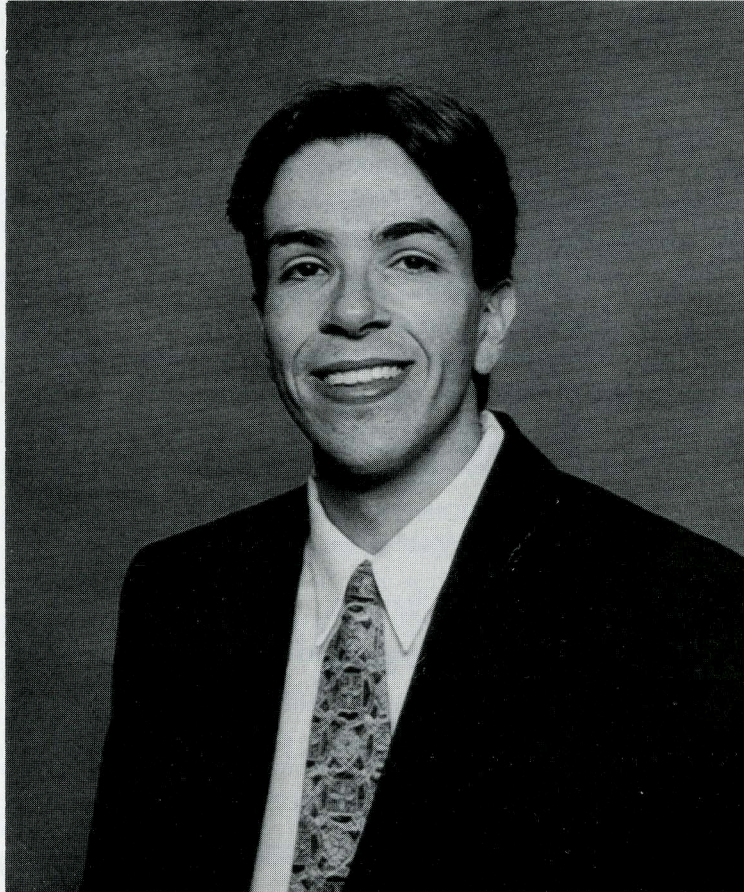
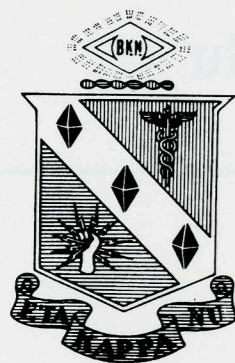


BRIDGE of Eta Kappa Nu



JOVAN D. MILOSAVLJEVIC
1996 Winner
Zerby-Koerner Outstanding EE Student Award

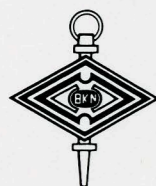


Editor and Business Manager
J. Robert Betten

November 1996
Vol 93 - No. 1

Contributing Editors

Marcus D. Dodson
Larry Dwon
George W. Swenson
Michael R. Hajny



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

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Contents

Adventure

16 Artic Adventure: Alaska, 1971

Announcements

3 Paul K. Hudson HKN Development Fund Annual Giving Campaign

23 Vladimer Karapetoff Eminent Members' Award: Call for Nominations

Awards

4 Zerby-Koerner Outstanding EE Student Award

Historical Notes

8 Eta Kappa Nu History, Part 4 National Officers, Conventions And Reports

In Memoriam

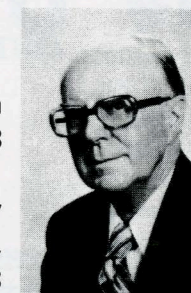
14 Harold A. Wheeler
Edwin C. Jones
Charles H. Merritt
Gordon S. Brown

Reports

22 1995-96 President's Report

PAUL K. HUDSON HKN DEVELOPMENT FUND ANNUAL CAMPAIGN

Paul K. Hudson
1916-1988



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

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

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

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

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

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

____ Distinguished Fellow (\$2000 and above)

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

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____ Fellow (\$25 - \$99)

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Box HKN

University of Missouri-Rolla
Rolla, Missouri 65401

Become a Paul K. Hudson Fellow

Do it Today!

See Details on Page 3.

ALSO VIST HKN's WWW HOME PAGE

<http://www.umar.edu/~hknhdqrs>

Zerby-Koerner Student Profile

The Alton B. Zerby and Carl T. Koerner Outstanding Electrical Engineering Student is outstanding by virtue of his/her scholastic excellence and high moral character; coupled with demonstrated exemplary service to classmates, university, community, and country.

Among the purposes which Eta Kappa Nu expects to achieve by the operation of this program are: Honor annually the outstanding electrical engineering student by providing accepted recognition of accomplishments in this field; Recognize the outstanding electrical engineering student's school; Motivate electrical engineering students to earn membership in Eta Kappa Nu; Distinguish the undergraduate chapter of Eta Kappa Nu from which the outstanding EE student was chosen; Provide additional opportunity for publicity and recognition of the Eta Kappa Nu Association and its objectives; and Encourage electrical engineering schools not having a chapter of Eta Kappa Nu to qualify and establish a chapter.

Inaugurated in 1965 as the Outstanding Electrical Engineering Student Award Program of Eta Kappa Nu, it has become a traditional means of providing recognition to deserving Electrical Engineering Students in the United States of America. In 1975 the name was changed to "The Alton B. Zerby Outstanding Electrical Engineering Student Award" to honor and perpetuate the memory of Mr. Zerby, a long time leader and Executive Secretary of Eta Kappa Nu, who was dedicated to the students. In 1993 the name was further changed to include Carl T. Koerner, to honor and perpetuate the memory of brother Carl, who had a lifelong dedication to Eta Kappa Nu, including serving as its President; and his selection as the fifth recipient of the prestigious Eta Kappa Nu Distinguished Service Award in 1975 in recognition of his contributions to electrical engineering and Eta Kappa Nu.

This award considers not only the scholastic achievements of the stu-

(Continued on Page 7)

THE ALTON B. ZERBY and CARL T. KOERNER OUTSTANDING ELECTRICAL ENGINEERING STUDENT AWARD 1996

Irvine, California
July 20, 1996

Text by
Marcus Dodson

THE INTERNATIONAL ETA KAPPA NU ASSOCIATION 1996

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JURY OF AWARD

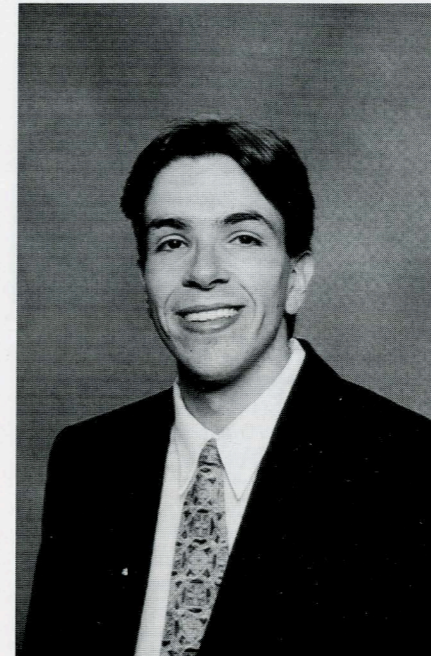
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Student Award Winner

THE ALTON B. ZERBY and CARL T. KOERNER OUTSTANDING ELECTRICAL ENGINEERING STUDENT AWARD 1996



JOVAN D. MILOSAVLJEVIC
Winner

Won expense-paid trip to the Hyatt Regency Irvine Hotel in Irvine, California and an award dinner in his honor, from the Alton B. Zerby Perpetual Memorial Trust established by the Eta Kappa Nu Official Family, and a monetary gift from the Carl T. Koerner Perpetual Memorial Trust established by Edith Ann Koerner.

JOVAN D. MILOSAVLJEVIC graduated summa cum laude, first in his class, from the State University of New York at Stony Brook, with a GPA of 3.98/4.00. He was nominated by the Theta Mu Chapter of Eta Kappa Nu. He was honored with membership in Sigma Beta, a National Honor Society, Tau Beta Pi, where he was Treasurer, and Eta Kappa Nu, where he was also Treasurer. He is also a member of IEEE.

He has been a volunteer tutor to his classmates, and has been quite involved with student government including being on a committee to hear cases concerning student academic dishonesty and other student issues. He organized and participated in numerous student events from money raisers, to technical events, to social functions. He brought in guest speakers from industry to bridge the gap from the status of student to professional engineer.

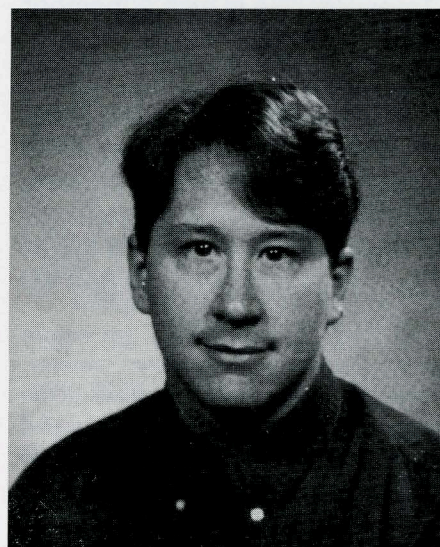
Mr. Milosavljevic, while interning at Symbol Technologies, Inc., designed a low cost two dimensional decoder prototype, and participated in the design and development of a device to measure the compliance of laser emission level for safety standards. The patent is pending. His "Laser Power Emission Detector" paper was published in the Stony Brook Engineer, Spring 1996.

Jovan has participated in "Habitat for Humanity" projects, a fundraiser for orphaned children of Yugoslavia, a "Walk for Cure" fundraiser for breast cancer research, collected food and clothing for Thanksgiving, Christmas and Easter for the less fortunate. He annually volunteers for the Special Olympics. He played a large part in involving his Eta Kappa Nu chapter in the "Adopt-a Highway" program — the first campus association to participate.

