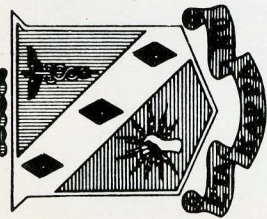


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Second-Class Postage
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IEEE Spectrum-345 E. 47th St.
New York, N. Y. 10017

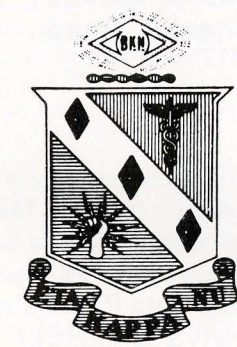
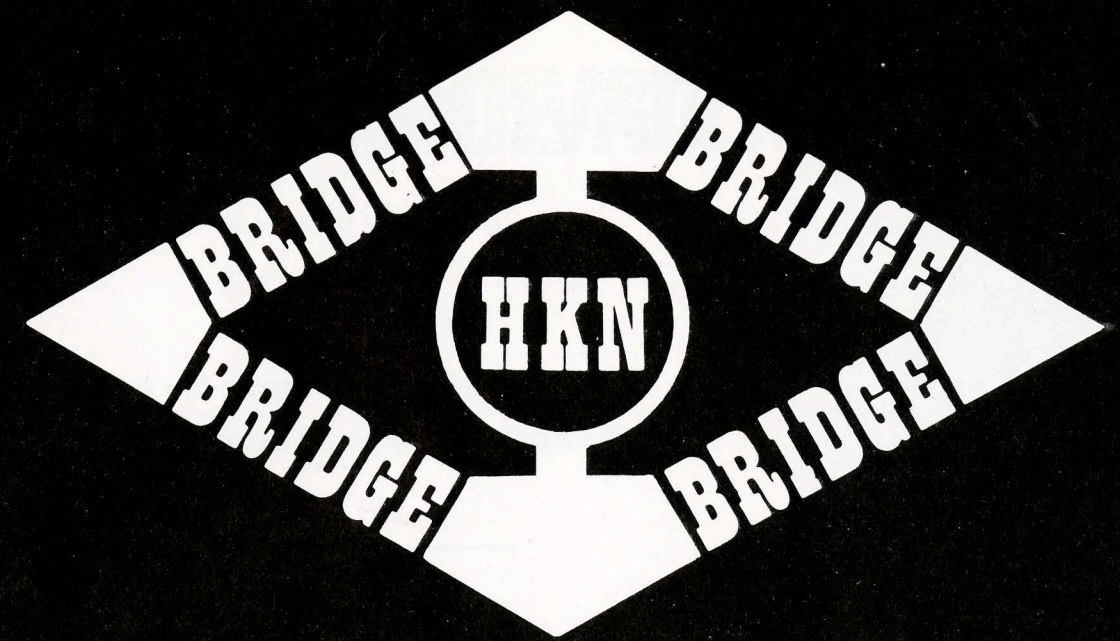


ETA KAPPA NU

BRIDGE

SPRINGTIME '78





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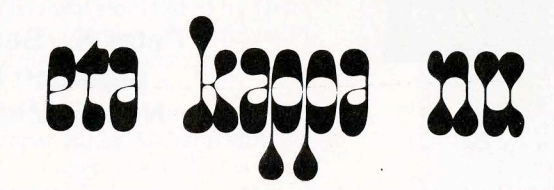
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COVER PHOTOS

Introduce our special supplement on
Waterfalls of the World.



Electrical Engineering Honor Society
Spring, 1978, Vol. 74, No. 3

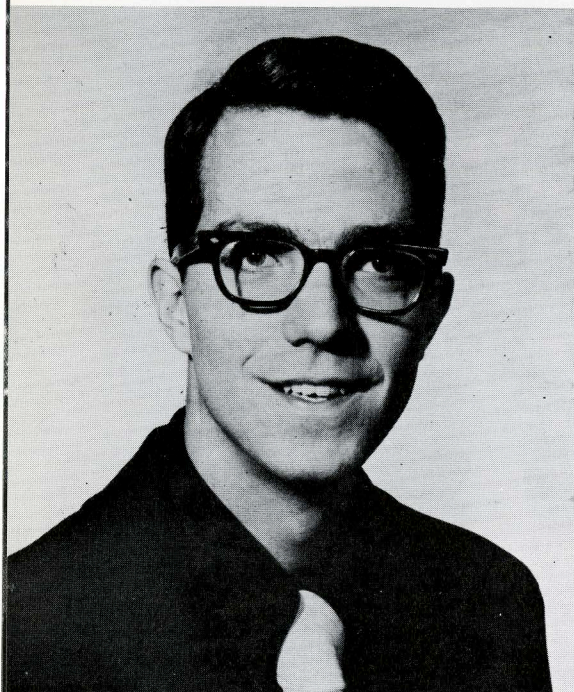
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The BRIDGE is published by the Eta Kappa Nu Association, an electrical engineering honor society. Eta Kappa Nu was founded at the University of Illinois, Urbana, October 28, 1904, that those in the profession of electrical engineering, who, by their 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.

The BRIDGE is published four times annually—November, February, May, August—and is published by Eta Kappa Nu, Haywood Publishing Company, 5th & Ferry Sts., Lafayette, Indiana. Second Class postage paid at Champaign, Illinois and additional mailing office. Copyright, 1978, Eta Kappa Nu Association. Subscription price: three years, \$7.50; Life Subscription, \$30.

Address editorial and subscription correspondence and changes of address to: BRIDGE of Eta Kappa Nu, P.O. Box 2203, Station A, Champaign, Illinois 61802.



