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AMERICAN ELECTRIC POWER SYSTEM


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OUR COVER

The Broadwalk on the campus of the University of Illinois, Urbana, on a sunny afternoon. The Illini Union is in the background.

ETA KAPPA NU

Electrical Engineering Honor Society

NOVEMBER, 1969, Vol. 66, No. 1

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This 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, 1884, that these in the profession of electrical engineering, who, by their achievements 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 an outstanding manner those who, in students in electrical engineering, have conferred honor on their Alma Mater 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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America's Most Distinctive Magazine
CANDY

Candy—that wonderful sweet treat, by gum—has a history as chock full of fascinating problems as a box of chocolate has fillings.

It all began thousands of years ago in ancient Egypt when, good children were given a honey-based confection made with nuts, figs and spices. Orientals, however, came up with another sweet thought—assorted fruits preserved in a honey solution.

In the Middle Ages a confection, concocted from sugar, rose water, and "gum dragon," was administered only to those who were ill, and the medicine was mixed in with the sweetness.

Later, Europeans preferred a more elaborate recipe which is still popular today. It was marzipan, prepared—then as now—by pounding almonds and pistachios into a paste and blending this with sugar and egg white.

Historians do not bother to mention whether "sugarplums" (so popular in nursery rhymes) were actually made with genuine plums, but we know they were enjoyed in England in the 17th century. The English were also responsible for the birth of candy making as an industry. The occasion was the famous 1851 exhibition, when manufacturers of other countries came, saw, tasted—and duplicated the goodies.

Americans, of course, got into the act. By the middle of the 19th century 380 well established small factories were offering a variety of lozenges, sticks candy and jujube paste. This last is obsolete today, but two new confections took its.

(Continued on page 24)

NATIONAL DIRECTORY

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SANTA BARBARA IS EPSILON TAU

Epsilon Tau Chapter of Eta Kappa Nu was formally installed at the University of California at Santa Barbara on May 29, 1969.

An induction team consisting of William Bonser, HKK Director, Professor Vincent Giroux, faculty advisor of Epsilon Nu, George Haan, President of Epsilon Nu, Dr. Robert MacMillan, President of Los Angeles Alumni Chapter, and George Yelland, Pacific Telephone Company, all from the Los Angeles area, had the pleasure of seeing this new chapter come into existence.

Director Bonser opened the ceremony with the reading of the chapter's charter. The team then inducted thirty-four (34) initiates which included two professional members. These men are Dr. John Skalnik, Chairman of the Electrical Engineering Department and Charles Harrison, Assistant Dean of Engineering.

Following the induction ceremonies, an installation of officers was held. Charter President Donald Gibson was presented the chapter gavel from the National Association.

Other Charter officers are; Robert Farley, Vice President; Bryan Boswell, Recording Secretary; Erick Mansen, Bridge Secretary; Gene Hanon, Treasurer; and Donald Spann, Corresponding Secretary.

Following dinner, President Gibson acknowledged the efforts of Brother Hormoz Motevali in the formation of this chapter and brought greetings.

(Continued on page 24)
1. Our new National President, Professor John Hancock, Head of the School of Electrical Engineering at Purdue University, Lafayette, Indiana, received his Ph.D. degree from Purdue in 1957. During the following eight years, he moved from Assistant Professor in Electrical Engineering in 1957 to Associate Professor in 1960 and full Professor in 1963; in 1964, in addition to his teaching and research duties, he was named Director of the Electronics Systems Research Laboratory within the Electrical Engineering School. In September of 1965, he became Assistant Head of Electrical Engineering for Research and, in October of the same year, moved into his present position as Head of the School of Electrical Engineering. During this period from 1957, he has also acted at different times as electronic scientist and staff consultant at the U.S. Naval Avionics Facility, Indianapolis, Indiana, as a member of the technical staff at Hughes Research Laboratories, Culver City, California, and as a consultant to Ramo-Wooldridge Corporation, Los Angeles, California, Emerson Electric Company, St. Louis, Missouri, ITT Kolling Space Communication Laboratory, Ft. Wayne, Indiana, Page Communications Systems, Washington, D.C., as well as to General Electronics Laboratory at Cambridge, Massachusetts. He has credited to him over twenty-five published articles in scientific journals and presentations at national and international conferences. The book, "An Introduction to the Principles of Communication Theory," McGraw-Hill, 1961, is used in numerous universities, and a second book is forthcoming entitled "Signal Detection Theory," also by McGraw-Hill.