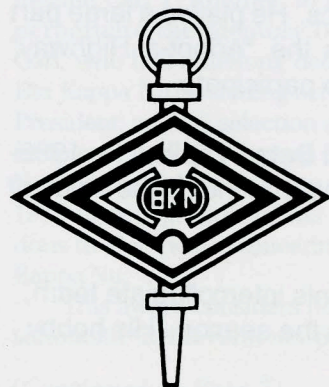
Mr. Milosavljevic was selected as a Tau Beta Pi Fellow for 1996-97. This will be a large financial boost for his continuing the study of electrical engineering at SUNY.

Jovan was a member of the men's tennis intercollegiate team, and enjoys hiking and skiing, according to the season. His hobby is trouble-shooting electronic circuits.

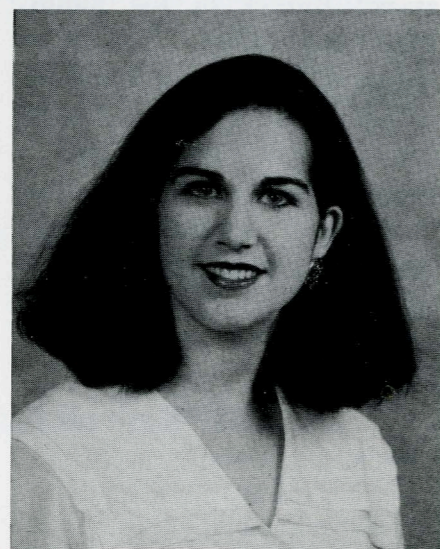
**THE
ALTON B. ZERBY and CARL T. KOERNER
OUTSTANDING ELECTRICAL ENGINEERING STUDENT
AWARD
1996**



**Daniel Lewis McGonigal
Honorable Mention**



**Christine L. Arbogast
Honorable Mention**



**Laura Catherine Pruette
Honorable Mention**

CHRISTINE L. ARBOGAST, who will graduate first in her class with a GPA of 3.97/4.00 at the University of Detroit Mercy, was nominated by the Beta Sigma Chapter of Eta Kappa Nu. She is a member of the Society of Women Engineers (SWE), IEEE, and has been honored with membership in Alpha Sigma, the National Jesuit Honorary Society, Tau Beta Pi, as well as Eta Kappa Nu.

For her school activities, she was the recipient of the Student Service Award given by the Engineering Student Council. She was selected 1996 Outstanding Engineering Student by the Engineering Society of Detroit. Christine has served as President of the Student Branch of SWE, and Chair of the IEEE.

Christine has used her spring breaks to work in catastrophic hurricane and flood relief areas. She regularly does volunteer work at her church, and "House Clean-ups" and "Neighborhood Clean-ups" organized work parties in Detroit. Also, she was an Engineering and Science Student Council member, A Resident Advisor of Residence Halls, a member of the Student Senate Council of Presidents, and many other services.

She interned with Mechatronics, Inc., where she programmed, modified, and troubleshot lab machines using Boolean languages; and updated electrical, hydraulic, and air schematics. The lab serves Ford Motor Co. for vehicle simulation.

Christine will receive full tuition and stipend at Duke University for Master/Ph. D., and a Tau Beta Pi Fellowship to be applied to graduate school.

She enjoys the physical activities of skiing, soccer, tennis and volleyball.

DANIEL LEWIS MCGONIGAL, with a GPA of 3.86/4.00, was nominated by the Epsilon Chapter of Eta Kappa Nu of Pennsylvania State University. He is a member of the National Eagle Scout Association, Veterans of Foreign Wars, Penn State Nittany Divers, and has been honored with membership in Phi Kappa Phi, Tau Beta Pi and Eta Kappa Nu.

Daniel was Vice President of Epsilon Chapter. His duties involved leading its activities, including tutoring, initiations, and the administration of "Student Rating of Teacher Effectiveness", which involves scheduling HKN members to administer in-class evaluations for each electrical engineering course (approximately 90 per semester), and check for errors, as the scores become a part of the faculty members' records. He promoted scuba diving for those with physical disabilities, as well as certification of divers. Dan served as student representative to the Industrial Professional Advisory Council.

He developed a Continuous Inference Network (CINET) design shell based on fuzzy logic, for applications to condition-based maintenance systems, and used to predict failure and required maintenance actions. Also, he designed a helicopter condition-based maintenance (CBM) computer program that satisfied an Office of Naval Research Task D-11 project requirement. The program demonstrated the utility of Fuzzy Logic algorithms.

His recreation includes softball, scuba diving, roller blading (hockey), golf, skiing, and foosball.

LAURA CATHERINE PRUETTE, with a GPA of 3.81/4.00, was nominated by the Epsilon Lambda Chapter of Eta Kappa Nu at Vanderbilt University. She is a member of the Society of Women Engineers (SWE) and has been honored with membership in Tau Beta Pi, Alpha Lambda Delta, Phi Eta Sigma, and Eta Kappa Nu.

She served on the committee to select the new Dean of the school, and represented her school on panels for recruitment for Vanderbilt. Representing SWE, she was Engineering Expo Chair, 1993-94, and she was rush counselor for Rho Chi.

Laura submitted a paper, entitled "Lithographic Properties of Poly (tert-butyl methacrylate) Based Block and Random Copolymer Resists Designed for 193nm Wavelength Exposure Tools", to the publication "Chemistry Materials" for January 1996. She participated in NSF's Research Experience, summer of '95, at Cornell, exploring applications of nanotechnology. Her Senior Project was investigating Photo-lithographic and Dielectric Processes in Diamond Technology Development and diamond device fabrication.

She volunteered at Our Kids, Inc., a clinic for sexually abused children, and tutored inner city children. She participated in fund raising for arthritis research.

Her hobbies are collecting Star Trek memorabilia, and watching SEC sporting events.

Finalists:
Grant Michael Erickson
Bee Bee Liew
Adam Schneider

University of Minnesota
Oklahoma State University
University of Houston

(Continued from Page 4)

dent but also pays attention to other attributes; participation in service to classmates and university in the form of curricular and extra-curricular activities, demonstrated interest in community and fellow human beings, and regard for country. These all play a vital part in the considerations leading to being selected. It also measures the student against the traditional yardstick established by Eta Kappa Nu in its goal of achievement of the well-rounded person; one who is neither a scholarly drudge nor a gregarious sport, but one that might be considered an appropriate combination of the best qualities of both.

Four years were spent in the development of this program by the Los Angeles Alumni Chapter of Eta Kappa Nu. Much thought and effort went into the structuring and development of the many features that are needed, and the procedures which must be followed to be assured that a truly representative selection of the top Electrical Engineering students have been examined before the designation of one of these individuals as the Outstanding Electrical Engineering Student.

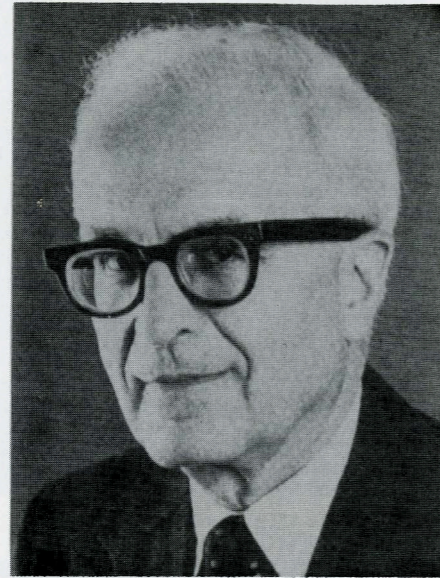
The program, thoroughly reviewed with the National Executive Council and the Board of Directors during the preliminary stages of its development, is formally approved and authorized as an official program of the Eta Kappa Nu Association. The Los Angeles Alumni Chapter has been designated as the implementing organization and has been authorized by the Executive Council to conduct the program.

The award winner's travel and expenses are covered by financial support from the Alton B. Zerby Trust Fund. An honorarium for the winner is made possible by the Carl T. Koerner Memorial Trust Fund, established in 1978 by his widow Edie Koerner and a large number of Carl's relatives and friends. Both Trust Funds, were established to honor their namesakes, who made significant contributions to Eta Kappa Nu. The Trust participants and the Eta Kappa Nu Board of Directors felt it appropriate that earnings from the Trust Funds underwrite this award.

Historical HKN Benchmarks

Part 4: National Officers, Conventions and Reports: 1904-1935

by Larry Dwon



This is another article of a special historical series written as a reminder of the 100th anniversary of Eta Kappa Nu, in October 2004. Herein, we shall recognize the elected national officers and present their prophetic statements, reports and achievements in behalf of HKN. It is my intention to honor them in the same manner as previous articles honored other volunteers who dedicated substantial voluntary efforts to establish the prestige of the Association and to maintain its viability in difficult times since 1904. That is when HKN was founded at the University of Illinois. The first article dealt with the founding and beginning efforts towards expansion into a national (now international) honor society in electrical engineering. It appeared in the *Bridge*, November, 1993. The second article (November, 1994) dealt with the growth of the Association into college chapters at other schools which had strong electrical engineering programs. Alumni chapters, along with their many supportive and prestigious activities, were also included. In November 1995, the evolution of HKN publications was highlighted giving due credit to those many inexperienced editors, albeit dedicated volunteers, who were so highly motivated to manage and edit the *Bridge* effectively enough to keep it alive in the face of hardships imposed by difficult times, improper organization and inadequate funds. In this article, we give national officers well deserved credit. They corrected the deficiencies, slowly but surely, making changes happen positively for HKN by carefully initiating new operating

methods, within financial constraints. The operating modes involved both student and alumni members. They will be reviewed briefly; but with sufficient detail to assure adequate recognition for the contributors to HKN's honor and well being.

Originally the national convention was created as the supreme legislative body of Eta Kappa Nu. The assembled National Convention was continued until it became too expensive for HKN to support. The National Executive Council, NEC, received the responsibility to administer the association's national business by implementing the articles and statutes of its constitution. In 1909, founder M.L. Carr wrote:

"Before bidding their Alma Mater good-bye, the founders created the National Executive Council by electing three of them to the offices. The idea was to have the organization largely under the control of the graduate members and the parent chapter was given no more voice in the control of affairs than any other chapter..."