DAVID D. WELTER

DAVID D. WELTER

University of New Mexico

**Selected by Eta Kappa Nu as the
Most Outstanding E. E. Student in the U. S.**

HONORABLE MENTIONS TO

**Peter K. Berntson, William H. Merwin,
Maureen P. Quirk, Linda A. Sims,
Neil E. Midkiff, and Michael J. Reed**

DAVID DOYLE WELTER, first in his class was nominated by Delta Omicron Chapter at University of New Mexico. Mr. Welter has been honored with membership in Eta Kappa Nu, Tau Beta Pi and Phi Eta Sigma. He has served as President of Eta Kappa Nu and Cataloger for Tau Beta Pi. He also is a member of The American Nuclear Society and the IEEE.

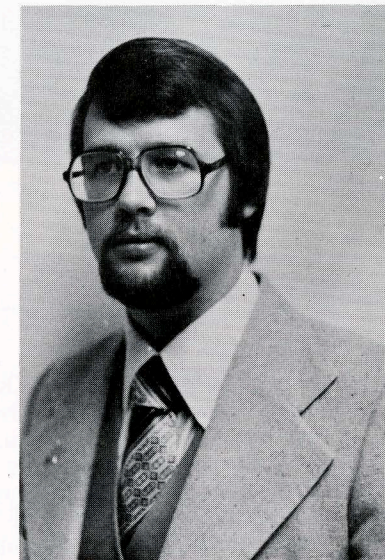
He has served his classmates as the representative for The Electrical Engineering Department on the Engineer's Joint Council. He was a member of EJC Finance Committee whose primary responsibility was control of University Funds related to the Engineering Open House. He has worked with a physically handicapped student on numerous occasions.

Mr. Welter gave a paper and presentation titled "An Inexpensive High Quality Holography System" at The IEEE Region Six Conference at Salt Lake City. He also gave a paper and presentation titled "High Quality White Light Holography" at The IEEE Research Paper Competition at Flagstaff, Arizona. He was winner of the Best Electrical Engineering Exhibit Award at the Engineering Open House. He received a citation for academic excellence from the Society of American Military Engineers and as a member of the Naval ROTC Program served aboard the USS Benjamin Franklin (SSBN-640), a nuclear submarine. He was a recipient of the University of New Mexico Mathematics Scholarship.

He helped pay for his education as a Grader for a Micro-processor Course and as a Programmer for Computed Tomograph research project.

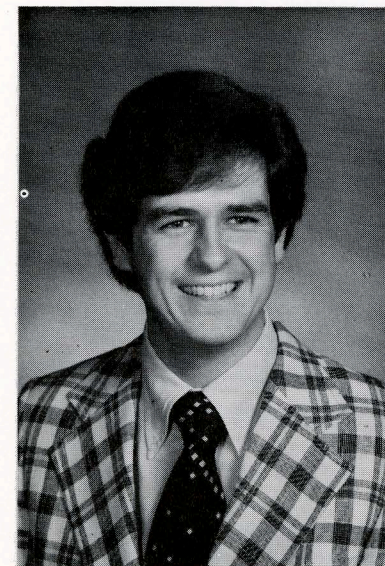
**Presented the Alton B. Zerby
Award at a dinner in his honor in
the Disneyland Hotel, Anaheim,
California, August 5th, 1977.**

HONORABLE MENTIONS



PETER KENT BERNTSON, first in his class was nominated by Delta Rho Chapter at University of North Dakota. A member of Tau Beta Pi and Phi Eta Sigma, he has served as Chairman of Engineers Council, President of the IEEE and Vice President of Eta Kappa Nu.

He was instrumental in helping the IEEE branch win its first IEEE Vincent Bendix Award. He has authored a paper titled "General Plotting Programs for H.P. 9821 Calculator" and a paper titled "Pacemaker Technology" published in The Dakota Engineer.



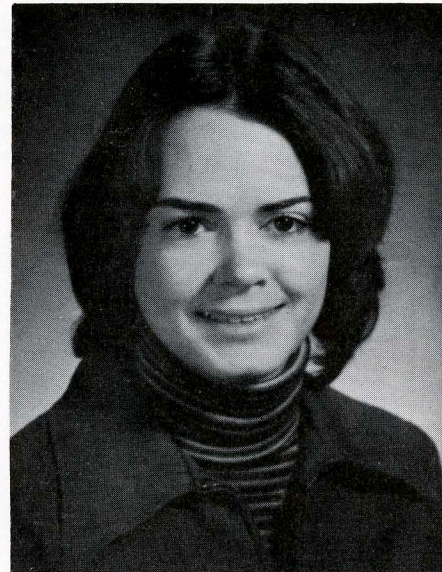
WILLIAM HEMSLEY MERWIN, was nominated by Beta Eta Chapter at North Carolina State University. He was honored with membership in Tau Beta Pi, Phi Kappa Phi, Phi Eta Sigma, the IEEE and North Carolina Fellows Leadership Development Program and has served as President of Eta Kappa Nu.

He helped author a paper titled "Comparison of Rapid Methods for Analysis of Bacterial Fatty Acids" in Applied Microbiology. He is a recipient of N.C. Fellows Internship Stipend and N.C. Fellows Subsidy of Summer Study in Oxford, England, and the Outward Bound School.



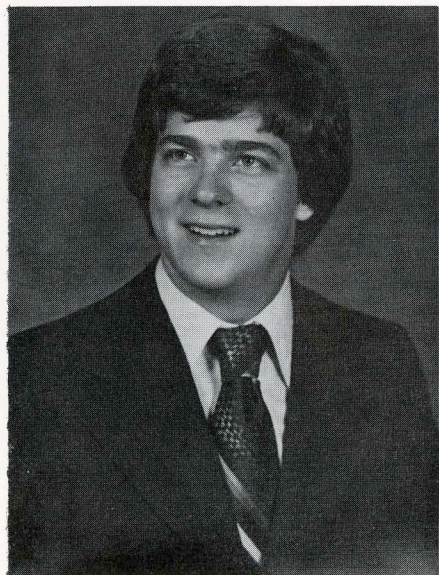
NEIL EVIN MIDKIFF, first in his class was nominated by Iota Chapter at University of Missouri-Columbia. He has been honored with membership in Tau Beta Pi, Phi Kappa Phi, the IEEE and Phi Eta Sigma and has served as President of Eta Kappa Nu.