2. Vice President for the coming year will be Mr. Anthony Gabrielle, Assistant Head of the System Operating Division, American Electric Power Corporation, New York City. He received his Bachelor's and Master's degrees in electrical engineering from M.I.T. and holds a second Master's degree in Industrial Management from M.I.T. A past president of the New York Alumni Chapter, he has been active in Rho Kappa Nu affairs for many years. He has published widely in technical journals and has been very active in community affairs. He has been a leader in Community Chest Drives, and officer of Municipal Civil Defense and a YMCA leader.

3. The east Central Region will be represented by Dr. F. Carlin Weimer, Vice Chairman of the Electrical Engineering Department at Ohio State University. He received the B.S. in EE degree from Ohio University in 1938 and the M.S. and Ph.D. degrees from The Ohio State University in 1939 and 1943 respectively. He has had industrial experience in engineering at Delco Products and A.C. Spark Plug Divisions of General Motors Corporation and research experience at Massachusetts Institute of Technology and the University of Illinois as well as The Ohio State University Research Foundation. He has also served as a consultant to several industrial and research organizations.

4. Mr. Melvin M. Weimer was elected to represent the Eastern Region. He received the S.B. and S.M. degrees in Electrical Engineering from M.I.T. in 1956, having been enrolled in the cooperative honors program. He is presently a Consulting Engineer in private practice. He is the author of more than a dozen papers, and the holder of two patents in the areas of physical electronics, optics, magnetics, and electromagnetics. He is a past President of the Boston Alumni Chapter and is responsible for the establishment of National Engineer's Week and the Motor Vehicle Safety Group.

5. Professor Ed. C. Glover of San Jose State College will represent the Western Region of HKN. He received the B.S. in EE degree from Kansas State College and the A.M. in Mathematics from Colorado State College. He has been Professor of EE at San Jose since 1951. Prior to that he was chairman of the EE Department at California. Also he was a Research Engineer for Dalmo Victor Co., and a Design Engineer for Consolidated Vultee Corp.

6. Elected to represent the West Central Region is Mr. Mark Shepherd, Jr. Mr. Shepherd was elected President of Texas Instruments Incorporated, just under 20 years after joining the company. He received the B.S. from Southern Methodist University and the M.S. from the University of Illinois. He was appointed executive vice president of T.I. in 1961, elected to the Board of Directors in 1963, and became president in 1967. He is Chairman of the Board, Southern Methodist University Foundation for Science and Engineering, and a member of the Board of Trustees of the University. He is a member of the Board of Directors of the American Management Association.
A FIRESIDE CHAT
with Cledo Brunetti

Those providing equipment for the home, by 1975 will have
color video-tape recorders in
t.V sets. Video recorders are
like music tape recorders ex-
cept they sound and picture
are put on the same tape.
Color video recorders should
be on the market shortly but I
am afraid they may cost as
much as $2,000 if not more.
By 1975, we should have the
price down to a few hundred
dollars added to the cost of
the regular TV sets. Combined
with a color camera in which
one can take color pictures at
home, these recorders should
be popular. They will also allow
one to pick up programs at
times when one cannot be
home, using timers like (those
on the kitchen stove. The TV
networks are considering (put-
ting) programs on in the mid-
dle of the night which can be
picked up by a recorder and
played back at the convenience
of the owner.
Perhaps the most interesting
development in television will
be the thin screens that can be
mounted on the wall just like a
picture. I saw these demon-
strated years ago in television
research laboratories but the
price is still too high. By 1975
we should have picture size TV
sets, say about 2 feet high, 3
feet wide and 3 inches thick
that you can hang on the wall.
By 1975 research should be
well underway using the new
laser technology to produce 3
dimensional pictures that will
fill a whole wall of the room.
The new science is called
holography. The 3D pictures
now being produced by the use
of lenticular lenses provide a
very real 3D effect on a flat
picture. Holography should im-
prove this considerably.