Consequently, national HKN business has been conducted by national conventions-at first in the assembled mode; but after 1933, mostly as mail conventions. However, annual meetings were held by the NEC, and the National Advisory Board, NAB. In 1959, the new Board of Directors, BOD, took charge. The assembled conventions are listed in Table 1. It shows who presided at each convention (normally the president) and gives brief comments about important actions. Explanatory comments follow the table.

Table 1
Eta Kappa Nu Association
National Assembled Conventions
1905-1962

Convention No.	Year	Location	Presiding Officer	Comments
1	1905	Urbana, IL	M.L. Carr	
2	1906	"	E.B. Wheeler	first annual banquet held *
3	1907	"	C.E. Armstrong	
4	1908	Chicago, IL	M.L. Carr	
5	1909	Columbus OH	A.F. McKee	
6	1910	Pittsburgh, PA	B.T. Anderson	
7	1911	Chicago, IL	C.T. Evans	
8	1912	Cleveland, OH	B.T. Anderson	
9	1913	Madison, WI	L.H. Harris	Original Constitution revised
10	1914	State College, PA	A.H. Heitmann	
11	1915	Lafayette, IN	A.B. Zerby	
12	1916	Cleveland, OH	R.H. Webb	
13	1917	Champaign, IL	B.E. Miller	New constitution adopted
14	1918		H.S. Cocklin	Convention canceled
15	1919	Chicago, IL	F.A. Coffin	
16	1920	Columbus, OH	P. MacGilvary	
17	1921	Ithaca, NY	B.T. Anderson	
18	1922	Philadelphia, PA	J.M. Spangler	
19	1923	Madison, WI	D.G. Evans	
20	1924	Urbana, IL	G.P. Sawyer	
21	1925	W. Lafayette, IN	A.A. Hofgren	
22	1926	Columbia, MO	F.E. Brooks	
23	1927	Cincinnati, OH	F.E. Brooks	
24	1928	Minneapolis, MN	E.S. Lee	
25	1929	Urbana, IL	J.W. Weigt	
26	1930	Ames, IA	M.S. Mason	
27	1931	Ithaca, NY	G.H. Kelly	
	1932			Visitations replaced Convention
28	1933	Chicago, IL	J.W. Newman	First Biennial Convention
29 #	1954	Urbana, IL	J.E. Hobson	50th anniversary
30 #	1959	Lincoln, NE	A. Naeter	
31 #	1962	Chicago, IL	J.A.M. Lyon	

Special assembled conventions

*Observations about some conventions-

The first convention was held in the spring of the 1905-1906 school year. The presiding officer was M.L. Carr, president. Other members of the first NEC were E.B. Wheeler, secretary, and C.E. Armstrong, treasurer. Attending the first annual banquet were members of classes 1905, 1906 and 1907 as follows: Professor Morgan Brooks, M.K. Akers, S.H. Grauten, R.O. Friend, L.V. James, H.F. Hale, F.W. Padfield, G.A. Williams, T.F. Dodd, G.W. Saatoft, W.C. Maddox, C.C. Carr, H.G. Bergett, F.D. Smith, J.W. Bard, D.H. Cornell, W.S. Burnett, W.A. Rush, L.F. Wooster, C.E. Armstrong, R.N. Fargo, L. Garrison, W.K. Stacy, T.H.

Amrine, H.J. Weaver, M.L. Carr.

1909-1910- B.T. Anderson was president in this period and in two subsequent periods (1911-1912) and (1920-1921). The first occasion was caused by C.C. Carr's need to resign because his employment made him transfer to Antwerp, Belgium.

1911-1912- At the 8th convention, Anderson said that, "the future growth of the society would depend largely on the efforts of all members." He appointed a committee to help the society grow in stature. On that committee were the following members:

M.L. Carr (chairman)- Underwriters, Chicago, IL.
C.T. Evans- Cutler Hammer Co., Milwaukee, WI.
E.B. Wheeler- Western Electric Co., New York City, NY.

L.H. Harris- University of Pittsburgh, Pittsburgh, PA.

F.H. Bagley- Union Switch and Signal Co., Pittsburgh, PA.

T.H. Amrine- Westinghouse Lamp Co., East Orange, NJ.

It was at this convention that the alumni chapter indebtedness was wiped out and further alumni assessments were discontinued.

1912-1913- At the ninth convention, L.H. Harris remarked, "In magnitude and importance, the work before this convention probably exceeds that which any convention has faced up to this time, if we exclude the first one." He also proposed that a new constitution should be drawn. A.B. Zerby reported about this convention as follows: "The time consumed in acceptance of the revision is certainly an indication of the Convention's belief that this matter is settled for all time." These words belong among other famous last words. A.B. Zerby reported that the following principal changes had been made:

- More clearly defining the idea as set forth in the original constitution.
- Describing more specifically the powers of the chapters.
- Changes in the classes of membership, making plain the qualifications of each class.

At this convention, M.L. Carr reported on his employment bureau concept which was tabled for future discussion. The members of his committee are listed above.

1913-1914- A.H. Heitmann was in the thick of a scholarship discussion, which had become a serious issue in 1914. His article "The Scholarship Standard", in the *Bridge*, 1914, p. 36, described the problem. He wrote: "Our old method of selecting pledges received

abuse, the natural result of undefined standards."

1914-1915- A.B. Zerby presided over the 11th convention when there were 10 college and 6 alumni chapters. He reported that the Association was in a good position to allow it to wait for petitions from prospective chapters to come to it, instead of actively pursuing new chapters.

1915-1916- H.S. Greene presided over the 12th convention. He presented a well received talk. He spoke of scholarship as meaning a great deal to the outside world. It represented an ability to closely apply oneself, which is what is needed in business. He said hard work accounted for 95% of success in business. He also gave the following interesting advice:

1. Stay away from booze.
2. Work hard.
3. Do anything you are told to do by your proper supervisor.
4. Work well with people.
5. Don't worry about your salary; increases will come.
6. Join outside organizations.
7. Don't overlook a small company.
8. Use your best judgment.
9. He concluded with "You are if you are".

1916-1917- B.E. Miller reported about the 13th annual convention. He wrote: "In the first place it was the largest delegation that Eta Kappa Nu has ever had at a convention.... The Chicago Alumni chapter ... was revising all of our rituals;... and plans to establish more alumni chapters. Consideration is being given to a quarterly publication of *The Bridge*....and a National Employment and Information Bureau was being developed.

This was a busy convention measured by the number of statutes adopted and defeated. Among the latter was a proposal to limit membership to the white race. "L.H. Harris deserves credit for his tactful opposition to this proposal," wrote S. Cocklin to me in December 1975, after reading a draft of my 1976 history of HKN. He also wrote that "two constitutional amendments were designed to assist in coordinating the college chapters..." In his term in office he made the following recommendations:

- More frequent publication of *The Bridge*.
- More alumni chapters needed.
- Reorganize the Council.
- The vice president should be the Bridge editor.
- A paid secretary-treasurer is needed.
- The Bridge editor should be compensated.
- An Employment Bureau should be created.

- A standardized accounting system is needed for the chapters.

Cocklin's big disappointment was the need to cancel the convention due to the war. The NEC could not meet also.

1918-1919- In opening the 15th convention, F.A. Coffin stated, "We have passed the most difficult two years in the history of Eta Kappa Nu. A.B. Zerby stated that: "Second only to the 1913 National Convention, at which an entirely new Constitution was adopted, the 1919 convention led them all." The convention discussed a possible headquarters office with a paid secretary-treasurer similar to American Institute of Electrical Engineers, AIEE. Decisions made at this convention included:

- The Bridge was to be a quarterly, beginning Fall, 1919.
- Subscription price was to be \$2.00 per year with 50 cents going to NEC for alumni activities.
- Bridge subscription to be collected from initiates for the college years plus two years beyond.
- Employment Bureau is to be considered.
- NEC should be increased from four to six members, including president, first vice president, secretary, treasurer and Bridge editor.

1920-1921- B.T. Anderson, in his third term as president, reported to the 17th convention as follows:

"since the last convention, the elected officers for this year-Paton McGilvary, President and F.T. Bangs, first vice president, found it advisable to resign. The remaining officers of the NEC appointed J.W. Spangler first vice president and me president for the unexpired terms...Alumni interest is better ...college chapters are healthy...four issues of the Bridge have been published since the last convention."

The treasurer reported the Association's net assets were \$ 645.99 and \$698.54 as of April, 1920 and 1921, respectively.

The Bridge editor reported that if it were not for F.E. Brooks' efforts in shouldering a large part of the burden, the job could not have been accomplished. The National Convention enacted a \$250 per annum honorarium to the Bridge editor plus 15% of solicited advertising income.

1921-1922- J.M. Spangler presided at the 18th convention. His opening remark was "This convention has been brought together at a considerable cost. Get the most benefit by getting on your feet and fight things out."

The treasurer reported net assets as \$219.22 compared to \$698.54 at the same time last year. The Bridge

account showed a net credit of \$2,039.27 as of April 1, 1922. Investments were reported for about half that amount, the remaining was in cash on hand.

Chapters reported their initiation fee charges according to the following frequency distribution:

Number of chapters	Fee (\$)	Comments
1	15	
2	16	
2	20	Not including price of emblem
1	20	"
7	25	
3	26	

Again, many resolutions were enacted on the ritual, employment, the Bridge, and scholarship.

1922-1923- President D.G. Evans presided. His main topic of discussion was alumni chapter activities and the need for more alumni to become active. He also talked about the combined role of scholarship and other good attributes as constituting proper measures of a good HKN member. He classified Eta Kappa Nu as an honorary-professional Association.

The treasurer reported assets to include investments at \$ 1,765.86 and cash at \$ 1,051.75.

The committee on Coat of Arms, (H.S. Cocklin, chairman, G.W. Anderson, and C.P. Hancock) reported that a Coat-of-Arms must have a ritualistic value, a technical value, and an artistic value. The presented version was adopted by the convention.

1923-1924- President G.P. Sawyer presided at the 20th convention. The past president's report was read first, from which the following excerpts are taken: "When we think of progress we naturally think of expansion. The fact that no new chapters have been added might raise a question. However, absence of new chapters is to some extent a mark of progress. We have had the usual number of petitions for chapters."