He authored a paper titled "Design of Microprocessor-Based Micro-computer system". He is a recipient of the National Merit Scholarship and The Curators/University Scholarship and St. Louis Electrical Board of Trade Student Award.



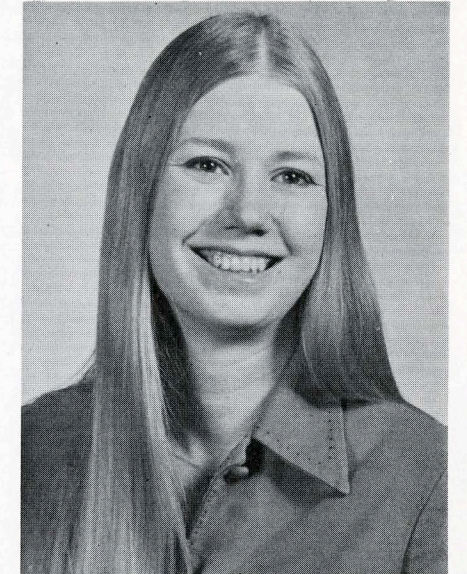
MAUREEN PATRICIA QUIRK, first in her class was nominated by Chi Chapter at Lehigh University. Miss Quirk has been honored by membership in Eta Kappa Nu, Tau Beta Pi, Phi Eta Sigma and the IEEE.

She is the recipient of the Scot Paper Leadership Scholarship, RCA/SWE Scholarship and the Knights of the Golden Eagle Scholarship and will be going to England to study at the University of London on a Marshall Scholarship. Miss Quirk built a microprocessor controlled robot and acted as Research Assistant for design of a Communication Network.



MICHAEL JOSEPH REED, first in his class was nominated by Epsilon Mu Chapter at University of Texas at Arlington. Mr. Reed has been honored with membership in Tau Beta Pi, Phi Eta Sigma and has served as Treasurer of Eta Kappa Nu and as Chairman of the IEEE.

Mr. Reed organized a "Dirty Pictures Contest" to expose sources of pollution in the Dallas-Fort Worth area and an IEEE student lab where students could use lab equipment and work independently on personal projects. He received the M.E. Sadler National Merit Scholarship.



LINDA ANN SIMS, third in her class was nominated by Beta Chapter at Purdue University. She has been honored with membership in Mortarboard and Phi Kappa Phi and has served as Vice President of Eta Kappa Nu and Vice President of Tau Beta Pi.

Miss Sims has served as a student member of the Curriculum Committee and as a volunteer for the Wabash Center for the Mentally Retarded. She is the recipient of the Presidential Honor Award, Outstanding Student in Electrical Engineering and is a member of the Purdue Society of Professional Engineers and Society of Women Engineers.

The Alton B. Zerby Outstanding Student Award Program is administered by the Los Angeles Alumni Chapter; Lawrence Hamilton, Chairman; Walter Williams, President. This year's Jury of Award was Larry Dwon, Earl Eyman, Ival Getting, Ronald King, and Carl Koerner. The Award Program is financed by a Perpetual Trust established by the following:

Nelson L. Best
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Anthony A. Chizmadia
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Frank Carlin Weimer
Roger I. Wilkinson
Thomas W. Williams
Abraham Zarem
Leon W. Zelby
Ethel Zerby
John Zerby

Perpetual membership in this Award Trust Program requires a contribution of fifty dollars. All members and friends of Eta Kappa Nu are eligible and invited. Also, memberships may be established IN MEMORIA.

MERRY MOMENTS WITH MARCIA

Applicant: Before I take this job, tell me, are the hours long?

Employer: No, only 60 minutes each.

Robber: This is a holdup! Give me your money or else.

Man: Or else what?

Robber: Don't confuse me, this is my first job.

The young lady eyed her escort with great disapproval. "That's the fourth time you've gone back for more ice cream and cake, Wilbert," she said acidly. "Doesn't it embarrass you at all?"

"Why should it?" the hungry fellow shrugged. "I keep telling them I'm getting it for you."

Judge: Did you steal this man's television set?

Thief: Oh, I only took it for a joke.

Judge: How far did you carry it?

Thief: From his house to mine...about three miles.

Judge: Six months in jail. That was carrying a joke too far.

Guide: "This building has been here for over six hundred years. Not a stone has been touched, nothing changed, nothing replaced."

Tourist: "They must have the same landlord as we have."

Not too bright — A friend of mine reported that NASA was getting ready to send an astronaut to the sun! "No way," said I. "He'd burn to a crisp before he was halfway there."

"No," said my friend, "they're going to send him at night."



The energy crisis is teaching us how many absolute necessities we may run out of that our forefathers never imagined anyone needing in the first place.

Mr. Jones phoned the doctor for an appointment. The nurse said she could give him an appointment in two weeks.

"In two weeks I could be dead!" wailed Jones.

"Well, in that case," answered the nurse, "you can always cancel the appointment!"

A man I know solved the problem of too many visiting relatives. He borrowed money from the rich ones and loaned it to the poor ones. Now none of them comes back.

A barber was cutting a crop of long hair off a young man and asked, "Were you in the Navy once?"

"Yes" replied the young man. "How did you know?"

"I just found your cap," replied the barber.

Customer: "Waiter, will you bring me another sandwich, please."

Waiter: "Will there be anything else?"

Customer: "Yes, a paper weight. My first sandwich blew away."

A boss called the entire office staff together and told them a new joke. Everyone but one man laughed uproariously. "What's the matter?" grumbled the boss. "Don't you have a sense of humor?"