Dr. Brunetti is Assistant to the Presi-
dent of PMC Corporation. He was named
by IEC as the Outstanding Young Elec-
trical Engineer in the United States in
1941. Editorial Assistance by Kathleen
Ryan.

A new PICTUREPHONE® see-while-you-talk set recently unveiled by Bell Telephone laboratories.
I Heard The Bells In The Country
The Story Of Bells

Writing the history of bells and bell casting is a more arduous task than trying to relate the story of carillon playing. Carillon playing is a comparatively “young” art, and can be traced through documents, writings and prints, but most of all, through city records of The Netherlands.

But the history of bells and to a great extent, the casting of bells, is a much more elusive matter. The making of bells and the art of forging metal has been lost in the mists of antiquity. We will then have to look to the artwork of the ancient peoples and to the few discovered bells of the great cultures of the past. Long before our era, the mainland of China knew the bell in a highly developed form, and many a historian tends to approve of the theory, that the bell was created or discovered in China... some say by one of their emperors long before 2000 B.C.

This theory has its worth, but it does not exclude the fact that bells in all sizes, and shapes were found in the Near East. The old Chinese bells that we know of, do not in any way resemble the form of the early medieval European bell, nor is the material used in the Chinese bell of the same composition. Form, material (the bronze) and even the sound of the Chinese bells are different.

In the old European bells we come across a bell mixture of 20 – 25% tin, with the remaining percent being copper. The requirements for the Chinese bell, fixed by official Imperial decree were 1/7 or 1/6 tin. This would call for a much less sonorous sound of the Chinese bell.

We also have to keep in mind, that the bronze culture of China seems to have been not very much older than 1300 B.C. Several historians believe that this means that the Chinese bronze casting technique was imported in an already advanced form from China’s neighbors, more specific from the middle East. This is the view of Dr. Wiersen who would like to look for the cradle of the bell in the Near East.

Then, let’s look first at the nations who were in this general area and the ancient cultures around the Mediterranean sea area.

Egypt had very little to offer in the way of mineral resources. Gold was found in Nubia and goldsmith craft developed fast. As for copper, the main ingredient for bell casting, little was found in Egypt itself. Copper, which already at an early date superseded ”flint” as the material used for implements, was obtained from mines in the Sinai peninsula. In Egypt there is evidence of the use of bronze, an alloy of copper and tin, only from the Middle Kingdom onward.

Some Assyrian bells were discovered by the excavation of the ruins of Nineveh and later of Nimrud by Sir A. H. Layard, (1817-1894) presumably, they are some of the oldest bells of which we have any record. Bronze Egyptian bells discovered in tombs resemble those of the Assyrians. This points again to the theory of early bell founding in the Middle East. Trading is as old as civilization, and bells cast in Babylon could easily have been traded for Egyptian goods.

From the Bible we know that the Israelites were accustomed to work with metals and that bells, whatever their size and shape were used in their worship, together with cymbals and trumpets.

The Japanese did experiment with their own bronze designs. In the early Yayoi culture, the Chinese artistic influences through Korea were very strong. By the early third century B.C. a people of Mongoloid blood from South China came to Japan and during the following centuries expanded into most of the main islands of Japan, merging with or driving out the earlier inhabitants. These Yayoi people brought with them a knowledge not only of bronze but also of iron, from which that time onward was to be used extensively.