He continued to explain that small chapters would have resulted with some doubt of success. Then credit was extended to J.W. Weigt, Bridge editor, for his splendid job these past three years.

The treasurer's report indicated assets of \$5,093.29 and investments at cost were \$4,177.55

A great amount of time was used to discuss an Employment Bureau.

1924-1925- A.A. Hofgren presided at the 21st convention. His highlights included:

1. Union College petition was approved.
2. A delegate was named to the Association of College Honor Societies, ACHS.
3. Changes were proposed in the wording of the Constitution.
4. A report of scholarship requirements resulted in a

conclusion that there should be no definite standard of scholarship.

5. A proposed guidance pamphlet was turned down as being the province of the Society for Promotion of Engineering education.

1927-1928- F.E. Brooks presided at the 23rd convention. The committee on reorganization (J.W. Weigt, chairman; D.G. Evans, and M.C. Hale) reported that a business manager should take over the duties of secretary, assistant secretary, treasurer and bridge editor. NEC should have only 3 officers and that a National Advisory Board (NAB) should be established. The report was adopted and the secretary was authorized to rewrite the constitution.

Under the new organization, the NEC consisted of the president, vice president and Executive Secretary. A NAB with 5 members was created. Two members were to be the last two living ex-presidents. The remaining three members would be alumni members elected annually at the convention. The NAB was given judiciary powers and the power to remove members of NEC for cause; and to appoint new members for their unexpired term.

1928-1929- E.S. Lee presided at the 24th convention. There was very little old business. A committee was appointed to study the insignia. It was reported that there were 22 chapters and 3800 members of which 300 were active- presumably meaning student members. The Bridge was just paying for itself. J.A. Umhoefer was chosen from among five candidates to be the first Executive Secretary. HKN records were transferred from A.B. Zerby in Pittsburgh to J.W. Weigt in Great Neck, NY and from D.G. Evans in Racine, WI to Riverhead, NY. Lee said that education and industry were the two areas in which HKN could become especially useful.

Under new business, some changes to the constitution were discussed including undergraduate initiation fees, biennial conventions and the accounting system.

1929-1930- J.W. Weigt presided at the 25th annual convention. He also delivered the talk for the presentation of the HKN memorial to the University of Illinois. Professor Morgan Brooks spoke on behalf of the University. Masters Maurice and Richard Carr, the founder's sons, unveiled the memorial and M.L. Carr concluded the ceremonies.

J.A. Umhoefer wrote the following for the 25th anniversary: "one of the most interesting points in the history of the Association is the gradual evolution from an obviously professional fraternity at the time of its founding to the position of an honorary fraternity which it now holds."

The more important convention decisions were:

- Another salary survey of its membership was authorized.
- The next convention should be at Iowa State University.
- A proposal to further limit the number of juniors to be initiated by any chapter was tabled until the next convention.
- A proposal to initiate electrochemical engineers at Penn State University was rejected.
- G.H. Kelly was elected vice president.

Several attendees and observers of conventions felt that they were inefficient and failed to provide proper contacts between chapters and the officers. In addition, conventions cost more each year which resulted in a serious drain on fraternity finances. The vote on this issue was 47 to 17 which failed to receive the required three-fourths majority required by the constitution. Visitations were also discussed. The treasurer reported assets to be \$9,491.96 and investments at cost were \$4,843.80.

1930-1931- M.S. Mason, president of NEC, wrote that during 1929-1930 academic year 300 initiates were added making the total 4382 since 1905. The alumni chapters were showing signs of good activities and the Bridge published six issues in the year.

He presided at the 26th convention. Two measures received the attention of the delegates:

- A measure to limit still further the number of initiates.
- A proposal to adopt biennial conventions.

Several observers of conventions felt that they were inefficient and failed to provide proper contacts between chapters and the officers. Also the conventions cost more each year causing a serious drain on fraternity finances. The vote was 47 to 17, failing to receive the required three fourths majority stipulated by the constitution. Visitations were discussed. The treasurer reported assets of \$9,491.96 and investments at cost to be \$4,843.80.

1931-1932- The 27th convention was an important and a busy one. G.H. Kelly presided. He introduced subjects of employment, biennial conventions, finances, growth of college and alumni chapters and standardized chapter by-laws.

J.A. Umhoefer completed his 3-year term as executive secretary and resigned. L.A. Spangler became Executive Secretary and Bridge editor in the 1931-1932 period. This situation led to a suggestion by the Chicago alumni chapter which was called the "Commission Plan". It will be discussed later. Umhoefer also pointed out that the major problems facing HKN were financial losses due to conventions and high assessments on new initiates. The latter caused some deserving candidates from accepting membership. He also highlighted the apparent lack of cohesion among chapters and unity of purpose that normally charac-

terizes a fraternity. Umhoefer urged the adoption of a biennial convention.

President Kelly reported that the following steps should be taken to economize:

1. Move the executive secretary's office from New York to Chicago.
2. Reduced the Executive Secretary's salary from \$2,400 to \$2,200 per annum.
3. Eliminated office rent expense by including it in the reduced salary of Executive Secretary.
4. Reduced printing cost of the Bridge.

He recommended L.A. Spangler as Executive Secretary for a term to be determined by the convention.

The treasurer reported assets to be \$8,835.23 and investments, at cost, to be \$4,843.80.

The Chicago alumni chapter did not believe that the full time service plan was the best for HKN because the salary was insufficient to attract a man with experience, ability and proper aggressiveness. Therefore, it proposed the "Commission plan" which was mentioned before. In summary, it was described as follows:

1. One man, who has the qualifications, time, facilities and willingness should carry this work, in addition to his regular vocation. He should be vested with the title of Executive Secretary and direct the activities of the office. However,
2. This man shall consult and be advised by five commissioners (the five who signed the proposal). In addition to reporting directly to the vice president of NEC, as directed in the constitution.
3. The Executive Secretary would receive \$2,200 and no extra compensation (a saving of \$440 per year) with the understanding that any losses on account of the Bridge shall be deducted from his salary.
4. If the Bridge shows a profit, a profit sharing plan shall be given the Executive Secretary as an incentive.

The New York alumni chapter opposed this plan for the following reasons:

1. The present plan was a success, at least as far as could be expected under present circumstances.
2. The Commission plan makes a large issue of the annual deficit. A careful study shows that the increasing losses were due to a sharp decrease in the number of initiates and to the fact that convention assessments levied did not pay for the convention costs. Any effort to correct the situation should be directed at the place of actual loss.
3. A careful audit shows that the Bridge is self-sustaining and shows that the secretarial end now earns a profit.
4. The Commission Plan is simply a method reverting back to previous methods and the plan is found wanting because a man in vocation could not devote the necessary time to the avocation.

5. The Commission Plan is an experiment while the existing full-time plan has been tried and found successful.
6. The full-time plan can be continued and the deficit made up as follows:

- a) Lower salaries-HKN men out of work would welcome the opportunity.
- b) Reduce costs of Bridge.
- c) Biennial conventions.

Much discussion prevailed. The outcome was to maintain the system with L.A. Spangler as a part-time Executive Secretary. The biennial convention was adopted and a chapter visitation plan was initiated for the alternate year.

1932-1933- President J.M. Newmann presided at the first biennial convention. Excerpts from his report follow:

"I believe the report of finances will show the success of the biennial convention plan from a financial standpoint....The convention performs very definite functions.... The visitation plan eliminates most of the business, but does, to a certain extent, provide interchange of ideas... I see no reason why the visitation plan should not be continued and considered an entire success on the basis of the last two years...Certainly any vital business can be conducted by a mail convention and other business can easily be handled by the biennial convention."

Starting in 1934, Assembled Conventions were discontinued. Only special occasions would warrant an Assembled Convention from here on.

L.A. Spangler displayed the following concerns: *"Initiates paid about 8% more than last year. Two years ago, initiates paid 27 to 30 percent more than is required this year. The Bridge has not been cheapened in quality and is still being published 6 times a year yet the officers do not anticipate using any portion of our reserves...The next pressing need is to secure and maintain the active interest and cooperation of a large proportion of alumni."*

1933-1934- Roger Wilkinson was president. I consider it a special honor that he signed my initiation certificate, when one considers his very dedicated voluntary service in behalf of HKN. He called for a long range policy for Eta Kappa Nu. He suggested that such a policy was a good task for NAB and NEC. He believed, more alumni would participate if more worthwhile projects were devised. He did more than his share to do so.

The report on finances showed savings (1933 over 1931) of \$853.46 for the Bridge, \$487.85 for NEC expenses and salaries \$562.06. The cost of visits to 22 chapters was \$553.50 compared to \$2,871.47 and \$3,123.00 for the 1931 and 1930 conventions respectively. As a consequence, assembled conventions were abolished as a general rule Business was to be transacted hereafter by mail conventions. This practice began in 1934; however, special assembled conventions were held in 1954, 1959 and 1962 as will be reported later.

1934-1935- President N.L. Best reported on the plans by R.I. Wilkinson, L.A. Spangler, C.A. Faust, E.F. Watson and E.B. Wheeler. Members of NAB were given credit also.

A summary of the plan topics follows:

1. **Undergraduate Policies** - Initiation fees will be reduced to a minimum. Visitations of college chapters replace conventions. It was therefore possible to reduce student assessments for such purposes from \$7.00 to \$2.00. Formulation of a suggested plan to guide college and alumni chapters. A chapter award was suggested. Reduced secrecy in the society was recommended.
2. **Alumni Policies** - Establish an Employment Bureau. Establish a medal of achievement for young engineers. Create a Newsletter for all non-subscribers to the Bridge. Publish a better Bridge. Future expansion of new chapters was recommended.

Because these policies proved to be so good and worthwhile, history later records remarkable improvement in and increased prestige of Eta Kappa Nu. The results will be reviewed in a future article of this series.

