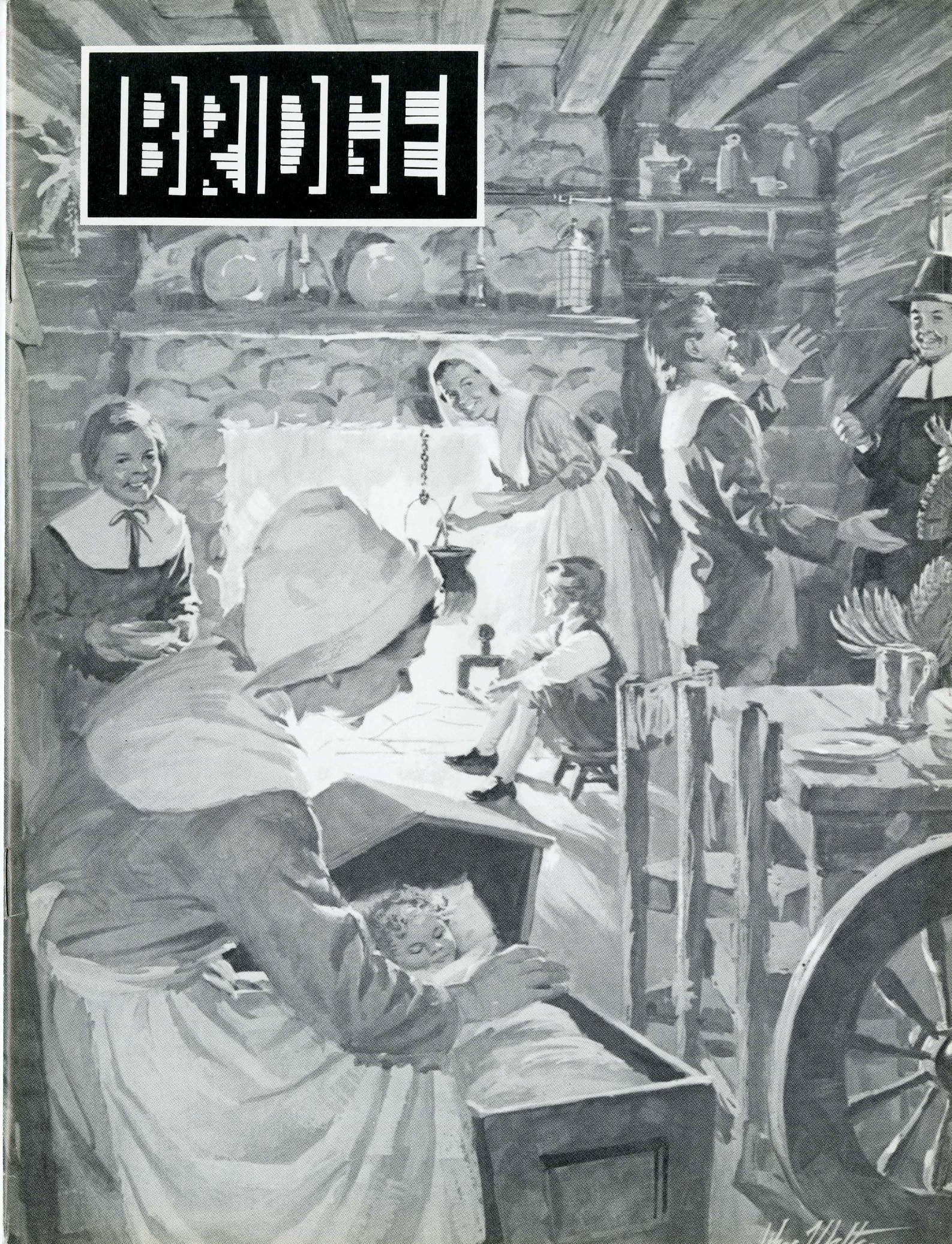
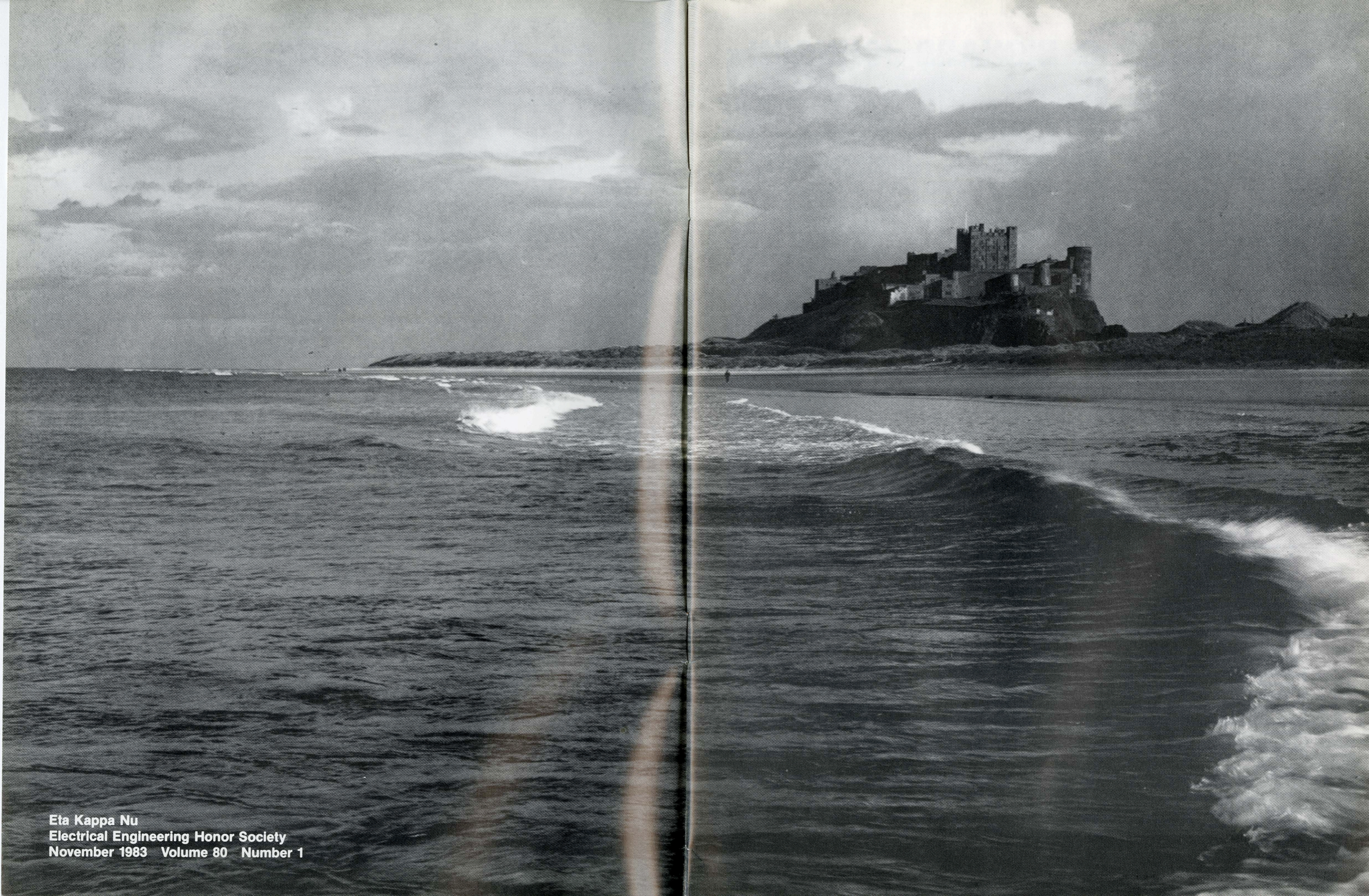
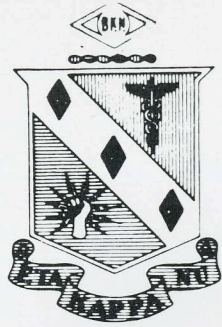


# 1619







# C. RICHARD JOHNSON

## OUTSTANDING YOUNG ENGINEER FOR 1982

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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.