Chinese artistic influences through Korea were very strong, but the Japanese did experiment with their own bronze designs. The most notable are the large bronze bells “Nakatsu”, which are entirely Japanese in shape and decoration. These bells are of all sizes. Starting as very rough products, they reached a high degree of sophistication.

Bells of bronze by the Urn-burials of Adichanallur, India, are related to the Bronze Age finds in Palestine (Gaza, Gerem) and Cyprus, and bronze bells found in the Deccan (Purandhar, India) are quite similar to those found at Nimrud, Assyria and Was, Armenia.

This brings us to the conclusion, that China, Japan, Burma, India, Mesopotamia and other ancient civilizations knew bells and made and used them in different forms and for different purposes, so long ago that tracing their origin becomes impossible.

The use of these bells? Almost for every daily need; for calling worshippers to the temples, alarm, shipbells, animal bells. (The use of cowbells in the Alps and animal bells in the Andes.)

The Buddha, almost invariably, uses bells in connection with their worship and the Llamas of Lhasa, in Tibet, wear a tinkling bell in their hats. The Gongs have elevated the bell into a deity, in the form of Ghagh-rapen or “Bell God”, and in Madras the Sacred buffalo-bell hangs from the necks of the finest buffalo of the herd.

The Jewish historian Josephus wrote that “King Solomon had large golden (?) bells on the roof of the Temple of Jerusalem. Bells are spoken of in Jewish literature and later they are mentioned by the Greeks and the Romans. It is recorded that Octavius, 63 B.C.-A.D. 14, who later became Emperor Augustus, hung a bell before the temple of Jupiter in Rome.

Clapper type copper bells were found in Peruvian tombs presumably dating back to the pre-Incan era. The beginning of the metal age in Peru was around 500 A.D. They point to a relationship with the Aymara and Nazca. Some of these bells are now preserved in the Museum of Antiquities in Lima, Peru.

Approaching the advent of our Western civilization, the bell’s shape takes two different directions: the Western “cupshaped” and the Oriental “pot and bowl” bells. However, many times these forms overlap each other and some of the very early Western bells are closely related to the “pot and bowl” shape of the Oriental bell.

It may be wise to explain what is meant by “pot and bowl” opposed to “cup” shape. A “pot” is a bell with almost straight sides and a height that exceeds its diameter; a “bowl” is a bell the diameter of which far exceeds its height; and a “cup” is a bell of almost equal height and diameter, with convex sides, which means curving outward, bulging out at the foot of the bell

One more bell form should be mentioned, and was in use in the Orient as well as in the early Western world; the “riveted” square or oblong shaped bell. These bells were “not cast”. They were made from a flat iron, later flat bronze plates with the corners cut out, then bent and riveted into an oblong form.

Many of these riveted bells were used in Western Europe for over five centuries. It was only the usefulness not the beauty of sound of the bell that counted. The most famous of these riveted bells still in existence are: The bell of St. Gallen (612 A.D.), the “Saafang” at Cologne, 9th Century, and the “Bell of St. Patrick” Will, (Clog Edachtach Patrace, between 1091 and 1105, now in the National Museum of Ireland.)

Many an historian believes that the bell originated somewhere in the Near East, more specifically around the Black Sea, from where this art of bell making could have easily spread to East India, and China, South to the Mediterranean regions, and North and West to Europe and Russia. Undoubtedly the Celtic tribes played a large roll in bringing the bell to the West.

Dr. Wiersen connects this thought with the fact that in the Greek-Roman era, the vocal music developed far faster than the instrumental, while in the East, the instrumental music with an abundance of gongs, bells, cymbals, et al. came more to the foreground.

The Celtic tribes on their great move to the West could well have been the harbingers of the bell, which in due time gave rise to the glorious bells and carillons in North-West Europe.
I heard the bells-- in the city
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CHAPTER REPORTS

by Anthony Gabrielle
National Vice President

Each year the Eta Kappa Nu chapters file annual reports with the national organization outlining their major activities. These reports are carefully read and evaluated by a committee. The chapters making the best showing are awarded beautiful plaques for display at their schools. The chapters that win the awards are not necessarily the ones who do the most number of things, but rather, the ones who do the most interesting and worthwhile things. Listed below are some of the interesting things that were done by chapters during the last year.