Nelson Best also reported the following:

- Beta Alpha chapter was installed.
- Initiation fees were reduced.
- There was an increase in employment activities.
- Approximately 157 lost Bridge subscribers were located.
- A Life Subscription plan was being developed.
- Negotiations for HKN chapters with 15 colleges have begun.
- A survey of electrical engineering departments was started which would yield important information for future chapter negotiations.
- A \$2.00 reduction in the initiation fee was made on top of similar reductions in recent years.
- There were 262 initiates that year compared to 242 the previous year.
- All chapters were visited - most of them by A.B. Zerby.
- A chapter handbook is in a planning stage.
- The New York alumni chapter's employment work placed 52 engineers. Chicago, Milwaukee, Los Angeles and San Francisco were engaged in employment work also.
- During the year Morris Buck developed the Life Subscription plan.
- Plans for a college chapter Award were formulated by members of the New York Chapter.
- R.I. Wilkinson was planning to implement a Recognition of the Outstanding Young Electrical Engineer Award, OYEE, which he developed.

IN MEMORIAM

HAROLD ALDEN WHEELER

Harold Alden Wheeler, an engineer, scientist, and inventor whose seven-decade career of engineering genius left the industry with more than 180 patents and 100 scientific papers, died in Ventura, CA on April 25, 1996. He was 93 years old.

Professor Alan Hazeltine hired Wheeler as the first employee of Hazeltine Corp. in 1928, an association that would last nearly 60 years. Wheeler had already invented both the neutrodyne radio receiver and his most famous invention, a circuit that achieved automatic volume control, which remains a standard feature of all AM radios. In 1939 he became vice president and chief engineer of Hazeltine.

Wheeler left Hazeltine in 1946 to found Wheeler Laboratories, where he served as president. In 1959 Wheeler Laboratories was acquired by Hazeltine, and Wheeler was elected a director of the corporation. He served Hazeltine in a variety of executive positions, including chief scientist and consultant, chief executive officer, and chairman of the board during the next 28 years.

During World War II Wheeler directed the development of the SCR-625 mine detector, used during the war and later in Korea. He also directed the design of an extensive series of antennas for electronic identification (IFF), which were placed on all allied ships by the end of the war. Other notable contributions include seminal theoretical work on microwave transmission lines and antennas that were applied to radar guidance and defense systems. His labs developed technologies that became the basis of products ranging from defense electronics to color television and movie production.

Among the many honors bestowed on Wheeler over the years are the highest awards of IEEE and Radio Club of America---The Medal of Honor and Armstrong Medal, respectively. He was also elected to the national Academy of Engineering. Wheeler received his B.S. degree and D.Sc. (Hon.) from George Washington University in 1925 and 1972, respectively. He also received honorary degrees from Stevens Institute of

Technology (Dr. Eng., 1978), and Polytechnic University (Dr. Eng., 1992).

Wheeler is survived by two daughters, Dorothy Tyliniski and Caroline Sawyer; two sisters, Catherine Lines and Margaret Nontzka; nine grandchildren and ten great grandchildren.

EDWIN C. JONES

Edwin Channing Jones, Professor Emeritus of Electrical and Computer Engineering at West Virginia University, died Saturday, September 14, 1996, in Morgantown, WV. He received a Bachelor of Science in Electrical Engineering from West Virginia University in 1925, and a Master of Science in Electrical Engineering from the University of Illinois in 1929.

His unbroken association with West Virginia University began in 1921 when he was a freshman. He joined the faculty in 1925, and was promoted to Professor of Electrical Engineering in 1947. During World War II, he directed the Army Specialized Training Program at the University. He served as Head of Electrical Engineering from 1948 until 1969, and retired in 1970. In addition to being mentor to hundreds of students during his career at WVU he remained their friend and was in constant communication with many until his death.

In 1980, he was appointed College Historian, and wrote a history of the first century of the College of Engineering. Entitled **A Century of Commitment**, it was published in 1987. In 1989, he was named by the University to the Order of Vandalia.

He was a member of the American Society for Engineering Education, and a Registered Professional Engineer in West Virginia. He was a member of Eta Kappa Nu and Tau Beta Pi. At WVU he served as the founding faculty advisor for the Beta Rho Chapter of Eta Kappa Nu, and also for the student branch of the American Institute of Electrical Engineers, Eta Kappa Nu (electrical engineering student honor society), and Mortar Board, (all campus student honor society). He was a member of the Academy of Distinguished Alumni of the Department of Electrical and Computer Engineering and served as its founding president.

He is survived by his wife and two children, Harriet Camden Jones White, Vienna, VA, and Edwin C. Jones, Jr., Ames, IA, who is an HKN Member, and four grandchildren.

CHARLES H. MERRITT

Charles H. Merritt of Littleton, an electrical engineer, died June 18 at home. He was 77. He was born May 20, 1919, in Coverdale, LA. He served in the Navy during World War II. On May 26, 1947, he married Delia Oliver.

He was a professor of engineering at Arizona State University for eighteen years. He also worked as engineering manager or chief engineer for divisions of Ampex Corp., Bell & Howell and Honeywell. He also taught at Metropolitan State College in Denver for fifteen years and retired in 1990 as Professor Emeritus from the electronic engineering technology department.

He held several patents in the areas of magnetic tape recording and light valve oscillography. He was a registered professional engineer licensed to practice in Arizona, California, Colorado, Oregon and Washington.

He was a member of the American Radio Relay League, the National Society of Professional Engineers, Professional Engineers of Colorado, American Society for Engineering Education, the Society of Motion Picture and Television Engineers, Sigma Xi, Eta Kappa Nu, and the Institute of Electrical and Electronic Engineers. His social fraternity was Tau Kappa Epsilon.

He is survived by his wife; two sons, Charles and Robert D.; a daughter, Edith Walker; and four grandchildren.

GORDON S. BROWN

Institute Professor Emeritus Gordon S. Brown, a pioneer in electrical engineering, computers and engineering education, died Friday, August 23 at his retirement home in Tucson, AZ. Dr. Brown, a former resident of Concord, MA, and Grantham, NH, would have been 89 on August 30.

His family said he died of complications resulting from cancer.

Dr. Brown was recognized internationally for his pioneering work in automatic feedback-control systems, com-

puter technology and the numerical control of machine tools. During World War II, Dr. Brown and his colleagues developed automatic fire control and aiming systems for guns used by the US military on land, at sea, and in the air.

He was also known for his leadership in the modernization of engineering education as dean of the School of Engineering from 1959 to 1968.

"Gordon Brown influenced the directions of engineering education in the past 50 years more than any other single person," said Professor Paul Penfield, head of the Department of Electrical Engineering and Computer Science. "Gordon's engineering science approach, stressing fundamental science, today forms the guiding principle behind most if not all engineering education, in all disciplines, at MIT and elsewhere."

Dr. Jay W. Forrester, Genneshausen Professor of Management Emeritus at MIT, and the inventor of core memory for computers as well as the field of system dynamics, served as a research assistant in Dr. Brown's laboratory. "He's been my mentor since 1940, the major influence on my career," Dr. Forrester said.

In remarks he made in 1990 on the 50th anniversary of MIT's Servomechanisms Laboratory, founded by Brown, Dr. Forrester said that Dr. Brown "always kept a close tie between theory, research and the real world. He continuously had the end result in mind."

"Gordon always looked for ways to change and improve the human condition and he often made the observation that **'the only steady state is the steady state of change'**," stated Forrester.

Dr. Brown did not lay aside his dedication to achieving change when he retired from MIT. In the 1980s---working with Professor Forrester and using system dynamics thinking and the feedback structure of all systems, whether physical, social or natural---he introduced a new basis foundation for K-12 education in his local school system in Tucson.

In the Catalina Foothills school district where he lived in retirement, Dr. Brown, as described by Professor Forrester in his 1990 remarks, began creating "a revolution in education." He started in 1988 by loaning software to an eighth-grade teacher of biology in the Orange Grove Jr. High School to introduce feedback concepts in the classroom.

Dr. Brown then negotiated with Apple Computer for a gift of \$100,000 worth of computers for the same teacher's classroom. He arranged a meeting with the Waters foundation of Framingham, MA, which has been funding the project since 1989.

Dr. Brown was born in 1907 in Australia and, at the age of 18, graduated from Workingman's College, now the Royal Melbourne Technical College, with three diplomas---in mechanical, electrical and civil engineering.

He entered MIT as a junior in 1929 on the strength of his college credits and received the SB in electrical engineering in 1931. As a graduate student, he served as a research assistant and instructor in electrical engineering, receiving the SM in 1934 and ScD in 1938.

He was appointed assistant professor in 1939, associate professor in 1941 and full professor in 1946. He became a naturalized American citizen in 1939.

Cinema Integrator

Dr. Brown's doctoral theses focused on what was called the cinema integrator (because it employed motion picture film), a precursor of the analog computer. Having early on recognized the future for computers and automation, he founded the Servomechanisms Laboratory in 1940, where work was done that led to the development in the late 1940s of the first major digital computer, Whirlwind, which was used after World War II by Lincoln Laboratory to develop the SAGE system of air defense for North America.

The development of concepts of automatic control for machines and industrial processes resulted in numerical control and the Automatically Programmed Tool Language (APT), which revolutionized modern machine work worldwide and has had a profound and lasting effect on industry. The term numerical control was coined in the laboratory to describe the direct control of the motions of a physical device, such as a machine tool, by numerically coded signals now common in digital computers.

Dr. Brown, as head of the Department of Electrical Engineering in 1952, launched a major program to restructure and revise the entire electrical engineering curriculum. He did this by basing the teaching more firmly than ever before on fundamental sciences such as physics and mathematics and bringing about

basic change in the department's educational approaches and philosophy.

Later, when he became dean of the School of Engineering in 1959, Dr. Brown extended to other engineering departments the same principles of curriculum revision. To this task, however, he brought added zeal on behalf of the principle of interdepartmental, interdisciplinary research as contained in the idea of the "research center." The concept grew and, once again, technical and engineering schools worldwide reconfigured themselves in similar direction using the MIT experience as a model.

Dr. Brown continued as dean of engineering until 1968, when he became the first holder of the Dugald Caleb Jackson Professorship. In 1973, Dr. Brown was appointed Institute Professor. He retired in 1974.

In 1985, Building 39, housing the Microsystems Technology Laboratories, was named the Gordon Stanley Brown Building.