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James A. D'Arcy  
Chairman, Award Organization Committee

C. Richard Johnson is the Outstanding Young Electrical Engineer of 1982. The award was presented to him at the 47th Annual HKN Award Dinner in New York City on April 18, 1983. The recognition is given annually to young electrical engineering graduates for meritorious service in the interests of their fellow men as well as for outstanding achievements in their chosen profession.

Dr. Johnson is an Associate Professor of Electrical Engineering at Cornell University, Ithaca, N.Y. He was named Outstanding Engineer for his "outstanding contributions to the field of control technology, his cultural achievements, and his involvement in professional activities." He was nominated by Dr. Joseph M. Ballantyne, Director of the School of Electrical Engineering, Cornell University.

Four other engineers were recognized as finalists:

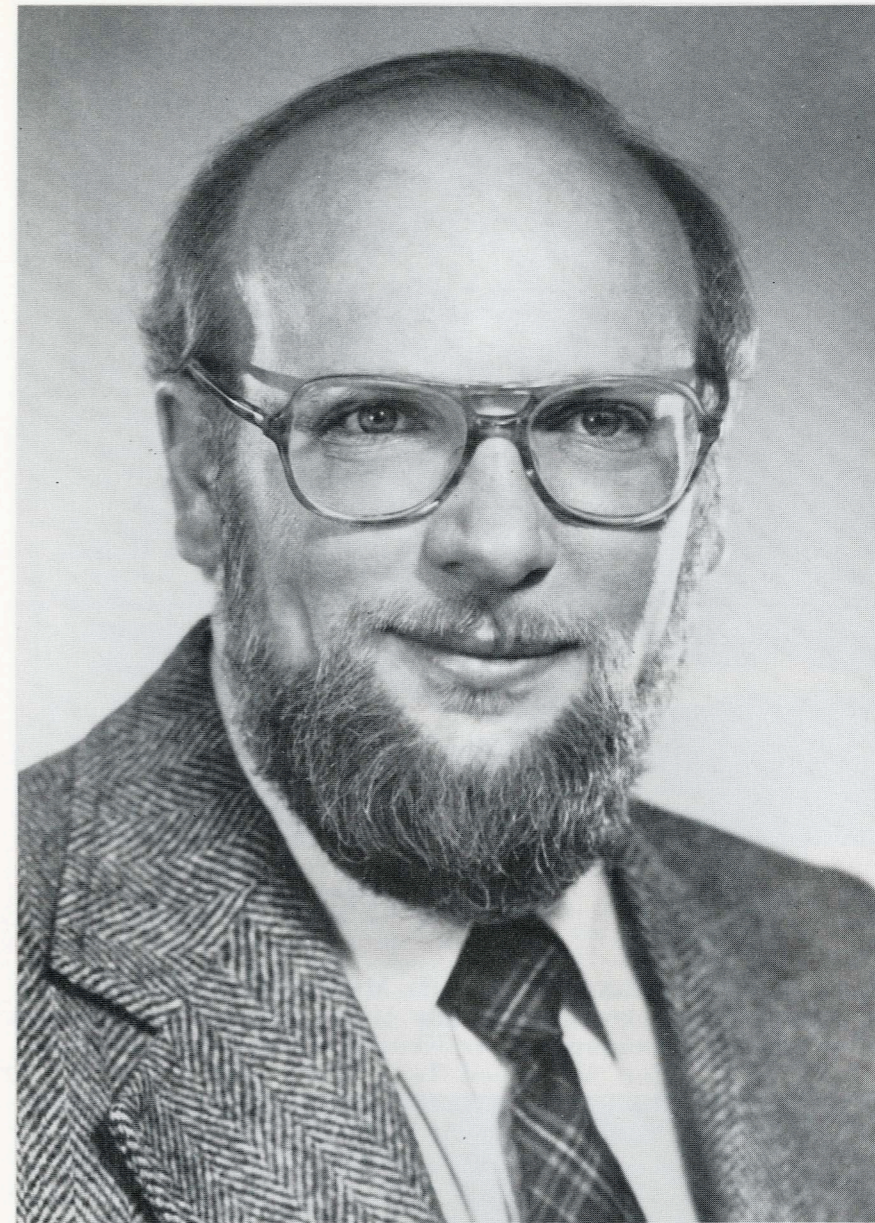
- Brian F. Fitzgerald, IBM Corp., Essex Junction, Vermont;
- Hung-Fai Stephen Law, Bell Laboratories, Murray Hill, New Jersey;
- Kevin C. McDonough, Texas Instruments, Inc., Dallas, Texas; and
- Alan D. McNutt, Union Carbide Corp., Oak Ridge, Tennessee.

The Eta Kappa Nu recognition is awarded to emphasize among electrical engineers that their service to mankind is manifested not only by achievements in purely technical pursuits but in a variety of other ways. Eta Kappa Nu holds that an education based upon the acquisition of technical knowledge and the development of logical methods of thinking fits the engineer to achieve substantial success in many lines of endeavor.

Nominations for the award are solicited each year through the Eta Kappa Nu Award Organization Committee. Nominations may be made: by any member, or group of members, of Eta Kappa Nu; by any section or group/society of the Institute of Electrical and Electronics Engineers; by the head of the EE Department of any US college or university; or by other individuals or groups, who in the opinion of the Award Organization Committee are properly qualified to make nominations.

The nominations for the 1983 awards should be submitted to the Chairman of the Award Organization Committee, or to the Executive Secretary of Eta Kappa Nu, by August 1, 1983. An eligible candidate is one who:

- has an electrical engineering degree (BS, MS, or PhD) from a



recognized U.S. engineering school;

- will have been graduated not more than 10 years as of May 1, 1983 from a specified baccalaureate program; and
- will not yet have reached his/her 35th birthday as of May 1, 1983.

Awards are made based upon (1) the candidate's achievements of note in his or her chosen work, including inventions of devices or circuits, improvements in analysis, discovery of important facts or relationships, development of new methods, exceptional results in teaching, outstanding industrial management, or direction of research and development; (2) the candidate's service for community,

state, or nation, such as activity in philanthropic, church, charity, or social enterprises, leadership in youth organizations, or engagement in civic or political affairs; (3) the candidate's cultural or aesthetic development, such as good work done in the fine arts, architecture or the drama, and the courses taken or studies made in historical, economic, or political fields; and (4) any other noteworthy accomplishments including participation in professional societies and other organizations.

The Award Organization Committee members are James A. D'Arcy, RCA "SelectaVision" VideoDisc Operations (Chairman); Irving Engelson, IEEE (Vice

Chairman); Sheldon J. Raiter, IBM Corporation (Secretary); Clarence A. Baldwin, Westinghouse Electric Corporation; Donald Christiansen, IEEE Spectrum; Larry Dwon, Consultant (formerly American Electric Power Service Corp.); Albert Fakheri, American Electric Power Service Corp.; Anthony E. Gabrielle, Gulf State Utilities; Quayne G. Gennaro, New Jersey Bell Telephone Co.; Willard B. Groth, IBM Corp.; Everett S. Lee, General Electric Co. (ret.); Robert W. Lucky, Bell Laboratories; George A. Mangiero, Brooklyn Polytechnic Institute; Stephen A. Mallard, Public Service Electric & Gas Co.; Ralph J. Preiss, IBM Corp.; Joseph J. Strano, New Jersey Institute of Technology; Berthold Sheffield, RCA Corp. (ret.); Lawrence D. Weschler, General Electric Co.; and Roger I. Wilkinson, Bell Laboratories (ret.).