Gamma Kappa—Newark College of Engineering
A 30 minute color film with sound was produced which presented a tour of the Electrical Engineering laboratory showing the potential hazards of various procedures. The film was done in a humorous vein showing misereably wired circuits with students puzzling over them, arcs across switches resulting in the reduction of students to ashes, careless carrying of instruments, resulting in the destruction of the instruments and other humorous but instructive examples.

Gamma Mu—Georiga Tech
An existing classroom was converted and furnished into a study student lounge for the EE Department. The project involved raising funds and purchasing furniture. Fund raising was accomplished primarily through the Director of Student Placement who sent a letter to select companies asking them to contribute. This source resulted in $1100.

Theta—University of Wisconsin
The Chapter purposes and goals were expanded and served as a guideline in determining the Chapter programs. These new purposes included the following:

a) To promote the integration of the theoretical aspects of a formal education and the practical aspects of industry.
b) To stimulate interest in outside activities.
c) To provide students with the opportunity to meet other students on a basis other than that of a classroom environment.
d) To provide an opportunity to informally meet professors and learn of their research works.

Gamma Sigma—University of Utah
Sponsored a special convocation for the wives of graduating seniors. Ph.D. degrees (Put Hubby Through) were awarded by EE Department Chairman.

Delta Theta—Pratt Institute
The Chapter went beyond the limits of the campus and into the neighborhood (slum area in Brooklyn, N.Y.). An Easter Party was planned for the children in a nearby hospital. The children came from culturally deprived families, and their parents had little time to visit. The Easter Party was done as a meaningful pledge project in lieu of polishing brass bridges, etc.

Delta Epsilon—Ohio University
An EE library was initiated and will contain up-to-date research materials, technical magazines, currently used textbooks, and reference material recommended by the faculty. The growth of the library will be dependent upon the effort of the Chapter to raise funds.

Delta Iota—Louisiana State
a) Since a major function of HKN is to encourage academic excellence, a bridge monument was built at the steps of the EE Department. The monument stands 3½ feet tall.
b) Sponsorship of an outstanding Electrical Engineering Senior Award with the recipient receiving $100 donated by an industrial company was instituted. In addition, each year’s winner is displayed upon a plaque in the EE Department Student study room.

Upsilon—University of Southern California
A successful fund raising scheme involved “Work Day”. This day faculty members and students helped HKN members for six hours at $10.00 to carry out any hour burden projects, yard work, etc.

Gamma XI—University of Maryland
An annual award is presented to the EE instructor who is an excellent teacher and a person who has contributed much to the education of his students. The award is presented at the Joint Engineering Honor Societies Spring Banquet.

METALLIC TRACTORS

Every electrical engineer knows of Luigi Galvani, the Italian physician who was born in 1737, and of Alessandra Volta, the Italian scientist, who was born in 1745, but I doubt if any reader of these lines ever heard of Elisha Perkins, the American physician who was born four years after Galvani and who achieved great renown in the field which made those two Italians famous. My object in writing these lines is to tell a little about this American physician.

Galvani became interested in experiments with the legs of dead frogs, possibly because he heard that the legs of a frog sometimes kicked while being cooked in a metal container and were touched by a metal knife or fork. He found that such kicks were produced when a spark from a static electric machine was sent into the frog leg.

He then hung the skinned legs of a frog on a copper hook and suspended the hook on the iron railing in his laboratory and watched to learn if atmospheric electricity would produce the muscular action. There was no action until, in adjusting the position of the suspended legs, the iron railing came in contact with the moist tissues of the legs. When that occurred the kick came. So Galvani discovered that an electric effect is produced if pieces of iron and copper are joined and the free ends are brought in contact with moist animal tissues.