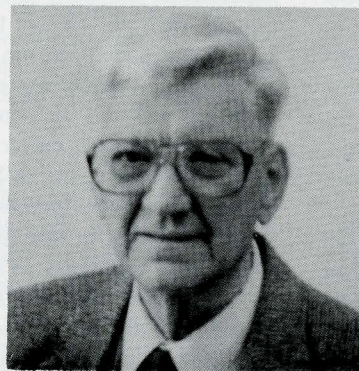
Dr. Brown authored more than 50 technical professional papers and in 1948 co-authored, with the late Donald P. Campbell, *Principles of Servomechanisms*, a standard reference in the field.

He was a frequent consultant to industry and government. His honors included several honorary degrees, a President's Certificate of Merit, the George Westinghouse Award and the Lamme Medal of the American Society for Engineering Education, the Medal in Electrical Engineering Education from the American Institute of Electrical Engineers, the Joseph Marie Jacquard Annual Memorial Award from the Numerical Control Society, the Rufus Oldenburger Medal of the American Society of Mechanical Engineers, and the Robert Fletcher Award of the Thayer School of Engineering at Dartmouth College.

He was a member of the National Academy of Engineering, a life member of the American Society for Engineering Education and the Institute of Electrical and Electronics Engineers, a fellow of the American Academy of Arts and Sciences and an Eta Kappa Nu Eminent Member.

Dr. Brown is survived by his wife, Jean (Alfred) Brown of Tucson; a daughter, Sydney B. DeVore of Tucson; a son, Stanley A. Brown of Gaithersburg, MD; and two grandchildren, Samuel C. DeVore and Laurel I. DeVore.

Arctic Adventure: Alaska 1971



by **George W. Swenson, Jr.**

EDITOR'S NOTE: *The author (BG '44) is Professor Emeritus of Electrical Engineering and of Astronomy at the University of Illinois at Urbana-Champaign.*

We were camping on the Kobuk River in Northwest Alaska, Janice and I. The cabin belonged to Dick Collins, an old friend from the 1950's, who hadn't been there for several years. We rented a well-equipped, four seat, Cessna 172 airplane in Anchorage, flew to Fairbanks to get advice and local lore from the Collinses, and then on to Kobuk, an Eskimo village a few miles upriver from the cabin. There we tied the plane down at the edge of the airstrip and rented a small motorboat from a local resident, to travel down to the site. We expected the building to be open and ready for us, as Edna, an Eskimo lady with a summer fishing camp nearby, had been alerted to our coming. Alas, when we arrived, the door was tightly locked and Edna was nowhere to be found, though her tent and fish-drying racks were visible across the river. Tired and impatient from a long and eventful day, we were in no mood for further delay, so we pried open a window and crawled into the bathroom.

The cabin was built in the late 1940's of local spruce logs. It had modern plumbing for the kitchen and bathroom, using water electrically pumped from the river, powered by a generator in the boathouse on a side channel behind the building. We discovered in due course that the cabin had settled slightly into the permafrost of the tundra, wedging the front door firmly shut, and that the boathouse was securely padlocked, with no key to be found. Eventually I managed to get the cabin front door open by removing the lock entirely, but not wanting to jimmy the boathouse door we decided to forego running water. In any case, some traveler in the past had allowed water to freeze in the bathroom fixtures, which were thus cracked and useless.

We spent a few interesting days getting acquainted with the cabin, the river and the tundra. Edna and her fishing crew of nieces, granddaughters and eight-year-old Harold came over for coffee, eventually, enroute to harvest the

bounteous blueberry crop on the tundra behind our cabin. We reciprocated, inspecting the racks of split whitefish drying in the sun and the barrels of blueberries to be buried in the permafrost as winter provisions. It was all fascinating, especially to Janice on her first visit to Alaska, her first long journey in a light plane, and her first wilderness camping trip. After a few days, though, it became apparent that it was time for some more civilized diversion.

The nearest town where we could expect to find a bath and a restaurant meal was Kotzebue, 150 miles to the west on the Chukchi Sea. It's the second largest Eskimo village in the world, about 1200 population at that time, with a well-developed tourism business fed by airline connections with Fairbanks and Anchorage. We decided to fly over there for a day's sightseeing. Transferring our camping outfit from cabin to boat, we motored up to Kobuk. The river was low and there were rocks and gravel bars lurking. Ignorant of the best channels we had to replace a couple of shear pins before we got there, and once I had to wade while pulling the boat over a shallow spot. Finally we tied up at the village, lugged our outfit to the plane, and took off.

Flying over Alaska in a light plane is always entertaining. The scenery is stupendous and the feeling of isolation and self-dependence is stimulating. In those days before Loran-C and GPS navigation systems one had to be very careful with one's dead-reckoning, map reading and fuel management. This day was no different, though with the river to follow all the way to Kotzebue Sound there was little risk of getting lost. We got there about noon, tied the plane down, put in a refueling order, and hitched a ride into town on the Alaska Airlines tourist bus. After a bath and a good lunch we went through the regular tourist routine, watching blanket-tossing and drum-punctuated dancing, admiring the mounted walrus, bear, wolf and caribou in the museum, wandering through the village stretched along the gravelly beach. Finally, late in the afternoon we strolled back to the airport. Given the late sunset and the long twilight north of the Arctic Circle in early August, we had plenty of time to get back to Kobuk and the cabin before dark.

Bad luck, again! The plane hadn't been refueled, and there was nobody at the airport. By the time we remedied that setback, filed a flight plan for Kobuk, and departed, it was probably after nine PM and we couldn't expect to get to Kobuk much before eleven. Still, I thought there would be enough light to land, so my only immediate concern was that I'd told the trading post proprietor that we'd be back by ten. I didn't want him to worry. The river was easy to follow, though a cloud deck had formed overhead as the sun set behind the Brooks Range to the north, and it became quite dark. Just before the expected time enroute elapsed I began to search the river bank for the village. Nothing! Neither Kobuk nor its airstrip had outdoor lighting and there was little contrast against the dark tundra. We flew on, perhaps we'd had an unexpected head wind to slow our progress. Eventually we passed a perfectly rectangular lake that I recognized from our trip up from Fairbanks. We'd come twenty miles too far! Turning back I descended as low as I dared

**Aerial View
Collins Cabin
Kobuk River, Alaska**



**Janice Swenson
And The Cabin Yard
Upon Our Arrival
Collins Cabin
Kobuk River, Alaska
1971**

**Janice Swenson
and the Paneak Family
Anaktuvuk Pass, Alaska
1971**



**Edna Commack
with her
Blueberry Pickers**

and anxiously searched the north bank of the river. Finally, there's the trading post's little yellow seaplane tied to the river bank, and there's the village. By now it's really dark!

Now to land. The airstrip is dimly visible in the gloom. We must land to the west, touching down at the very east-most end of the runway. The strip is used mainly by the mail plane, a very powerful Twin Otter, which uses only a few hundred feet of runway, so the east end is bare but the west end is well overgrown with weeds and brush. We have only a single headlight on the plane, not really intended as the sole resource for a night landing. Still, there should be plenty of room to feel my way cautiously to the ground. Then, a new setback! Circling to land I see another airplane, its red beacon blinking at me from the bare end of the runway. It's not moving, and it's blocking my approach. I circle again, hoping he'll take off or taxi off the runway. Minutes go by. I try buzzing the village, in case he's visiting there. Finally I can't wait any longer and I decide to land from the west, though that end of the runway is very indistinct in the gloom. With full flaps, minimum speed, we feel gingerly for the ground. No telling what rocks or logs might be hidden in those weeds. Then it looks like a forest in the landing light as the propeller chops through the growth, and then a bump and a rushing sound as vegetation hits the wing struts and the bottom of the fuselage, and then we're in the clear and braking to a safe stop. So much for that. The other pilot hasn't moved his plane, but we ease around it and tie down in our usual spot. I notice a bunch of leaves caught in the angle between the right wing and its strut.

Now we lug our camping gear to the river and load it into the boat. But it's very dark. Can we go down the river without damaging the boat's propeller or hull? Mostly the river is fairly placid, but there are plenty of places to run aground. While we were discussing this a boat sped by, carrying a whole family down river. At least the locals don't consider night travel to be hopelessly foolhardy. The alternative would be to set up our mountain tent at the runway's edge and wait for morning. We decided to go.

Within a few hundred yards there was a loud clunk! and the motor stalled. I pulled it out of the water and found to my dismay that one of the three propeller blades had broken off and disappeared. The day before, knowing that we had only a couple of spare shear pins, I had improvised several from some hard drawn copper wire I found behind our cabin, a remnant of Dick's ham radio antenna. It was one of these that failed to shear when we hit a rock, causing the propeller to break instead. Even though it might happen again, we had to go on, limping along at slow speed to minimize the vibration from the mutilated prop. Alas, luck failed us again, and it wasn't long before we lost another blade. Now we're really stuck. If it happens again the motor is totally useless, and if we should happen to miss the cabin in the dark we'd have no hope of moving back upstream. We had one paddle, hand-whittled from a spruce tree, so, with Janice huddled in a poncho in the bow, I started paddling slowly downstream.

The hours went by slowly as we drifted on in the dark. A

light mist formed on the river, but we could dimly see the tops of the spruce trees on either bank. Owls hooted and a wolf howled in the distance, and all in all it was an eerie situation. Morning twilight came slowly, but by 4:00 AM it was quite light and we thought we'd easily see the cabin in time to pull over to the bank when we got there. About that time two Eskimo youths came downstream in a fast motorboat and, seeing our plight, took us in tow and landed us at the cabin in a few minutes. We offered them coffee, but they thanked us and hastened on toward Shungnak. We went right to bed.

Next day we appraised our situation. Without a propeller we were effectively stranded at the cabin. True, the village of Shungnak was a few miles downstream and we could paddle and drift there easily enough. We'd been there a couple of days ago, looking for shear pins without success, and it was very unlikely they'd have a propeller to fit our motor. Then we'd be unable to get back to the cabin. A better bet seemed to be to hitch-hike up to Kobuk. We appealed to Edna, who arranged for us to ride up there with a teenage relative home for the summer from high school in Fairbanks. This young lady navigated the shallows expertly and quickly and delivered us to the trading post where, wonders of wonders, we found a single propeller, and one for a ten horsepower Johnson motor at that. Our prayers had been answered. Returning to the cabin without incident, we set about repairing our battered power plant.