The Jury of Award, appointed by the National President of Eta Kappa Nu, with the approval of the National Board of Directors, consists of two present or past national officers of Eta Kappa Nu, and three or more prominent American educators or industrialists. In 1982, the jurors were: Dr. Jose B. Cruz, Jr., (University of Illinois) Vice-President for Technical Activities, IEEE (Institute of Electrical and Electronics Engineers); Dr. Russell E. Lueg, Professor of Electrical Engineering, University of Alabama (Past President, Eta Kappa Nu); Dr. Samuel Musa, Staff Specialist for Electronic Warfare and Target Acquisition, Office of the Under Secretary of Defense for Research and Engineering; Mr. Charles E. Ohlman, Senior Vice-President, Consumer Services, Indianapolis Power & Light Company; Mr. Keith R. Rathjen, Vice-President for Advanced Technology and Engineering, Defense Electronics Operations, Rockwell International Corporation; and Dr. R. Bruce Renda, Dean of Engineering and Technology, IUPUI (Purdue University School of Engineering and Technology at Indianapolis).



(Seated L to R): Mr. Charles E. Ohlman, Senior Vice-President, Consumer Services, Indianapolis Power & Light Co.; Dr. R. Bruce Renda, Dean of Engineering and Technology, IUPUI (Purdue University School of Engineering and Technology at Indianapolis); Dr. Samuel Musa, Staff Specialist for Electronic Warfare and Target Acquisition, Office of the Under Secretary of Defense for Research and Engineering; Dr. Russell E. Lueg, Professor of Electrical Engineering, University of Alabama (Past President of Eta Kappa Nu).

#### THE 1982 JURY OF AWARD

(Standing L to R): Mr. James A. D'Arcy (RCA Corp.), Chairman HKN Award Organization Committee; Mr. Keith R. Rathjen, Vice-President for Advanced Technology and Engineering, Defense Electronics Operations, Rockwell International Corp.; Dr. Jose B. Cruz, Jr., (University of Illinois), Vice-President for Technical Activities, IEEE (Institute of Electrical and Electronics Engineers).

## CHAPTERS

**ZETA IOTA CHAPTER, Clemson University**—This year was highlighted by the continuation of several activities and by the addition of a few new activities. A list was compiled to Eta Kappa Nu members and their areas of specialization. The list was distributed to professors so that when a student is seeking help in a subject, the professor may refer him to a student proficient in that area. The new members were initiated in the Spring and the induction ceremony was topped off with a prime rib banquet at a local restaurant.

One of the new activities was conducting tours of the EE facilities for prospective EE students, parents, and visitors to the university. An Outstanding Professor Award was established to recognize the most proficient professor of the EE Department. The award will be given every two years in order to enable two years of senior Eta Kappa Nu members to vote. The voting was restricted to Eta Kappa Nu students to insure that the award was not a popularity contest but a true representation of a professor's teaching ability. The recipient of this award will have his or her name engraved on a plaque that will be

mounted in the entrance to the EE building.

One of the brightest activities was the design and sale of an Electrical and Computer Engineering T-shirt. The shirts were sold to the EE students and money from this will purchase the plaque for the Outstanding Professor Award. *by S.L. Cooper*

**JULIAN GOODSTEIN, 6 Woodland Drive, Woodbridge, Conn. 06525, Would like to have HKN members of New York University, 1942, contact him.**

# Psi Chapter

## University of Texas-Austin

**PSI CHAPTER, University of Texas at Austin**—The many and diverse activities of the Psi Chapter during the Summer and Fall Semesters culminated with Dr. Russel E. Lueg speaking to an audience of 122 at the chapter's Fall Banquet. Dr. Lueg was the International President of HKN for the 81-82 term. Dr. Lueg received his Ph.D. from the University of Texas in 1961. Having Dr. Lueg as our honored guest speaker was an appropriate finishing touch to one of the most outstanding semesters ever enjoyed by the chapter.

The memorable events of the past summer and fall began with the election of eight ambitious individuals to the offices of the chapter. Much of the organization's success was due to the leadership and creativity of the President, James Gaidry. James directed the activities of the other officers and was responsible for several changes in the image and accessibility of the chapter within the EE department. Among these changes was the relocation of the HKN office from a small, out-of-the-way room to a larger one located just off the EE

student lounge area. As a result of this move, our office has become a veritable beehive of activity.

Larry Horton, the chapter's Vice-President, directed a promising class of forty-five pledges to their induction to HKN this December 3. The fall pledges were given many duties within the chapter to encourage participation and a sense of responsibility. In addition to helping the active members with the chapter's regular services and functions, they organized the Fall Picnic, constructed a magnificent chariot for the upcoming Student Engineering Council Chariot Race and Spring Picnic, and organized a fund-raising project of their own.

Regular fund-raising activities of the chapter included donut sales on Friday mornings, coffee sales five days a week, a student file photograph service, and an occasional paper stuff for the campus newspaper. These funds were deftly managed by our Treasurer, Jerry Lawson.

D'Ann Duesterhoeft, the chapter's Recording Secretary, besides taking minutes and attendance at all chapter



(L to R) Dr. Russel E. Lueg, Dr. W.C. Duesterhoeft, James Gaidry (Pres.), Larry Horton (V. Pres.)

### THE ETA KAPPA NU COLLEGE OF BENEFACTORS

#### SUPREME BENEFACTOR

Edith Ann Koerner  
Paul K. Hudson

#### HIGH BENEFACTOR

Boston Alumni Chapter  
Norman R. Carson  
Chicago Alumni Chapter  
Helene Koerner Gahlen  
Lloyd Hunt  
Fritz A. Koerner  
Eugene Mueser  
Joanne Waite

#### BENEFACTOR

Marc Dodson  
Delta Nu Chapter  
University of Alabama  
Frank B. Doyle  
Larry Dwon  
Margaret K. Goodrich  
Irma Hanson  
Fred Harrell  
Floyd K. Harvey  
Edward Jordan  
Everitt S. Lee  
Omicron Chapter  
University of Minnesota  
Sydney R. Parker  
Donald S. Pearson  
Howard H. Sheppard  
Alan R. Stoudinger



# A Stranger At The Court Of Saint James

## Part Eight

### Saint Paul's Cathedral

We were walking down the Strand one pleasant afternoon taking in the sights. We looked down an alley and saw what appeared to be an old railroad station. It wasn't. It was the Savoy Hotel—one of the fanciest and most expensive in the world. A little later we saw a very large and impressive building across the street. I said to a passer-by:

"What church is that?"

It wasn't. It was the London Law Courts. I think they were the Civil Courts. The Criminal Courts are elsewhere—Old Bailey or something. Farther down the Strand, where it becomes Fleet Street we saw an impressive building that would pass for any of the State Capitol Buildings in the United States. Or, without the dome, like the Post Office in a large city. It wasn't. I did not need to ask. I knew it was Saint Paul's Cathedral.

I am not an expert on Cathedrals. Few people are. Still I have to say that it is my opinion—my amateur opinion—that Saint Paul's is the most underrated in the world. It is one of the largest and

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The interior of Saint Paul's looking toward the Chancel. The round gratings in the floor are to allow light and air into the undercroft below.

most beautiful in existence but we seldom hear of it in the United States. It is not even mentioned in the several books on Cathedrals that I have in my library—one of which was written and published in England. Notre Dame of Paris, Chartres, Salisbury and others get a heavy press but the only story I can remember reading concerning Saint Paul's told about how the place was in the process of falling down and that enough money could not be raised to put it in proper repair. I was soon to discover how silly that story was. They may, indeed, be having a maintenance problem but it certainly is not evident to the casual visitor, and there is no way the English people would ever allow that beautiful masterpiece to fall into ruin.