Galvani’s discovery attracted wide attention of scientists and physicians. Then the question arose as to whether the electric effect came from the junction of the two metals or at the point of contact of the two different metals with moist tissue. Galvani believed the electricity came from the animal tissue but Volta believed it came from the point of contact of the metals. Galvani died before that dispute was settled. In 1791 when Galvani announced his discovery, Elisha Perkins was the physician in Plainfield, Connecticut, a rural town not far from where I grew up. Dr. Perkins became greatly interested in Galvani’s discovery and at once began experiments along that line, using pieces of iron and brass about three inches long and pointed at one end. He stroked the pointed ends of this device over the parts of his own body and that of his patients where there was pain or inflammation and was convinced that such action brought relief.

He then applied for a patent, using the name Metallic Tractor for the device. The patent was issued about 1796. The new method of treatment was tested at three American medical colleges and those colleges strongly endorsed the use of the new method for treatment of inflammation, pain in head or teeth, rheumatism and other physical troubles.

In Copenhagen Frederick’s hospital also made tests and published the results in an
A midwestern regional meeting of Eta Kappa Nu was held on May 1 and 2 at the University of Kansas, Lawrence, Kansas. In attendance were delegates from nine chapters representing the following universities: Colorado, Kansas State, Kansas, Missouri (Columbia), Missouri (Rolla), Nebraska, North Dakota, Oklahoma State, South Dakota School of Mines.

A general meeting was held on the afternoon of May 1. The principal speaker was Mr. Jack Farley, Eta Kappa Nu National President, who discussed the country-wide aspects of the EKN activities. He emphasized the growth of EKN and the problems associated with producing the film "Careers in Engineering". The response to the film has been highly satisfactory. More than one hundred copies have already been purchased by universities and industries. Following Mr. Farley's address there was a very informative and useful discussion by each chapter representative of their chapter activities and problems. The activities centered largely, perhaps, on the need to maintain programs which encourage participation by chapter members and which, hopefully, would be sufficiently rewarding financially to maintain the chapter solvency. The problems discussed by the representatives were almost exclusively devoted to a single item: how to achieve active participation by a substantial fraction of the chapter membership. Several interesting proposals were made.

Following the afternoon meeting, there was a banquet held on the evening of May 1. Approximately forty people attended. The speaker was Professor William Bass, a member of the Anthropology Department of the University of Kansas. Professor Bass gave a fascinating account of the evolution of some of the physical characteristics of man.

On Saturday morning, May 2, a tour was provided to acquaint the visitors with the teaching and research facilities of the Department of Electrical Engineering. In particular, the activities of the Remote Sensing Laboratory of the Center for Research in Engineering Science were presented.

Regional meetings of this type can serve a very worthwhile purpose. They allow members of EKN to become acquainted and they provide a stimulating influence which serves to strengthen each chapter. The Gamma Iota Chapter of the University of Kansas was pleased to have had the privilege of being the host of the meeting.

Photo below: The chapter delegates and faculty advisors with President Farley (sixth from left). Opposite page top, Professor Bass with unidentified friend speaking at the banquet. Bottom: Many delegates brought their ladies.
The Great Sahara Mousehunt

Catherine Cline and
Miggs Pomeroy

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Miggs

THE POST IS IN AN UPROAR. A native soldier has brought wood that the
Lieutenant's truck has been involved
in an accident near Tekro. The Lieutenant is thought to be hurt, but
the wireless connection is bad and no details are known. Salarie is
busy getting together a supply convoy with petrol, water and
rations. The Medical orderly is assembling his equipment, scalpels, splints, surgical dressings and morphine. We are asked if we will
take the wounded man on to Faya with us in the morning, as there
is a hospital there. We plan to shift things around so that one
car can be used as an ambulance. We will put inflated mattresses, blankets and sleeping-bags on the roof that covers the
petrol cans and hope to soften the bumps somewhat. But it is
worrying not to know just what to expect. How badly is the
Lieutenant hurt? I suppose if it is bad enough a helicopter could
come up from Fort Lamy.