But it seemed that the Fates had not finished with us yet. Though ours was a ten horsepower Johnson, its propeller shaft was a millimeter or two larger in diameter than the bore of the new propeller hub. It simply wouldn't fit. I scoured the cabin for tools and managed to come up with a small rat-tail file, a broken hacksaw blade, and a pair of well worn dressmaker's scissors. Nothing more. The boat had come with a pair of gas pliers, and I had my boy scout knife and a small camper's axe. Thus equipped I set about enlarging the bore of the propeller hub. It was a hard aluminum alloy. Of course, I had no vise. Squeezing the propeller between my thighs I sawed away with the round file, trying hard to keep the hole cylindrical. It was a very tedious job, and tiring. Janice learned some interesting old-soldier's language, and I acquired some blisters and abrasions. Eventually, though, the hub slipped onto the shaft, and the fit seemed snug along the full length.

Then a new problem: the new hub had a flange not possessed by the old one, and it prevented close mating between the hub and the lower gear housing so that the shear pin would not engage properly. The flange had to go. Scraping it off with the hacksaw blade and the round file was a very inefficient process which took more hours. And then, that problem solved, still another emerged. With the shear pin properly engaged, the propeller shaft protruded so far past the hub that the retaining nut would not tighten down on the hub. The trash pile behind the cabin yielded a number of relatively sound tin cans, from which I cut about a half-inch worth of shims using the dressmaker's scissors. It looked like something Rube Goldberg might have dreamed up, but

it seemed secure and sound when everything was finally assembled.

Now came the time to test the result on the river. But first, I'd better try to fix the improvised, hard-drawn copper shear pins, so they'd really shear when they should. The Coleman gasoline stove was pressed into service as an annealing furnace, and I shoved off from the river bank with a well-softened shear pin in place. Oops! It was too soft, and it sheared the instant the motor fired. So, there now ensued a crash program of metallurgical research which finally resulted in usable shear pins, and, at last, a viable mode of river travel for two frustrated campers.

That seemed like enough excitement for one week, so we decided to fly back to Fairbanks, to continue our exploration of Alaska in a more sedate manner. Little did we know what lay ahead!

We'd had an adventure-filled week on the Kobuk River: gathering blueberries with an Eskimo extended family, exploring the villages of Kobuk and Shungnak, flying to Kotzebue and back and landing scarily in the dark on a partially-obstructed village runway, paddling a heavy boat with a damaged outboard motor all night down a mist-shrouded river. It was surely a dramatic introduction to back-country Alaska for Janice, on her first trip to the wilderness.

Having improvised repairs to the outboard motor and successfully navigated the shallow river from our cabin up to Kobuk, we returned the boat to its owner and transferred our camping outfit to the Cessna for the flight back to Fairbanks and civilization. While settling our grocery account at the trading post I inquired whether the owner, himself a pilot who had generously sold us fuel from his private cache, had any weather information for our route. In those days remote Alaskan villages had no telephone connections with the "Outside", so we couldn't just ring up the Federal Aviation Agency for a briefing. But, no, his only radio contacts with Fairbanks were twice a week when he exchanged weather and traffic information for the air mail service to the village. We'd have to chance it, but the local weather was fine so we anticipated no trouble. Off we went, on a southeasterly course.

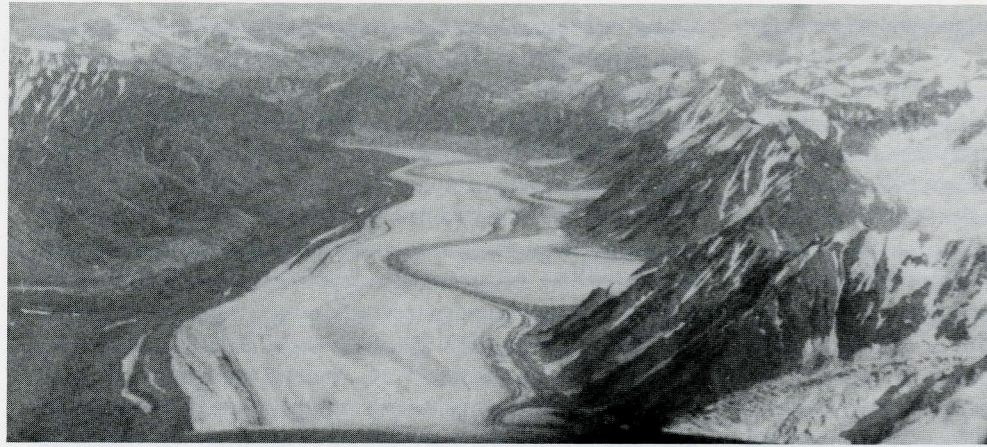
Things went smoothly enough for the first half-hour, flying low over the taiga, identifying landmarks noted on our trip north a week before, scanning the lakes for moose, beaver lodges and swans. Then the visibility began to deteriorate and soon, though we were flying as low as we dared, we were in the clouds with zero visibility. Hoping this was just a local situation we pushed ahead for a few more miles, flying on instruments alone, but the weather only thickened. Now there were mountains ahead, so we daren't proceed. Thirty miles or so away was an FAA-operated remote communication station at Indian Mountain; maybe I could file an instrument flight plan and climb on top of the clouds. They answered my call promptly, and as promptly told me that we were out of luck. All the airports in Alaska south of us were closed on account of a major storm, and there was no place to go. Turning back toward Kobuk I assessed the situation: Kobuk was not an attractive alternative as the

trader had told me he couldn't let me have any more gasoline. We'd be stuck there indefinitely. Indian Mountain told me that Bettles airport was open, 100 miles away, but that the weather was deteriorating. There seemed no other choice so we turned northeast, still on instruments, and headed for Bettles.

That area was "uncontrolled airspace", that is, there were no radio aids to navigation and it was legal to fly on instruments without official FAA approval or control. On the other hand, we couldn't see where we were going; not a comfortable feeling in a region bounded by high mountains. I calculated our position very carefully using dead reckoning: time enroute since Kobuk, compass headings, indicated airspeed. Hopefully our assumed position was accurate within a few miles, as those mountains were bound to be very intolerant of any intrusion. I tuned to the frequency of Bettles' navigation aid, a "very-high-frequency omnirange" (VOR), and turned the receiver volume up high. Not a peep. We couldn't expect to hear anything for at least forty minutes, of course; meantime, we'd have to follow the compass, and hope for the best. Searching the aeronautical chart for terrain heights and obstructions I flew as low as I dared, hoping to see the ground. Now and then there'd be a glimpse of spruce trees through breaks in the clouds, and then a watercourse roughly parallel with our track. That, hopefully, is the Koyukuk River. If so, it would lead us to Bettles. Alas, the clouds closed in and we had to focus on dead reckoning again. For what seemed like an eternity we flew blindly on, then there was a faint sound from the radio and a small flicker of the needle on the course direction indicator (CDI). I called Bettles but there was no answer. Still, it was a hopeful sign, and we kept on for ten minutes more until Bettles' Morse code call sign was clearly heard and the needle settled down on a steady reading. Now we were sure of finding our destination and I was greatly relieved. I thought Janice's white-knuckled tension seemed to subside a bit.

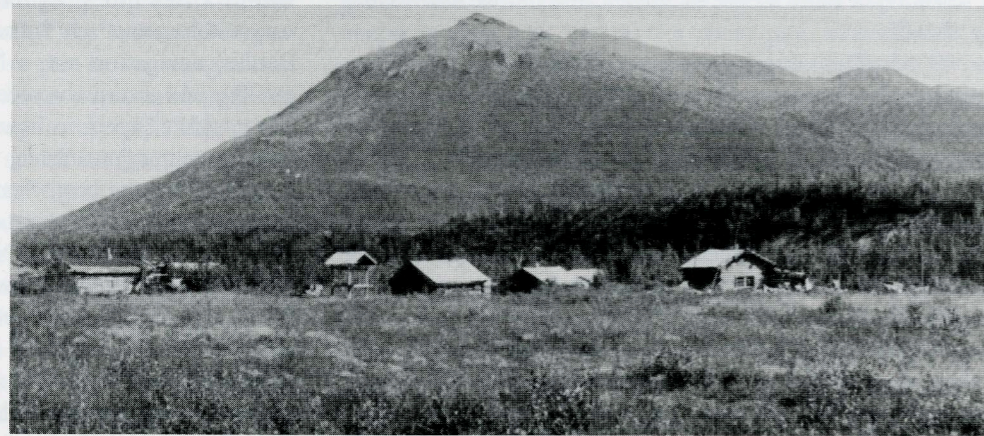
Now it was possible to talk to the flight service operator at Bettles, and to explain our situation. The weather there was marginal I was told, and I might not be able to make a visual landing. As I had no documents for that airport, he quickly described the appropriate maneuver in case I had to execute an instrument approach. He said there was no other air traffic about, and none expected. Now another problem suggested itself. I'd been at Bettles a few times before, and I knew the only accommodation was the dormitory at Bettles Lodge, a large second-story room with several double-deck bunks. Not an ideal situation for newlyweds on a honeymoon! The FAA man 'phoned the lodge manager who offered to turn his own bedroom over to us for the duration. Very thoughtful!