The only reason I can see why the Cathedral does not get the praise it deserves is because, as stated, the outside looks more like a Government Building than a typical Cathedral. The inside, however, is one of the most glorious places ever constructed by human minds, hearts, and hands.

I realize that I must be a bit careful when I say that a certain Cathedral is extra beautiful because it might imply that it is more beautiful than some others, and I would not want to do that. Beauty is in the eye of the beholder and every Cathedral has its own special

kind of loveliness. Yet they certainly are different and a large part of this difference is due to the circumstances of construction.

There are many kinds of Cathedrals but when we think of them—when we just say the word *Cathedral*—we usually think of great Gothic Cathedrals. Also, when we try to appraise or evaluate a particular Cathedral we usually use the thirteenth-century Gothic as the benchmark.

A true Gothic Cathedral (or Church) has three main characteristics: (1) The Pointed Arch, (2) The Flying Buttress, and (3) The Ribbed Vault. I am sure that many people consider that all of these things have natural or inherent beauty, and I certainly agree. But that was not their original intent.

The pointed arch was invented so that the roof of the nave could be made the same height as the roof of the transept, even though the two were not the same width. It is easy to see that barrel arches would not do this. If two barrels of different size were joined perpendicular to each other, they would not have the same height. The Pointed Arch is

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by PAUL K. HUDSON  
Editor — Bridge



also used extensively within the walls of the Church to carry out the theme and consequently there is the presumption that it is a strong arch. This is not the case. The barrel arch is much stronger and the catenary is the strongest.

The Flying Buttress was invented so that there could be thin walls and large windows without the forces of the roof pushing out

**Left—This memorial to Arthur Wellesley, the first Duke of Wellington, is in the north aisle.**

**Above—The Chapel of the Order of the British Empire, at the east end of the crypt.**

the walls. Cathedrals built before the Flying Buttress had very thick walls, small windows and dark interiors.

Finally, the Ribbed Vault was invented to prevent the vaulted roof from falling into the Church. There is the near-universal belief that the ribs carry most of the weight of the vault. In truth, they carry none of it and could be removed without harm. It is the ribbed shape of the vault that makes it sturdy.

To put it all together, we can say that a large part of the loveliness of Gothic Cathedrals had its origins in pragmatic considerations. Forethought, planning and design went

even farther. For good reasons the interiors were a bit cold and gray. The Church had to pay for the entire construction—it was not done with donated materials and labor. Costs were very great and prohibited such things as warm expensive stone, tiles, mosaics, etc. In addition, the Cathedrals were not churches every day. During the week the commerce of the city, not to mention the economics, took place in the Church. And whenever a civic meeting of the area population was held, it was held in the Church. In consideration of these things it would not have been prudent to build a Church which could have been damaged easily by people engaged in secular activities.



It is obvious, however, that the Cathedrals were designed and built to be everlasting. A century is only a moment in the life of a quality Cathedral. An interesting example of this can be found in Notre Dame of Paris. Careful observation will show that it is not straight, but built on a curve. It is, I think, the only Cathedral with this characteristic. It is often suggested that this is to represent Christ on the Cross. What it actually represents is a curve in the bed-rock on which the foundation stones were laid. The good Fathers were determined to build a Church that would *stay there*, and they did. Over the centuries, the weight of the Cathedral has caused it to sink about three feet, but it is still as strong as when it was built.

Having said all of the above, we now come back to Saint Paul's. For thirteen and a half centuries a Cathedral dedicated to the honor of Saint Paul has stood upon the summit of Ludgate Hill. Sir Christopher Wren's great renaissance church which rises majestically over the City is the fifth to bear the name of London's patron saint. It dates from 1668 when the King and his Commissioners contacted Sir Christopher, the Surveyor-General, and asked him to design a new Cathedral. The previous structures on the site had either burned or fallen into ruin. By 1698 the main part of the Cathedral was finished except for the dome and the west front. The last work was done in 1708, only 42 years after the destruction by fire of the previous structure. This is surely a record for a Church of this kind and size. Many of the Gothic Cathedrals required centuries.

Several months before I came to England I had a major surgical operation from which recovery was a bit slow. So by the time I had walked from Piccadilly down to

**Nelson's marble sarcophagus was part of a tomb begun in 1524 for Cardinal Wolsey. It was confiscated by Henry VIII and then lay forgotten at Windsor Castle until Nelson's death.**

Trafalgar and then down the Strand to Saint Paul's, I was a bit fagged out. I sat down on a chair below the dome and just rested. As I look about, the thought came to me that this was surely the most beautiful place I had ever seen. It was not cold and gray but, on the other hand, it was not frantically-busy baroque. It was just plain nice. As I sat there I kept saying over and over, "God is Love" because that was the impression the place gave me. The warm stone, floor tiles, mosaics, saucer domes and, of course, the overall design, were a complete fascination.

However, we must play fair in all of this. The Gothic Cathedrals were built when the architecture of great churches was in its infancy. Wren designed this structure centuries later when a great deal more was known. Also he did not have to concern himself with damage that might be caused by people selling chickens in the place during the week, or the *unwashed* coming in for a big rowdy meeting about some secular affair. Finally, he did not have severe money problems. My general conclusion is that Gothic Cathedrals are lovely in their own way and Saint Paul's is lovely in its way. They are just not the same thing. When I am in a Gothic Cathedral I think about the mystery and wonder of life and death. When I am in Saint Paul's I think about his beautiful essay on Love contained in his first letter to the Corinthians: *Though I speak with the tongues of men and of angels—and have the gift of prophecy, and understand all mysteries, and all knowledge—and have all faith, so that I could remove mountains, and have not love, I am nothing.*

As I sat in my chair beneath the dome I could not help being an engineer even in that beautiful and artistic place. I thought about how the weight of the dome was 68,000 tons and how this was 1,000 tons heavier than the ship on which I sailed to England—The Queen Elizabeth 2. I considered the problem of building piers that would hold that ship up in the air.

There is a most interesting whispering gallery in the dome and I so much wanted to visit it, but I was too fagged out to climb all those stairs. It was not until I left that the thought occurred to me that they might have an elevator, installed at some later date. If I ever go there again I will ask.

The basement or undercroft of the Cathedral is supposed to be the largest of its kind in the world. I could believe it as I almost got lost a couple of times. The stairway down was not impressive considering the importance of the place. It reminded me of the basement stairs in an old farm house. But once you got down, there were many points of great interest. The Chapel of the Order of the British Empire is located there and it is very beautiful. The tombs of many famous people are to be found in various places. It was a surprise to me that one of the least impressive was that of Sir Christopher Wren. The most impressive was that of Lord Nelson. It rests beneath the dome and surely must be the most beautiful sarcophagus in the world. It was originally made for Cardinal Wolsey, but was confiscated by Henry VIII when Wolsey fell out of favor. Henry might have intended to use it for himself, but did not. It lay forgotten at Windsor Castle until Nelson's death two and a half centuries later.

During the second world war the Cathedral suffered two direct hits from high explosive bombs. One penetrated the choir roof and completely destroyed the high altar. The other burst between the roof and the floor of the north transept, carrying with it many tons of masonry through to the crypt below. Saint Paul's was also attacked by incendiary bombs and it is a tribute to the Cathedral's devoted band of fire-watchers, often working under extreme danger, that they were extinguished before great damage occurred.

Saint Paul's was, of course, the setting for the royal wedding of Prince Charles and Lady Diana, in 1981.