"I don't have to laugh," said the man. "I'm leaving Friday."

SOCIALISM: "You have two cows and give one to your neighbor."

COMMUNISM: "You have two cows. The government takes both and gives you the milk."

FASCISM: "You have two cows. The government takes both of them and sells you the milk."

NAZISM: "You have two cows. The government takes both of them, and shoots you."

NEW DEALISM: "You have two cows. The government takes both, shoots one, milks the other, and throws the milk away."

CAPITALISM: "You have two cows. You sell one and buy a bull."

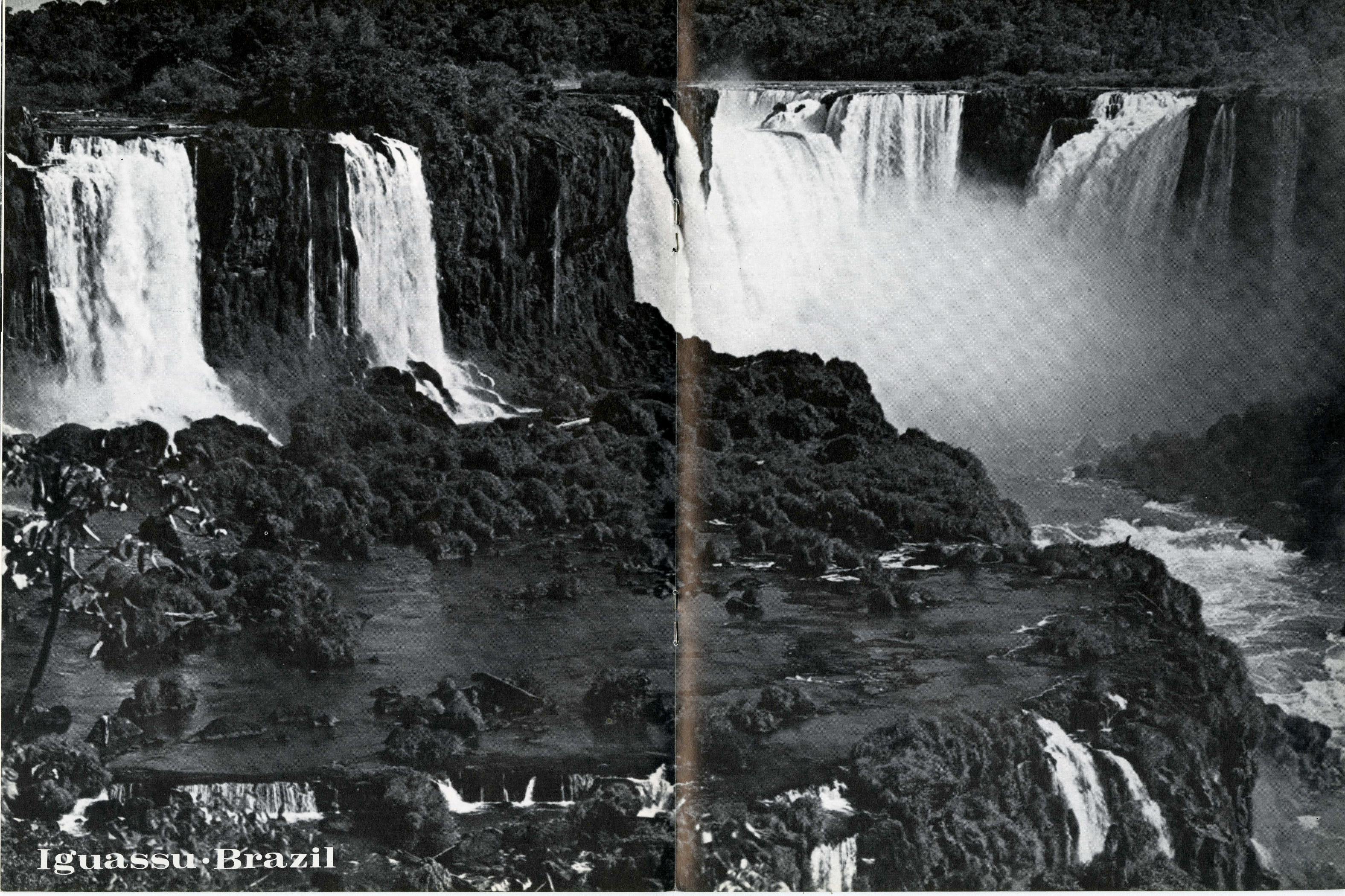
by Marcia Peterman

Interesting Places

- Part Three -

Waterfalls Of The World





Iguassu • Brazil



Angel Falls

One of the world's loveliest vistas is located in one of its most inaccessible regions. Angel Falls, the highest waterfall on earth, has never been viewed from an overland approach. Only a handful of people have ever seen the falls from the base and they arrived after a week's journey by dugout canoe. The Falls are normally viewed from the air.

Angel Falls is located in the Auyan-Tepui mesa of Venezuela, and is 3,212 feet high — twenty times higher than Niagara. The part of the falls shown on the opposite page is exactly one-half a mile high. This is no ordinary falls however, as it does not start with an ordinary river. The water for Angel Falls comes from an underground river 200 feet below the surface of the ground. This river drains a mesa area of only 250 square miles — a tiny area for such an enormous amount of water. However, the rainfall averages 300 inches per year which probably makes this area the wettest spot on earth.