To while the morning away Liv joins the taxidermists, and
skins a rabbit he has shot from the terrace. He hasn't done this
kind of work for many years and decides that there are other
occupations that he likes as well. He says that this is his swan-
son.

Catherine and I take our personal laundry and start down the
hill to the washing-spring, which is by the side of the lake near
the swimming-pool. An entertaining native boy has already washed
our clothes. He is determined to follow us around and refuses
to remove from his pocket. Their clothes are all laid out to dry on
the ramps with bits of stone and dirt to hold them down. At
the end of the platform, I am determined to finish my wash and
when he wades out of the spring we wade in. We stand in water
to our waists with laundry floating about us, and pound each
piece on a great slanting rock. The fish nibble at our legs and we
wonder what they make of the lather of detergent and army all-
purpose soap. Two white-robed Tubs squat watching us for a
while. Perhaps they are waiting their turn. Unexpectedly one of
them takes off his clothes and wades out into the lake and we
wonder if the Sergent-Chef has exaggerated slightly. Also, we
are both impressed with the fact that a naked black is so much less
made looking than a naked white. When the sun goes right down
to it, white skin is inclined to have that under-a-rock look. Certainly massive numbers of white people spend unecessary quantities of time and money just to try and make sure that you never hear of dark people bothering about a bleach. As we walk up to the fort our dripping clothes dry on our backs before we climbed to the top.

There is pigeon for lunch, nineteen lovely mouthfuls. They
were blue and downy when seen this morning, but one shouldn't

think of that, and Pfevrier has made a superlative sauce. Sergent
Salarie, his truck reads, is hurt in a tear of husk of bread and
himself down a good foot of millet. The bower of flowers around
the table picking at the last pigeon, he bursts into the mess hall
again, eyes blazing, and announces that the native soldiers
have served him and are likely to. Sergent-Chef has wounded
Salarie, and now there is no pigeon. The Sergent-Chef rocks with laughter, and through the rest of the meal the giggles, smaller and smaller, constructing an HKN bulletin board for his heartless reports on the affairs of the country. He takes us up to by getting the women of the village to dance this afternoon, on the open sand by the lake. Against the orange sands their brilliant robes and head-dowads and mundane jewelry shimmier and clash. One girl has a diadem of a gross of large
safety-pins standing in a row across her head. The girls are shy in the daylight, and have to be chased into their dance by the Sergent-Chef, who runs around after them threatening and
cajoling, striking a rump or tickling a rib. They start at last, the drummer beating an oral drum and chanting a refrain which we are told says 'The white people have come from the north by the old caravan route and they are very nice and very rich and will give us plenty of money very rich very rich.'

The dance is being done out in the open, one of the girls of the art, the feet shuffle in little sandy circles, the head is shilly bowing and the
arms wave; they seem to say, 'Come on, come on, come on, we
couldn't care less.' This is a daily event at the camp. A girl will
sing out one and chasing her round and round, firing at the
tom-tom; the tom-tom grows louder and the waving arms, giggles and shrieks louder. The sun is setting beyond the lake, and
the tall palm trees bow and send the circle of dancers. We feel as though we were on a South Sea island rather than in the centre of a great desert.

Miggs and I patrol this afternoon only mildly amused to hear of the drama that had been enacted about him. He roared up to the fort in his open Dodge Power Wagon, with engine and radiator clogged against the wind and dust. We thought them

fully dashing. They have been parcelling out the northern border in this way a look-out for people who slip over illegally.

'Gun-running?' I ask hopefully, but he merely nods commiseratingly, and says that the offenders are mostly geologists from the oil camps in Libya. There is one pass which they must come through called Rocker Noir. I think that it is the path which we missed when we came skiing over the mountains, so I don't suppose
it is so easy to guard after all. However, the Lieutenant has
ordered us to wary the natives and to report any sight of a
Dodge Power Wagon with, according to the local Tubs, two
Americans, a Frenchman and a Libyan aboard. The Lieutenant
is not likely to be deceived; he has never caught any geologists yet, which he says 'is regrettable.'