## PROFESSIONAL AWARENESS

### Introduction

Engineering is more than a job or a career of jobs. It is a profession encompassing an integrated continuum of several important professional activities. Nor is engineering a static profession. It has been growing and changing rapidly with all indications pointing to further advances. Therefore, it favors those persons who are self-motivated to continue learning and who voluntarily perform to the best of their ability as whole persons.

Performance may constitute activities in engineering, management or an entrepreneur/consultant. Success in these work areas may have different connotations. For instance, one may desire to recognize success simply by how high in the industrial ladders (technician, technologist, engineer or manager) he has climbed. Success can also be measured by how well professional peers recognize and reward with distinctions and honors a person's contributions and achievements. Often a business is considered successful by just remaining solvent. In an organization, performance appraisals are made by managers who may not always be objective and who may not even enjoy the process. In a profession many persons enter the evaluation thus assuring objectivity and

Larry Dwon was President of HKN in 1959. He is our official Historian and is Assistant Editor of Bridge.



Larry Dwon, P.E.

tougher appraisals which make the outcome more wholesome.

Therefore, engineers are constantly faced with serious decisions about their values, work habits, people relations, education updating and upgrading, registration value, pensions and age discrimination matters. These subjects and others related to them are the thrust of United States Activities Board (USAB) and these articles.

Career considerations start with what constitutes a profession and the ethical practices such an entity encompasses. It is helped by continual planning; striving for high but reasonable goals; establishing a time frame of

objectives toward the goals; continuing education in its broadest concept and performance to high self-imposed standards. Not all such efforts involve a smooth journey. Nothing that is worthwhile ever occurs smoothly or suddenly.

Serious ball games are being played in industry each with their own set of rules. Not all ball games are played professionally nor are the rules always clear. Therefore, it behooves the players to establish value guidelines for themselves, to learn the games and the rules under which they are governed, as well as, the manner in which different players maneuver to gain an advantage or occasionally reap a well-deserved disadvantage. The ultimate goal should be for the individual engineering graduate to match his/her attributes to the system that offers him/her the optimum satisfaction (career and personal).

The facts, observations, opinions and suggestions, in this or any other career-related article, must be evaluated (accepted or discarded) on the basis of one's own set of values and goals. What follows is the result of over 40 years of self-motivated continuing education, varied experience as an engineer, manager, teacher, voluntary participant in the profession and as a consultant. A rather humble beginning, the depression and being naturally more a maverick than an organization man established a desire to succeed more as an achiever rather than in the realm of power over people.

Information about industry is documented in various ways by

many types of persons including successful engineers, managers, educators and entrepreneurs. Each has a point of view based on his or her own background and experiences; but above all their values and ambitions.

Be guided by a large sample of opinion but do seek experienced guidance. Sooner or later you must choose your ultimate career path. When you do, pursue your objectives with determination, your best effort and have no regrets about your choice. However, be flexible so you can avoid dead ends. Keep records that monitor your progress and make changes when feedback indicates the need. Stay current in your field. Volunteer some of yourself to your profession to insure your visibility. Check your worth on the open market often. Do not take for granted that your employer will automatically do that for you.

**Factors Crucial To Career Success**—Careers turn out better when they are planned and controlled by the individual than by a less-concerned person. Very few people will care as much about your success as you should. Your ability to remain in control depends upon many factors, including:

- Continuing education
- Quality performance
- Reasonable objectives and goals each with sufficient stretches
- Self-assessment
- Opportunity assessment
- Negotiating skills
- Timely job transition decisions and actions

Indeed, many other factors (especially people) will affect your career over which you will have hardly any control. If you have no control over a situation don't worry about it; but do be concerned enough to eliminate the influence. Worry makes a person sick. Concern makes a person stimulated positively to better the situation. Above all do not gripe about the situation you are in; change it or remove yourself from it. A griping person normally receives poor appraisals from harassed and unsympathetic managers. There-

fore be a maverick once in a while and get the thrill of changing the situation for the better. Mavericks do get demerits but they also have fun.

### Life and Career Planning

Several good books and papers have been written on this important subject. Among the more directly useful, are those authored by Messrs. Bolles, Crystal, Maccoby, Peters, Picarelli and others to whom reference has been made herein.

My own experience suggests that it is most worth while to develop the following competencies:

**Self Assessment**—This is the most important of the group of competencies. If you do not know yourself, how will you ever determine what would satisfy your goals? How can you sell yourself effectively? How can you improve yourself?

Each person should want to know his/her strengths and weaknesses both technically and personally. Only then can a person begin to sell from strength. Therefore, objective feedback from a sincere friend or a close relative could be important to have. Normally, inner drives and thoughts are better known by the person than by someone else. On the other hand, seldom would a person be as thoroughly cognizant of his/her effect on people as would be a close associate at work or in a social group. It is definitely an advantage to have working relationships with people that would not hinder career ambitions. However, this suggestion does not mean one has to be a "yes person"—except of course, he believes it would help his objective. There are definite goals that need such actions. On the side of not having such a goal, one should always be polite but not condescending.

There are times when the situation requires and it is your best interest not to be too nice a person. An important career crisis from my experience may demonstrate the point. Two years after the president of the company authorized my last position, he requested a person-to-person progress report in addition to the written reports that had been

provided regularly. He was obviously disappointed in the progress I was making as Manager Engineering Manpower, a new and unique position in the industry at the time. In short, because of the circumstances surrounding the creation of the position, I was operating in accordance with the best preachings of the Human Relations Schools of Thought that were emanating from Behavioral Scientists. When I tried to explain my slow progress to the president on the basis of the difficult situation that existed in the relationships between the power industry and engineering educators and within the company as a consequence of my new position; and, especially when I suggested that I thought the better approach was to go easy and gradually make friends by the approach of the social scientists, all hell broke loose. I was finally asked one critical question, "Do I really believe that my appointment to this position was to run a popularity contest?" My spontaneous judgment was to answer, "No Sir." My reprieve was to change my strategy immediately or someone else would assume my responsibilities.

My approach to the job changed immediately so did the results improve dramatically. My published papers on engineering and technology education, accreditation matters and manpower utilization are the proof that success is not always achieved by being a nice guy. In the above situation a necessary dialogue between the power industry representatives and educators produced positive results. Incidentally, whereas the nice-guy approach promulgated a rebuke from the president, the subsequent successful approach did not inspire praise nor extraordinary recognition simply high level support.

**Opportunity Assessment.** Another important competency is the ability and will to research opportunities and to assess them properly in relation to one's career goals. Many people have written on this subject from a variety of viewpoints. Fancy brochures abound. Some of them may be art collectors' prize possessions but many fall short as valuable career



information pieces. Advertisements proclaim challenges of many varieties in terms that try to appeal to the "In-Group" but not in accurate descriptive facts. Annual reports are impressive from financial and charting of past progress viewpoints but are less useful as indicators of what kinds of jobs are available now and in the future. Yet they should all be perused and used as inputs to all contacts with those potential employers. Talking about their contents, asking questions about them gives the impression that you did your homework.

A much better way to gather useful career information is to speak to employed engineers. Attendance at career meetings sponsored by technical societies are the best opportunities especially if the audience is permitted to enter the discussion. Properly conducted, such meetings get both sides of the story of employment out in the open—employers' and employees'. There is bound to be a viewpoint in the audience that is different than the one expounded by the speaker or panel. Among many others, this is one good reason to join and become active in IEEE. The forums provide opportunities to gain career information, to make career contacts and to make yourself visible to the profession and prospective employers through committee participation, writing papers, presenting them and practicing the arts of communication and managing. IEEE has over four million person years of experience. A section meeting of twenty persons could easily represent 400 person years of experience. Take advantage of other people's experiences. Don't reinvent it. Your share of individual hard knocks will come soon enough. Listen for the true meaning of responses to your inquiries about a company or position you are seeking. Factor into the verbiage the expression of the face and eyes, the tone in which words are phrased. Is the person sincerely giving you the straight information or half truths. The latter may be useless or the most significant signal to be wary.