Angel Falls was named for Jimmie Angel, the man who discovered it in 1935. Several years before, a prospector had hired

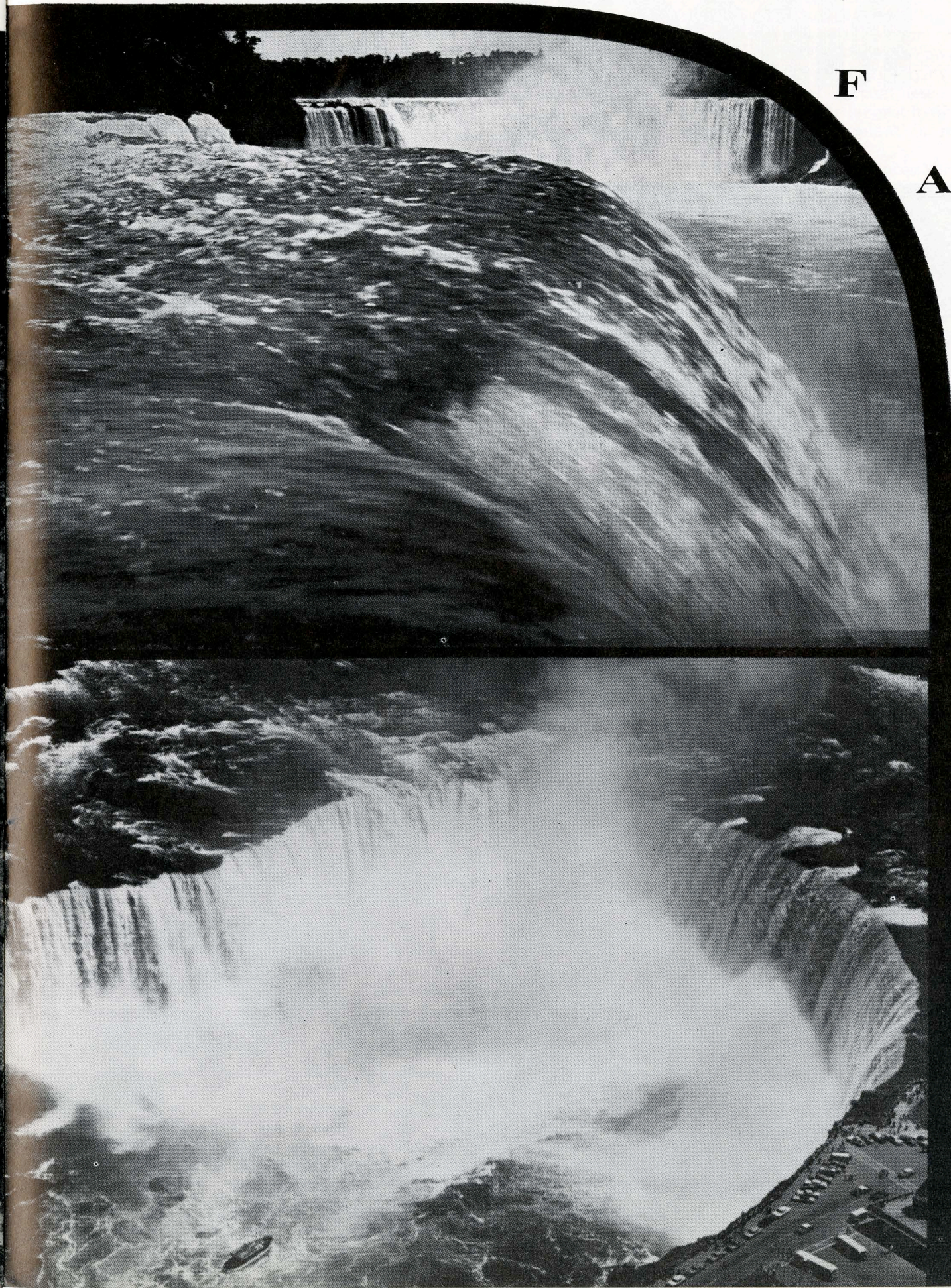
Angel to fly him to a "place" in Venezuela where he quickly "picked up" a sack-full of gold. After the prospector died, Angel returned to the area in search of the "place" but he never found it. Instead he found, by accident, the giant waterfall which he described as "nothing else like it in the world."

In 1937 Gustavo Heny and Felix Cardona became interested in Angel's discovery and the three of them made unsuccessful attempts to reach the falls overland. As a final try, Heny, Angel and Angel's wife flew a plane from a base camp to a flat area near the falls. Disaster struck when they found that they could neither reach the falls nor fly the plane back out again. The two-week march out, without much food, through perhaps the most savage countryside on earth almost cost them their lives. Jimmie Angel's plane still sits today on the mesa where it landed in 1937, and the Venezuelan government has declared it a national monument. Jimmie died in 1956 as a result of a plane crash in Panama and, as he had requested, his ashes were scattered over the falls.