All these arrangements made, we arrived at Bettles, made a routine instrument approach, tied the plane down, and finally, collapsed in the dining room of the lodge. Only two hours from Kobuk and five since leaving the cabin, it had seemed a long, eventful day. A quick visit to the Flight Service Station confirmed that there were no destinations open to the south, and no break in the weather expected for



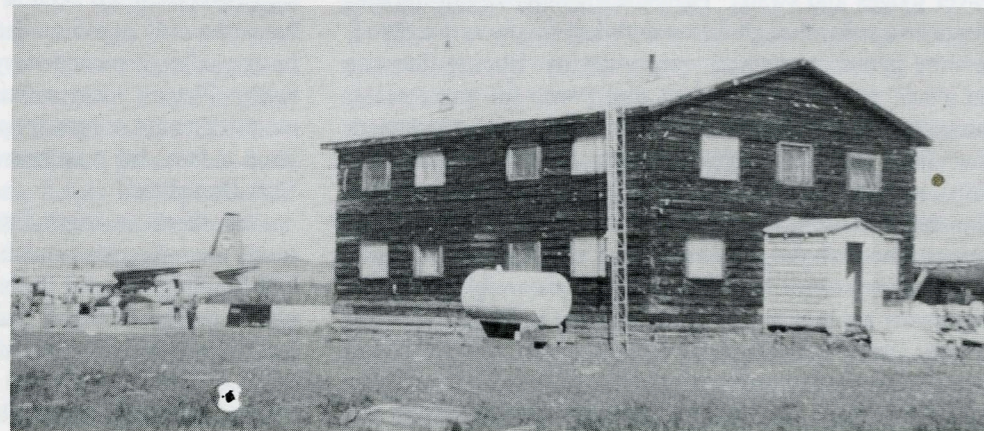
**Black Rapids Glacier
Alaska Range**

**Wiseman, Alaska
1971**



**Eskimo Sod Igloo
Anaktuvuk Pass, Alaska**

**Bettles Lodge, Alaska
1971**



a couple of days. We were stuck in Bettles, but there was food, shelter, gasoline, and weather information. What more could we want? Next morning we checked again, with the same result. But at Bettles the day dawned clear and beautiful, and in those latitudes "clear" has real meaning, with visibilities 50 miles or more. We decided to explore the Brooks Range to the north of us, since we couldn't fly south. Those mountains are wild, rugged and beautiful. I'd flown over them several times in airliners, and just the year before I'd flown a smaller Cessna 150 from Anchorage to the summit of the Brooks Range. Now I had the chance to see it all afresh through the eyes of my partner. We headed northeast up the Middle Fork of the Koyukuk River, marvelling at the solitude and grandeur of the terrain. Our destination today was Wiseman, a ghost town apparently uninhabited, though a grass airstrip was shown on the chart.

We landed and strolled over to the cluster of log cabins scattered along an overgrown dirt street. Most of the buildings were decrepit, some completely collapsed. There was a largish structure, evidently a dance hall or tavern, and another, probably a store or trading post. Then a cabin in better condition, with a rustic picket fence and a garden, weedy but clearly planted this year. We paused before the gate, and our voices apparently aroused the occupant, a middle-aged, bearded man in a well-worn army field jacket who appeared in the doorway. A somewhat halting conversation ensued, during which we learned that he'd lived alone in Wiseman for many years. He said there was another man in town, at the far side, but that he hadn't seen him since the previous Fall. They only interacted once a year when each needed the other's help in collecting firewood for the winter. We asked more questions: No, he didn't hunt and didn't even own a gun. An airplane came every month or so, bringing groceries and mail, but he never went "outside". It seemed he lived on a small pension from a long-ago job in Fairbanks and the residue of an inheritance from his father who'd run a tavern in Dawson, over in the Yukon. I rather expected we'd be invited in for coffee, in the usual gesture of Alaskan hospitality; instead it became apparent he was tiring of our presence. Ten minutes' conversation in one summer was more than enough, I guess. We moved on.

After exploring more valleys from the air, marvelling at brilliant blue lakes against equally brilliant green tundra, we took stock of our fuel and reluctantly headed south toward Bettles.

Supper that night in the family-style dining room exposed us to more interesting folks. There were nine transient men there besides Janice and me, plus the cook, the lodge manager, and a helicopter pilot. They were all more communicative than the Wiseman hermit, and we were surprised to learn that all of the nine were scientists engaged in biological and geological studies preliminary to construction of the Alaska Pipeline. Ten Ph.D.'s out of fourteen diners at that frontier outpost!

Next day the weather report was the same, so we had another chance to explore the mountains to the north. This time we headed up the John River toward the summit of the

Endicott Mountains and the Eskimo village of Anaktuvuk Pass. I'd landed there the year before and visited with some of its inhabitants, and I'd known about this village and its environment ever since my days at the University of Alaska, eighteen years earlier. I wanted to show it to Janice because it must be unique in all the world. It's the most remote Eskimo community in Alaska, and thus it's been free of the genetic infiltration experienced by the seacoast populations over the past century. The Pass itself is a concentration point on the migration route of one of Alaska's major caribou herds, and the village is sited to exploit that fact. Twice a year, Spring and Fall, the villagers hunt enough meat to feed them throughout the year. The economy and racial purity of the village are unique and ethnologists, physiologists, wildlife ecologists have studied the people and their environment intensively.

We landed on the village's steeply sloping airstrip. (Land up hill, take off downhill, regardless of wind direction.) A group of village children surrounded the plane as we stepped out, followed more sedately by a few adults. We strolled into the village, answering the children's curious questions: What's your name? How old are you? How fast is your airplane? Where do you live? Is Illinois bigger than Alaska? One young man declared that he'd worked in Chicago for several years but that he'd returned to the village for a less hectic life. He pointed out his house, a tiny sod igloo, one of several such still occupied. Most of the residences were small plywood shacks, and the only substantial-looking building was the two-room schoolhouse with the attached residence of the teacher.

We sought out Simon Paneak, a well-known village elder whom I had met a year before. Invited in for coffee, we chatted with his extended family and admired his engaging grandchildren. The village women conducted a cottage industry, making ceremonial masks from caribou hide and wolf fur for sale in the native handicraft trade. We bought two to add to the two I'd obtained the year before. (Years later I saw similar ones in Seattle shops for twenty times what we paid.) Finally, we decided to move on, and I asked Mr. Paneak if I could buy gas from the village supply. He consulted his colleagues and regretfully informed me that they could sell me some only if it were an emergency. That meant that we couldn't fly much farther north, but would have to return to Bettles after just a short excursion onto the North Slope. The villagers were anticipating the Fall caribou migration, so we agreed to look for the herd for the thirty miles or so for we could afford fuel. We saw no animals during the half hour search, so we turned back, scribbled a negative message on a piece of cardboard, and tossed it out as we buzzed the airstrip before heading down the John River once more.

One more night in Bettles and we were rewarded by excellent weather reports all the way down to Anchorage. It took us three days to get back. The fine weather, all too rare, mandated an aerial exploration of the Alaska Range from west to east, including Mt. McKinley itself. But that's another story, for another time.

HERE'S WHAT HKN IS!

by

Michael R. Hajny, P.E.

HKN President, 1995-1996

What is Eta Kappa Nu?

HKN is the electrical engineering honor society, the phrase that appears in the HKN publications, and on HKN letterhead. HKN membership identifies the top performers in electrical engineering based upon their scholastic achievements in college.

For me there are also two other responses:

1. HKN encourages life long commitment to technical excellence; and contributions to society.

Technical excellence means doing the very best at what you are working on at all times. It is not interchangeable with innovation and invention, which are also important. An engineer may not be in a position to invent things all the time, but an engineer is always working on something, and should do the very best.

Contributions to society include a very broad range of opportunities for HKN members: church, school, professional societies, adult education, military service, participation in primary and secondary education, counseling and assistance to immigrants. HKN encourages engineers to be involved with other persons and make contributions to society in addition to technical excellence.

2. HKN recognizes with awards, engineers, who, in their life and work, exemplify technical excellence and make technical contributions to society. To this end, HKN annually manages

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HKN'S Financial Statement for the 1995-96 Fiscal Year ending June 30, 1996 is summarized below:

	General Operations and Bridge	Development Funds	Award Funds	Total
Revenues				
Fees	\$ 70,152	\$ -0-	\$ -0-	\$ 70,152
Subscriptions	27,508	-0-	-0-	27,508
Interest, and gain on redemptions	93,728	1,093	16,980	111,801
Gifts	-0-	8,158	-0-	8,158
Other	7,355	-0-	-0-	7,355
Total	\$ 198,743	\$ 9,251	\$ 16,980	\$ 224,974
Expenditures				
S&W	\$ 82,200	\$ -0-	\$ -0-	\$ 82,200
Postage, Printing and Supplies	48,160	-0-	-0-	48,160
Materials, Tele, fax, daily costs	5,148	1,828	461	7,437
Fees, Taxes, Insurance, Audit	12,603	-0-	-0-	12,603
Awards, BOD Mtgs, Travel, Visitations	13,076	-0-	9,898	22,974
Total	\$ 161,187	\$ 1,828	\$ 10,359	\$ 173,374

several award programs. The HKN Bridge Magazine typically contains articles and photographs of the award winners and describes their accomplishments. The awards for which an engineer is eligible occur throughout the engineer's career and lifetime:

Award Eligibility Details

Outstanding Junior EE Student: During Junior Year of college.

Outstanding EE Student: During Junior or Senior Year of college.

Outstanding Chapter Activities Award: HKN college chapter.

Outstanding Young Electrical Engineer: Electrical Engineers in practice are eligible up to ten years after receiving baccalaureate.

Outstanding EE Professor Award: While engaged in teaching.

Vladimir Karapetoff Award: Toward career's end for significant discovery or invention by an electrical engineer.

Eminent Member Status: Outstanding leaders in the electrical engineering field, through their significant technical attainments and contributions to society (great benefactors of mankind).

INFORMATION FROM THE HKN BOARD: HKN 96-97 Mail Convention is underway! HKN's Award Programs are self supporting, and donations to specified programs may be sent to HKN Headquarters. The next time you read about an award program in the HKN Bridge, or in other publications, it will remind you of HKN's commitment to technical excellence and service to society. You may also wish to see HKN Headquarters' Home Page on the Worldwide WEB: <http://www.umr.edu/~hknhdqrs> In addition, we are thoughtfully reexploring international expansion; and concurrently updating HKN's electronic communications profile. We are also seeking to provide you with the type of articles you would like to see in the Bridge. Please inform us of your Bridge preferences, and also please send your e-mail address to HKN Headquarters ASAP at: hknhdqrs@umr.edu

Nominations Invited for The Sixth Vladimir Karapetoff Eminent Members' Award



Dr. Vladimir Karapetoff

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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