A very important aspect of opportunity assessment is the matter of how the company provides for the delicate transition from school to industry. Three normal possibilities are: direct assignment to a specific job; a short, sometimes ineffectual orientation program before the assignment decision is made; or a formal planned program of varying length (six months recommended) in which several work assignments are experienced by the incumbent and some instructional course work is available before initial assignment. I have always insisted that the reward for exceptional performance on the training program should be that the incumbent would get his/her first choice of assignment. Everybody gains from this procedure.

Beyond this transition period, it is important to assess what other career opportunities prevail. Table 1 shows some possibilities. Note the degree of control that the individual might have. A job seeker should determine the constraints of the process during the interviewing period.

**Objectives and Goals**—Are you seeking an engineering career, a management career, a combination of the two or something entirely different? Is time a constraint on your selection potential? Do you want a risk or security? Are you willing to pay the price of either one? Do you want freedom of choice or an orderly structured work situation? The answers to these questions will lead to different employment areas and industries. You must plan your career and life paths in advance of the search for them. If you do not plan, both your life and the career within it will be controlled by random forces which you cannot direct and the end result may become a status quo situation or worse yet, a mid-career crisis. (16, 17)

Objectives and goals are the road maps of your ambitions. If you do not have such a map the chances are good that you will end up somewhere not to your liking.

Goals that are compatible with one's skills, education experience and personal attributes decrease the probability that problems will arise that cannot be handled. Be honest with the evaluation of yourself. Make sure that your mental, emotional and physical capacities match the requirements of your aspirations. Your health should be as important as your career. Without good health your chances of success is limited. Besides being partly successful is better than not being able to reach any of your fine objectives.

Especially important to a professional person is the acquisition of good judgment. Peter Drucker explains a decision as a judgment or choice between something that is almost right and an alternative that is probably wrong. He also contends that decisions in industry are not based on a consensus of facts; they grow out of a clash and conflict of divergent opinions. Opinions are untested hypotheses which make them worthless unless tested with reality. Let me assure the reader that the opinions expressed in this article have been tested in very real situations. The only doubt that can enter the reader's mind is that mine is a sample of one experience. However, other experiences have been observed by this writer so the article is really a consensus of many opinions. Other opinions should be sought, of course.

Good judgment is necessary in choosing jobs, choosing bosses, entering the management arena (the pun is intentional), leaving one career for another and scores of other situations.

To succeed, one must stretch beyond the norm. Norms are different in various industries and companies within them. Some persons can or will want to stretch more than others. The competition for the better jobs will be rough. Therefore, one must always have alternative goals, be flexible, pull with the events that are encountered, and be reasonable in setting them. The latter may be difficult, disappointing at times but very wise, in the long run.

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# MERRY MOMENTS WITH MARCIA

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A man and his wife were returning to their seats after a movie intermission. In a voice of concern, he asked the man seated at the end of a row, "Did I step on your toes on the way out?"

"You most certainly did," responded the man angrily.

"OK," he said, turning to his wife, "This is our row."

Struggling with the English language, the foreigner was completely frustrated by the reasoning behind the pronunciation of words like tough, bough, though. He gave up when he read this newspaper headline: "Bazaar Pronounced Success."

They tell me a correspondence school is an all-mail college.

Pharmacist's Mate—You cough more easily this morning.

Patient—I should. I've been practicing all night.

Footprints in the sands of time are never made by sitting down.

The dictionary is the only place where success comes before work.

An accident victim was in the hospital recovering from a broken leg. "How are you being treated?" asked his concerned visitor.

"Well," replied the patient, "I can't kick."

"I've invented a computer that is almost human."

"You have? You mean it can think?"

"No—but when it makes a mistake it can put the blame on another computer."

"I've heard Joe is suffering from Dunlap's disease."  
"What is Dunlap's disease?"  
"His stomach done laps over his belt!"

Some people ask the secret of our long marriage. We take time to go to a restaurant two times a week. A little candlelight, dinner, soft music, and a slow walk home. She goes on Tuesdays, I go on Fridays.

## HOW TO KNOW YOU'RE GROWING OLDER

Everything hurts and what doesn't hurt doesn't work.

The gleam in your eye is from the sun hitting your bifocals.

You feel like the morning after and you haven't been anywhere.

Your little black book contains only names ending in M.D.

Your children begin to look middle aged.

You finally reached the top of the ladder and find its leaning against the wrong wall.

Your mind makes contracts your body can't keep.

You look forward to a dull evening.

Your favorite part of the newspaper is "20 Years Ago Today."

You turn out the lights for economic reasons rather than romantic reasons.

You sit in a rocking chair and can't get it going. Your knees buckle and your belt won't.

You regret all those mistakes you made resisting temptation.

You're 17 around the neck, 42 around the waist and 96 around the golf course.

Your pacemaker makes the garage door go up when you see a pretty girl.

The little old gray-haired lady you helped across the street is your wife.

You sink your teeth into a steak and they stay there. You have too much room in the house and not enough in the medicine cabinet.

You get your exercise acting as a pallbearer for your friends who exercise.

You know all the answers but nobody asks you the questions.



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by **MARCIA PETERMAN**

# PADDLING DOWN THE ALBANY

## Part Two

Dan and I maneuvered our 17-foot aluminum canoe into the little Cree Indian village of Fort Albany at about supper time on 5 August 1976. Weary and sore after six days of unremitting work, we had just paddled 240 miles in what we suspected might have been record time. This last day had been the hardest. We'd lost our way in a maze of channels and islands and had wasted hours "tracking" the canoe, wading knee-deep in icy water, guiding the craft among

jutting boulders and lowering it down rapids and over ledges on a rope.

The village was a welcome sight. Two churches dominated separate communities, one Catholic and one Anglican, and there were dozens of freight canoes pulled up along the river bank. Only an hour earlier an Indian family in one of these had been our first human contact in five days.

We landed near the Hudson Bay Company store and sought out the

store manager, a standard source of information and advice in the Canadian North. We had a problem to solve. The hard work of the trip was over, but we still had to find our way from Fort Albany 150 miles south to Moosonee, Ontario, where we could catch a train to civilization via the Ontario Northland Railway. Paddling down James Bay was out, so said all our informants. The bay is extremely shallow and stormy. The tides are high, leaving extensive tidal flats exposed at low water. The ebb-tide currents can easily sweep one out to sea. There's no shelter from sudden storms. In other words, far too dangerous for a small canoe.

The alternatives, we were told during our pre-departure planning period, were the Hudson Bay Barge Line, which would take our canoe as freight but no passengers, or the airline which scheduled a thrice-weekly DC-3, but wouldn't take the canoe, or an Indian boatman with an outboard-powered freight canoe, who would take both. We were determined to salvage Dan's canoe, for which we'd developed considerable affection. It turned out that there was only one barge run per year, still two months ahead, so that was out. The freight canoe seemed the best bet, though the fee seemed a bit steep. The Hudson Bay Co. manager recommended Antoine K\_\_\_ as a reliable guide and navigator, so we strolled over to his house to see if he'd be willing to take us.

Antoine was a stocky, well-built Cree in his middle thirties, apparently something of an entrepreneur. His house was like all the others: government-

designed, compact but comfortable. He ran a mini-grocery store out of a clothes closet, and several times during our interview native children came to buy candy bars and chewing gum. His own small offspring eyed us curiously, with shy smiles and show-off antics.