Saut d'Eau·Haiti



NIAGARA



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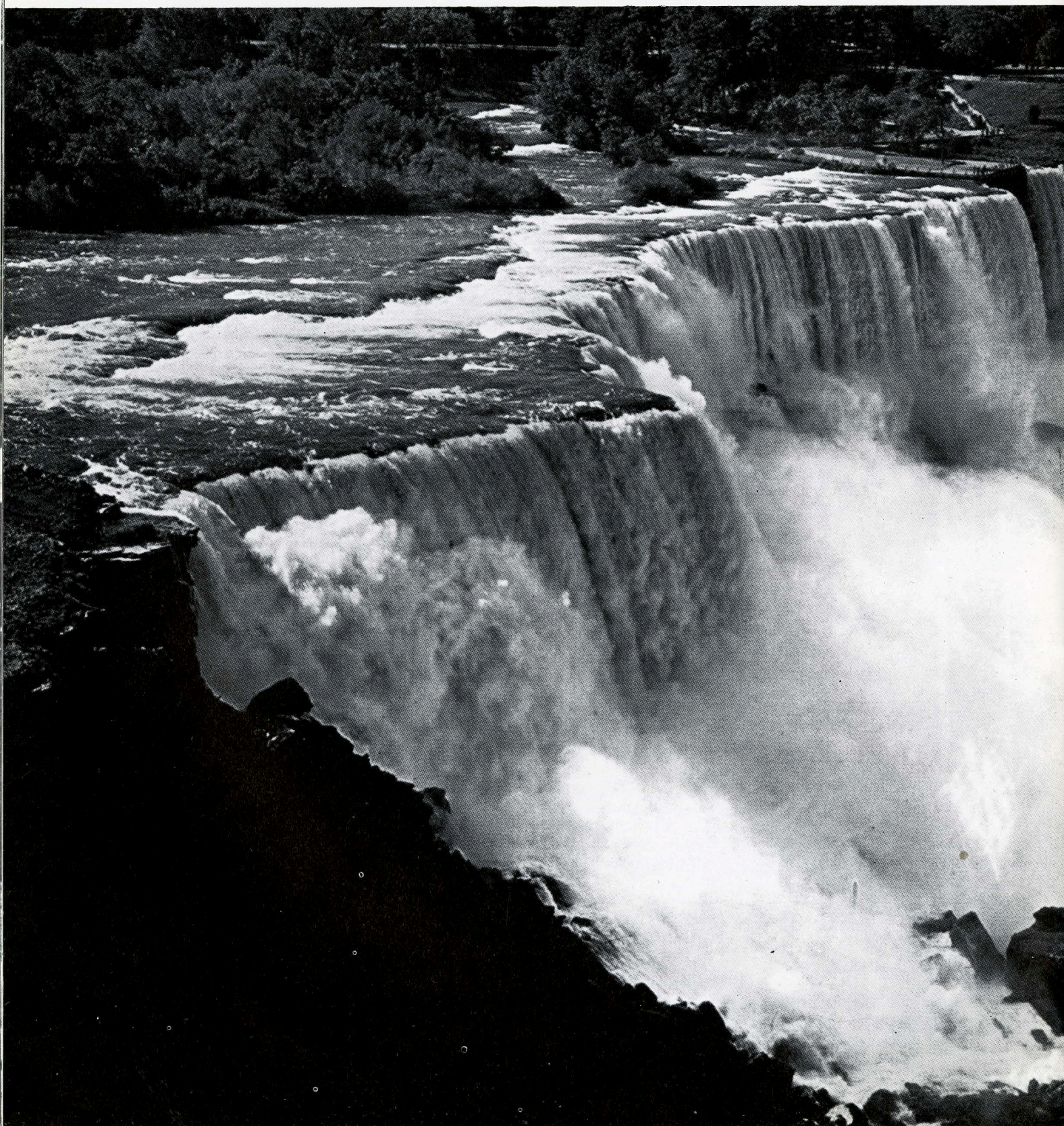
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NIAGARA FALLS



It may seem a bit strange to go to Niagara Falls without a barrel or a trousseau. After all, it wasn't that long ago that many people came to this famed resort for one of two reasons — either to test their fate as a daredevil or put it in the hands of matrimony.

But times have changed. It isn't Wagner's traditional wedding march or even Grieg's "Wedding-day at Trolldhaugen" that comes to mind as you cross over the upper Niagara River from Grand Island to the city of Niagara Falls.

Instead, you have this impulse to tell the bus driver, who doesn't resemble Clint Eastwood in the slightest, "Play Misty for me."

Looking downstream, in the distance, you see a huge cloud of white mist hovering over one portion of the river — the site of the falls. It's an eerie feeling. Even this far away, you sense the power of these mighty falls that lie on the border between the United States and Canada.

Here upriver, the water is calm. But a little farther downstream, the river drops about 50 feet, gaining speeds up to 25 or 30 miles an hour. There the foamy, churning rapids begin.

At Goat Island the now turbulent river divides, soon to plunge 182 feet over the crest of the 1,000-foot-wide American Falls on one side and 176 feet over the 2,100-foot-wide Horseshoe or Canadian Falls on the other.

There is a third falls, the Luna or Bridal Veil, which is the smallest of the three and separated from the American Falls by a small island. Both the American and Luna Falls are on the U.S. side while most of the Horseshoe Falls, so named because of its contour, is on Canadian soil.

Countless millions have marveled at the natural beauty of the falls for nearly 300 years.

During the 19th Century, much of the area was exploited by land-owners who wanted to make a fast buck off the tourists. A high board fence was built around the falls so visitors had to pay a fee to see the cataracts. Then in 1885 the state

of New York created the Niagara Reservation which became the first state park in New York and was free to everyone.

Today the falls are jointly owned by the U.S. and Canada while their preservation, improvement, and beauty is the cooperative effort of both the state of New York and the province of Ontario.

The first European to discover and describe the falls was a Franciscan father named Louis Hennepin. In December 1678, on a promontory a few hundred feet downstream from Prospect Point, Hennepin first sighted the gigantic cataracts which the Indians called Niagara, "Thunder of Waters." The name is appropriate.

Seeing the spectacle, Hennepin said, "The universe does not afford its parallel." Hennepin was accompanied by the French explorer La Salle.

Every second 1½ million gallons of water pour over Niagara Falls — a power potential of 4,000,000 horsepower! It's this great volume of water crashing against the rocks at the base of each falls that produces Niagara's ever-present spray or fine mist.

Acting as a strait or big spillway, the Niagara River runs 36 miles from Buffalo on Lake Erie to Lake Ontario at Youngstown, N.Y. Between these two points, the water level drops approximately 330 feet, the falls accounting for most of the difference.

The Niagara River drains four of the Great Lakes — Superior, Michigan, Huron, and Erie — into Ontario, the fifth. This amounts to the drainage from 255,000 square miles of midcontinent North America.

Just as a basis for comparison in size, 94 per cent of the water flows over the Horseshoe Falls while only 6 per cent goes over the American cataracts.

A fur trader named Chabert Joncaire was the first man to divert some power from Niagara's water flow by use of a water mill. That was in 1757. But it wasn't until 1881 that the power was sold for commercial use.

In 1958 construction began on the Robert Moses Niagara Power Plant, which was to become the main station of the Niagara Power Project. First generating power in 1961, the plant was completed in 1963, making it the largest hydro-electric generating plant in the free world.

At Prospect Point you are standing at the brink of the American Falls. It's here with the mist cleansing your face that you get your first real sensation of the falls' power as the water cascades down to the huge river basin below.

Your first thoughts are about the huge chunk of rock that broke off the crest of the American Falls a few years ago and went tumbling into the gorge below. You wonder how much warning mother nature gives before staging such an event.

The rock slides are all part of the natural erosion that goes on annually, causing the falls to retreat at an average rate of about one foot per year. If you had been among the living after the glacial period, you would have viewed the falls at the Niagara escarpment, six miles downstream from their present position.

All the falls can be viewed from Prospect Point, but Luna and Goat Islands provide a better advantage for the Bridal Veil and Horseshoe Falls, respectively.

There are two attractions on the American side which no visitor to Niagara Falls should miss if he or she wants to truly and fully experience this natural wonder. They are the Maid of the Mist river trip, which may be made from Prospect Point, and the Cave of the Winds walking tour, from Goat Island.

Near Prospect Point, rising 282 feet in the air and adjacent to the American Falls, is the U.S.'s only observation tower. It's Canada's observation towers, however, that afford the most dramatic views.

Near the base of the U.S. tower, which can be descended by elevator, thank goodness, for a 25-cent fee, is the dock from which the Maid of the Mist departs for a cruise to the foot of the Horseshoe Falls. The boats also may be boarded on the Canadian side.



Jeffery J. Brom Memorial Award

John F. Parsons of 13026 S. Hindry Avenue, Hawthorne has been awarded the Jeffrey J. Brom Memorial Award as the outstanding electrical engineering sophomore at the University of Southern California for the 76/77 school year. Selection is based on academic achievement, character and leadership.

The honor was conferred by USC's Upsilon Chapter of Eta Kappa Nu. Parsons received the award at the semi-annual initiation banquet. Also in attendance

was Mr. George Key, principal of John's high school, Hawthorne High, and Mr. and Mrs. Joseph Brom for whose son the award is named.

A \$50 book grant and an engraved certificate accompany the annual honor.

Another facet of the award is a \$100 book grant to Hawthorne High School's library. This is accompanied by book plates for volumes which the grant will fund and an engraved certificate for the school.

XI CHAPTER, Auburn University — Xi Chapter has several important activities and charities. A few of them are as follows:

Outstanding Chapter Award The Chapter was very proud and honored to receive notification that it was selected as one of the three most Outstanding Chapters in the nation for the 1974-75 academic year.

The Chapter wishes to express its gratitude to the hard-working members and of course, our faithful and ingenious Advisor, Dr. James L. Lowry. After receiving the award, the Xi Chapter received many congratulations including that of the Dean of Engineering, Vincent S. Haneman, Jr. The Figure is a picture of the Eta Kappa Nu directory with the Outstanding Chapter Award displayed. The directory is located in Dunstan Hall next to the Electrical Engineering Department Office.

Toys for Christmas. The Chapter donated fifty dollars to the Lee County Department of Pensions and Securities. This money was used to buy toys for underprivileged children in the Auburn area to ensure them a happy Christmas.

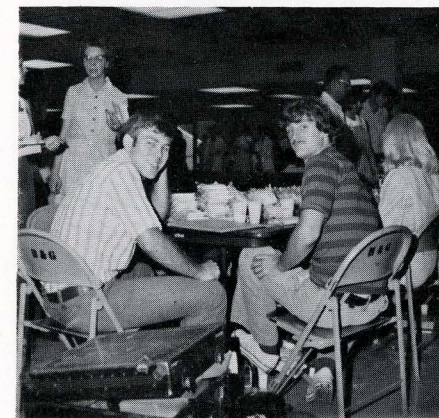
Blood Drive — The Chapter was proud to participate in the Summer Quarter Blood Drive. The Blood Drive was sponsored by the honor society of the School of Pharmacy. Eight members of the Xi Chapter worked as volunteers during the one day drive. The members worked at different stations such as registering the donors, labeling the blood, and taking blood pressures. The members who had the courage gave blood to assist in reaching the goal of over 700 pints of blood. Pictures of Xi Chapter Members working in the Blood Drive are shown in Figure 14.

Cleaning the Bridge — During the Summer Quarter, the Chapter held a 'Clean-the-Eta Kappa Nu Bridge' party in lieu of a final business meeting for the quarter. The large replica of the Eta Kappa Nu Bridge is mounted in the lawn in front of Ramsay Hall, the building which houses the offices of the Dean of Engineering and his assistants. The bridge is formed in

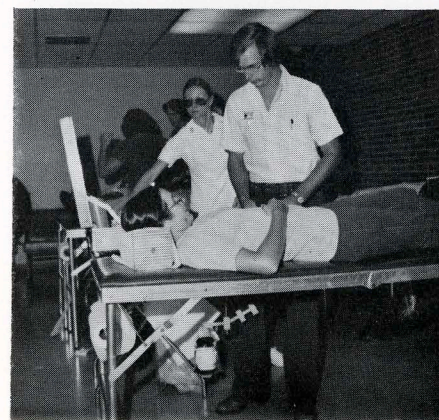
cement with the Greek letters 'HKN' made of copper embedded in the cement.

The Figure shows one bright, sunny Saturday morning when a crew of industrious Chapter members set out with their pails and brushes in hand to clean the bridge. They made a diligent effort with detergent and brass polish.