We struck a deal with Antoine. For \$250 he'd take us to Moosonee in his big freight-canoe. He'd supply all the gas and the groceries and a big, comfortable tent. He had a 25-horsepower outboard motor and a 10-horsepower spare. He'd been navigating James Bay all his life and knew the waters like the palm of his hand. He'd pick us up at Anderson's dock at 3:00 p.m. the next day.

We paddled down the river a bit farther and up a side channel to Anderson's establishment, headquarters for a large-scale guiding business, catering mainly to goose hunters from the USA and southern Canada. The place was deserted, but we found an empty

and somewhat decrepit shack on the river bank in which to spend the night.

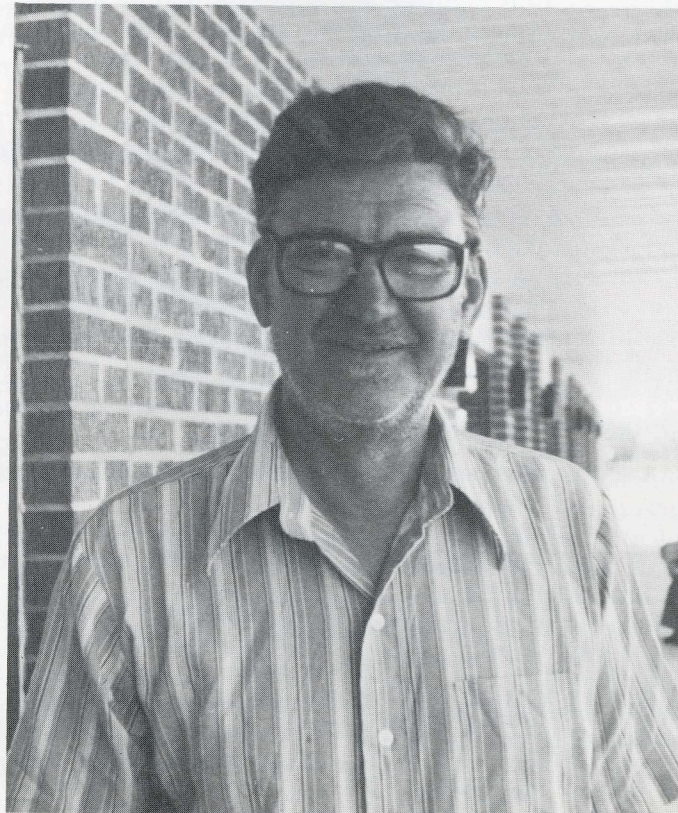
Next day we hiked back to the village along the sandy road, trying to analyze the economics of this remote community. The Albany River for 150 miles upstream had been devoid of any sign of human activity. Hunting and trapping were apparently no longer important. There were no signs of commercial fishing: no net-drying racks, no stacks of fish-boxes, no ice-houses. No factory or workshop buildings. No boat-yard, despite the many canoes in evidence (made in an Indian-operated factory in Quebec, we were told). Only the government-operated school and hospital, and the two churches. Aside from guiding goose-hunters in autumn, there seems little for these people to do. Again, we're struck by the dilemma of these Arctic and sub-Arctic peoples, in transition from a semi-nomadic hunting/fishing life

to an as-yet-unknown niche in an industrial society.

Antoine is busy around the village with his pickup truck. He has the garbage-hauling concession, and he's been up all night getting caught up with his work so he can leave with us this afternoon. A few children play in the dusty streets with two puppies and a bicycle. A DC-3 lands at the airport and unloads a sack of mail and two cartons of supplies for the hospital; no passengers.

There aren't any native-made souvenirs or handicraft items at the store. We walk back to Andersons, past the garbage dump where Antoine is discharging his load and his colleague is bulldozing sand over it. I'm busy with my binoculars, checking the birds. Greater yellowlegs. Nashville

**Dan McCollum tracking the canoe through shallow rapids on the Albany, near James Bay.**



The author, George Swenson Jr., at Hearst, Ontario after ten days in the woods. Dr. Swenson is Professor of Electrical Engineering and Astronomy and Head of the Electrical Engineering Department at the University of Illinois-Urbana.



warbler, raven. A yellow rail clickety-clicks in the rushes but won't reveal himself.

We have lunch in our shack and prepare our luggage for loading into Antoine's canoe. A teenage couple putters up on a motorcycle and sits with us silently for twenty minutes, smoking cigarettes.

Antoine arrives at the dock more or less on schedule. Expertly he rigs a towing harness for our small canoe and stows our duffel aboard his large one. He indicates our places and we sit down on our pack-sacks. A flip of the starter cord, a wave to the kibitzers on the dock and we're off downstream, heading for the river's mouth a few miles away.

There's a very shallow bar across the mouth of the Albany and it's necessary to cross at high tide. Apparently we missed it, because at five o'clock Antoine headed for shore, grounding the canoes a hundred meters from the grassy margin. We wade ashore, carrying

the grocery box and the large canvas tent. The tide is running out rapidly and in no time the canoes are high and dry.

This is Saturday, and I'm quite anxious to make the 6:00 p.m. train out of Moosonee on Sunday. Antoine has assured us it is feasible, but now he busies himself putting up his large, canvas, wall tent. I object. We must push on as soon as possible. Antoine responds that it's impossible to proceed until the tide comes in. We might as well be comfortable, and he finishes staking down the corners of the tent which he's erected on a frame of driftwood poles.

That finished, he announces grandly that we'll have supper. We're about to have a demonstration of Indian camp skills. Back in the 1930's, as a lad fascinated by woodcraft and nature lore, I learned from Ernest Thompson Seton and the Boy Scout Handbook

#### The village of Fort Albany

how an Indian makes a campfire. Build it small, conserve firewood, sit close, keep warm, guard against forest fires. Now Dan and I learn from a *real* Indian how it *should* be done. Pile up half a cord of driftwood. Pour on a gallon of gasoline. Touch a match to a big wad of newspaper and toss it at the pile from thirty feet away. Ka-whoom! The blaze must be visible all the way to Moosonee!

It takes nearly an hour for the flames to die down enough to put on the tea kettle. Antoine puts out a loaf of bread and some bologna and cheese. We eat, and then retire to the tent for a nap until the tide comes in. At least that was the theory. Antoine pulled out a pint of rum to help him relax, and then proceeded to tell us the story of his life and his religious philosophy. Eventually the tide came in, about 11:00 p.m., and Dan and I interrupted the monologue to insist upon striking the tent and getting under way.



It was now deep twilight, but light enough to see the grassy, treeless shore dimly off to the right. The sea was calm, the sky overcast with occasional breaks. The canoe purred along, Antoine sitting impassively at the tiller, occasionally taking a swig of rum. As it darkened, I asked him if he had a flashlight and a compass. No he didn't. I dug mine out of my pack. I estimated from the look of the wake that we were making 20 miles per hour, or so. Occasionally Antoine would slow the canoe and probe for the bottom of the bay with a seven-foot stick.

It was now pitch dark and we'd apparently left the shore far behind. I flicked on my flashlight, and glanced at the compass. Our course was 160 degrees, and I said it out loud. "Yes," said Antoine. "That takes us right to Moosonee." We motored on through the night. The wind had risen a bit, and we occasionally took some spray aboard.

An hour passed. I checked my compass again. "Hey," I called, "we're heading 75 degrees." "Yes," said Antoine, "that takes us right to Moosonee." He took another swig from his flask, now nearly empty. "My God," I thought, "we're lost at sea with a drunken skipper." The thought was truly worrisome. This course would take us far off the direct route to Moosonee and eventually into the vast waters of Hudson Bay. Should we mutiny and take over the navigation ourselves? Antoine slowed the canoe again, probed the bottom with his stick, and proceeded dead slow. Within a few minutes I noted that our course had changed to 95° and then 110°. Gradually it dawned upon me. He was navigating by soundings, feeling his way along some tortuous, invisible channel in the shallow bottom of the bay. It was an eerie feeling, just the same, blundering along in the

**Antoine and his freight canoe**

pitch dark with absolutely no visible references. We might have been alone in the universe. Only the glow from Antoine's cigarette and an occasional muttered exclamation from Dan indicated that any other beings existed anywhere.