Methodist Fall Bazaar — The Xi Chapter sponsored Mrs. Margaret Lowry (the mother of our Advisor) in the annual Methodist Fall Bazaar. Mrs. Lowry displayed two large tables filled with hundreds of hand-made items ranging from tiny marble figurines to silk flowers. The quality of her work made the Eta Kappa Nu display the busiest in the Bazaar. The tables were identified by a large 'Eta Kappa Nu' sign.



Xi Chapter Members working in the Auburn Blood Drive

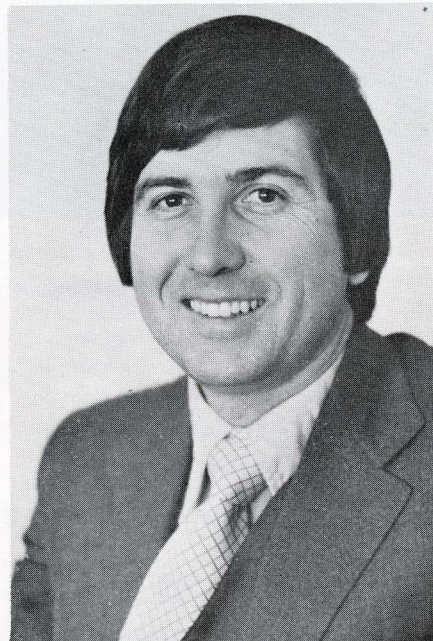


Cleaning the Bridge located in front of the Engineering Administration Building



Dr. Stanley R. Liberty has been selected as the Outstanding Electrical Engineering Professor in the United States for 1977. Dr. Liberty is an Associate Professor of Electrical Engineering and also an Assistant Dean at Texas Tech University, Lubbock, Texas. The award was presented at a luncheon in his honor held by the National Board of Directors in the New York Hilton Hotel, New York City. The Philadelphia Alumni Chapter of Eta Kappa Nu is in charge of the Award Program.

OUTSTANDING PROFESSOR AWARD



Dr. Stanley Liberty

Stanley R. Liberty was born November 13, 1942, in Gray, Maine. He is of French-Canadian descent. As a youth he worked in a brick yard near his home, attended Cheverus High School in Portland, and participated on several varsity athletic teams, including a state championship baseball team. He exhibited an early talent in music and played professionally when he was 13 years old. He was a member of a number of bands which toured New England resort areas, most notable of which was the Randy Brooks Orchestra, in which he was featured as alto saxophone soloist. He matriculated at Notre Dame in 1961 and received his B.S. in Electrical Engineering in 1965. Subsequently, he also received M.S. and PhD degrees from Notre Dame. Much of his undergraduate tuition was defrayed by his activity as a professional musician, both as a saxophone player and a pianist.

During his pursuit of graduate degrees he served as a teaching assistant and a research assistant in the E.E. Department, taking a particular interest in the development of new undergraduate laboratory experiments. He was first employed as an engineer by Naval Facilities Engineering Command at Norfolk Naval Base. While there, he received letters of commendation for outstanding performance. In June, 1966, he volunteered for service in South Vietnam, serving as resident Electrical Engineer at Danang Air Force Base. Again he was commended for outstanding performance.

Dr. Liberty was honored at a luncheon held by the National Board of Directors in the New York Hilton Hotel, New York City. Photos by Howard Sheppard.

Dr. Liberty joined the faculty at Texas Tech in 1971. He has served as faculty advisor of the I.E.E.E. student branch and has been graduate advisor in the E.E. Department. He is presently Associate Dean of the Graduate School and a Director of the Texas Tech University Institute for Energy Research. He has introduced and developed new courses in both the undergraduate and graduate curricula. Although his specialty is automatic control and optimization theory, he has taught courses in many areas of Electrical Engineering. In 1974 he received the Tau Beta Pi award as the outstanding faculty member in the College of Engineering. He is author or co-author of several technical papers and research reports and has received grants and contracts from NSF, ONR, and ERDA.

Dr. Liberty has been very active in relating his engineering teaching to local industry and the community. He was one of the first members of the "Flying Professors" program wherein he taught graduate courses to engineers at their industrial plant. He has chaired the educational activities committee of the South Plains section of I.E.E.E. and has served as treasurer, secretary, and vice-chairman of that section.

In 1974 he organized a public symposium entitled "The Energy Problem: What Can Be Done?" attended by 2,000 people from West Texas and including such speakers as Dr. Edward Teller and Dr. Aden Meinel. He also edited a booklet with the same title, distributed by the University to local community organizations and later adopted by the national I.E.E.E. organization.

In 1974 Dr. Liberty was instrumental in bringing the community of Crosbyton, Texas, and Texas Tech together in a solar-thermal-electric research and development project that subsequently has received over a million dollars of ERDA funding. He is currently project manager of this contract.

Dr. Liberty maintains his interest in music and sports. He now gives private music lessons, plays handball daily, and has coached Babe Ruth, Little League, and Pony League baseball.



I'm my own boss.

I work for Schlumberger.

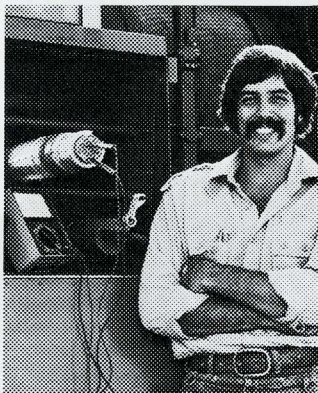
There's nothing routine about a career with Schlumberger. Just ask Larry Gutman who joined us a year ago.

"Working as a field engineer for Schlumberger is *everything* I thought it would be," says Larry. "I like to be outdoors.

Work with my hands. And keep my own hours.

"I'm responsible for myself, my crew—and everything that happens on the job. It's really exciting to make things work out right.

"Some people aren't cut out for this. It takes a *special* person. I work long, hard hours—and



sometimes it's tough to stay awake.

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