At long last Antoine announced that we'd reached deep water. We would run full speed for awhile and would then come to shallow water again. There'd be a reef, and we'd have to find a 100-foot-wide passage in order to pass through. We might have to spend the night there if we were too late for the high tide. He opened the throttle and we roared off into the darkness. I noted that the course was again 160°, but didn't mention it; Antoine seemed to have a certain disdain for my notions about navigation.

We had followed that course for an hour at full speed when the clouds partially cleared off and moonlight streamed down. Shortly afterward a huge, black rock



loomed ahead and passed 50 feet to the right, then another appeared on the left. The engine slowed and a moment later we ran aground with a thud. Antoine reversed the engine and pulled us clear, then ordered me to throw over the anchor. We swung with the tide, which was now running strongly.

We'd hit our target precisely after a twenty-mile run in the dark with no directional references. I suddenly had new respect for Antoine's skill and confidence. He remarked that there was a large, derelict ship aground on the reef a short distance to the right, invisible in the gloom. A chorus of canine howling came from the direction of the western shore of the bay. Wolves, Dan and I thought, but Antoine said it was an abandoned team of sled dogs which was now running wild. The sound added to the atmosphere, at the least. Antoine now said "Go to sleep," and rolling himself in a piece of tarpaulin, lay down in the bottom of the canoe. A final swallow of rum emptied his bottle

and he threw it overboard. Dan and I wrapped ourselves in our ponchos and lay down in two inches of icy bilge-water. Neither expected to sleep a wink, but it had been a long, hard, eventful day and we both passed out almost immediately. It must have been about 2:00 a.m.

I woke cold and stiff, aching in every fiber. It was gray dawn and the water was much higher. The small canoe floated docilely at the end of its tether, rocking gently in the waves. The rest of the crew were still asleep, but woke promptly when I spoke. Antoine looked at the water and ordered the anchor raised and stowed. We'd make it to deep water while the tide was in, then we'd go ashore in about an hour, build a fire, and have a big breakfast. It sounded like a good plan.

Six hours later there'd been no landing and no breakfast. We were

**Antoine making camp on the shore of James Bay**

now about ten miles out in James Bay, almost out of sight of land. There was a brisk breeze from the south and a substantial sea which caused the canoe to pound violently. My seat was in the bow, facing aft. Every time we'd rise on a wave I'd brace myself, anticipating the crash into the trough. Wham! A shock would travel up my sensitive spine and I'd wince with pain. There was only a brief respite every hour or so when we stopped to change gas tanks or to bail out the small canoe. Our little aluminum craft followed us obediently enough as long as there wasn't too much water sloshing around in it.

At one of these pauses Antoine announced again that we'd go ashore in about an hour for a meal. We were carrying a number of driftwood logs for firewood and a jolly fire and a hot cup of tea seemed a mighty attractive proposition. Alas, it was only propaganda. We never stopped. No explanations were offered and none asked for. We were very tired,



after all, especially Antoine, who'd had only three hours' sleep in the past 48. He began to neglect his bailing routine and the towed canoe began to plunge heavily into the waves. I considered suggesting that we should empty it, but decided not to risk a confrontation. Despite his impassive demeanor as he sat at the tiller, I sensed that his nerves were on edge. Dan was blissfully asleep, wrapped in his rain gear, not waking even when occasionally a heavy splash of spray hit him full in the face.

We pressed on through the early afternoon. The wind and flying spray abated some but there was still a respectable swell from the south, which made heavy going for the waterlogged canoe in our wake. Dan woke up and we munched on some trail rations from our packs. Nobody spoke. Once Antoine pointed out some birds on the water ahead and the binoculars revealed a flock of common scoters, my first ever and a new entry for my life list.

Suddenly there was an abrupt

jerk and the towline parted with a loud twang. The motor stopped and we looked back to see the aluminum canoe submerged to its gunwales and its cargo adrift. We motored back to it and quickly discovered a long transverse crack in the hull, evidently the result of metal fatigue from the pounding of the waves. We hauled it aboard the freight canoe and rescued the two floating ten-gallon gasoline cans. I watched with regret my favorite, old, smoke-blackened tea kettle, a veteran of many adventures, as it drifted away on the tide. Economically, not worth rescuing, but emotionally, a real loss.

Dan was angry at the loss of his canoe. It, too, was an old companion. We'd invested a lot in this trip, too. Now it was ruined. It made the whole James Bay trip irrelevant, too. If we'd simply abandoned the canoe at Fort Albany we could have come to

**Cruising down James Bay. Antoine at the tiller and Dan asleep in the salt spray.**



Moosonee much more cheaply by airline. Dan blamed Antoine, and I suppose he was culpable in some sense. After all, we'd engaged him to get us *and* the canoe to Moosonee, by implication safely.

We were now in the broad, muddy mouth of the Moose River. Getting over the shallow bar was difficult, but once in the river there was plenty of depth and we motored rapidly the few miles to the town of Moosonee. The train was due to leave in an hour. We paid off Antoine and found a man with a truck to take our gear to the station. Fortuitously, we encountered a Canadian tourist who commiserated over the damage to Dan's canoe, then offered to buy it at a bargain price. He worked in a boat factory and could probably repair it by heliarc welding. Dan agreed.

Our odyssey was over. It involved a sour note at the very end, but in balance it had been a great adventure, worth re-telling through the years at many a faculty-club lunch. That's what really counts!

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## Psi Chapter

Continued from page seven

and officer meetings, had one of the most important duties of all. It was D'Ann who saw to it that there was beer and snacks at all chapter meetings. The presence of these refreshments tended to increase attendance and give the monthly meetings a social flavor. Important chapter business was still conducted smoothly and the members were "brought into a closer union" as is indicated in our Constitution.

Several other activities of Psi Chapter were coordinated by the Corresponding Secretary, Gary Abbott. Gary chaired the Banquet Committee and the Freshman Survival Kit Committee. The Freshman Survival Kit is a document the chapter is developing to give new students information and tips on how to find or avoid certain things important to their academic and social success.

The Bridge Correspondent, Robert Soderblom, of course, wrote this article. He was also responsible for interesting displays, posters and newspaper announcements for the chapter.

The two additional positions within the chapter, Student Engineering Council Representatives, were held by Jack Butler and John Salick. These people performed important duties for the chapter as well as serving on the Council. Jack was organizer for one of the chapter's most significant services to the department, student pre-advising. Of the 1700 students advised during pre-registration period, the chapter advised 1200. This was a great relief to the EE faculty. John earned his keep by running our tutoring



Dr. Lueg poses with Psi Chapter officers and faculty advisors.

program and coordinating the electronic circuits demonstrations we give to students taking basic circuit analysis courses. These demonstrations were given during class in cooperation with the faculty.

Additional activities of the chapter included: three river float trips, the Summer and Fall Picnics, the Fall Smoker, and a faculty basketball challenge (we won). We also had intramural teams for: basketball (champions in our league), football, softball, volleyball and bowling.

Psi Chapter currently has a membership of about ninety. Many of these members are very active within the chapter and help to make all of the chapter's activities fun and successful. To recognize and encourage participation by chapter members, Psi Chapter began two new awards this semester. The awards and their recipients for Fall 1982 were: Most Outstanding Pledge—James A. Luckemeyer, and Most Active Member—Yun-ling Lou. Psi Chapter is looking forward to an even better semester this spring.