'Ve would like to compare cauibles, the pebbles which the gorillas have climbed, and send them home with, of course, a severe reprimand.' I think that he enjoys this grown-up game of hide-and-seek.

DELTA CHAPTER, Illinois Institute of Technology—The 1968-1969 school year saw the first suc-
cess of the Delta chapter of the Illinois Institute of Technology's elec-
trical engineering chapter. This success was due to the
active chapter, according to the provisions of the program, principally to the efforts of the chapter's presidency at the end of the semester to students in the electrical engineering department. A scrapbook containing
curriculum vitae of each student was shown to ITT's electrical engineering department. The form asks for evaluation of both teacher and course. Results are tabulated and a complete report is presented to the head of the electrical engineering department. Based on those results, the department's "teacher of the year" is selected. This teacher's name is then submitted to ITT's school-wide "teacher of the year" competition.

The "successful impact" mentioned earlier was the electrical engineering de-
partment's announcement of a major under-
graduate curriculum change. Through Delta chapter's evaluation program, stu-
dent discussion, with several courses in the curriculum was communicated to the department. As a result, these courses were either dropped entirely from the curriculum or were replaced by more
meaningful courses. Some curriculum re-
schedulings were made, and a new electrical engineering undergraduate now encounters his first EVER course in his sophomore year of college as opposed to his junior year.

Mr. Nourse's Alumni Mater, Downey High School, also received a substantial
check from Union Pacific for putting the program through libraries. Each of the books will be bookplate-protetced and will become a
chapter banquet, Mr. Nourse's Alumni Mater, for the 150 students who will attract more of the qualified students at
Downey High School to major in electrical

Mr. Terry Lee Donahue was selected as the best advisor for the Award for
received a check for $25. Mr. Donahue is presently a University Trustee, honored to award only to a few select
undergraduate students.

Franklin Pong, the immediate past President of Upson, was recently named as the best advisor for the Award for the University's
University's Alumni Mater. He was presented a check for $25. Mr. Pong is currently a University Trustee, honored to award only to a few select undergraduate

Mr. Hauger has done a most ad-
sirable job as President for the Spring Semester. Phil is also graduating in June.

The highlight of the Spring Semester has been designated as the Outstanding Chap-
the Western Region for 1968, which is very gratified by this honor and we hope that we can instill some spirit and enthusiasm for a place in our group.

Match Box

Andy Lietzke, a graduate student in Biomedical Engineering, and Linda Crum-
mer, a senior in EE, will be married on June 14th. Andy is a past President of Upson Chapter. Linda has been a Recording Secretary during the Spring Semester.

Have a happy summer and see you again in Fall!

BETA GAMMA CHAPTER, Michigan Technological University—Our slide rule instruction course during the fall quarter was proven again to be successful. Sixty

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22
ELLERY... octavo volume giving favorable opinion of the system which they called Perkinism. In London, under direction of Lord Rivers, an organization named Perkinian Institution, was formed, chiefly for benefit of the poor. Disinterested and in- telligent characters from almost every quarter of Great Britain, including professors, regular physicians, surgeons and clergymen testified to the benefits received from the use of Metallic Tractors. It was reported that over a million cures had been effected.

In 1793 the daughter of Dr. Perkins, her husband and two children died of yellow fever in Philadelphia. This stimulated him to develop a new medicine which he hoped would be effective in treatment of fever and other diseases. In 1799 there was an outbreak of yellow fever in the city of New York, and Dr. Perkins went there hoping his medicine might help to end this terrible disease. After about four weeks he was struck by the fever, and died September 6, 1799.

In 1797, because of a political upheaval, Galvani lost his offices and he had serious fail- ur e of health. The death of his wife, his controversy with Volta regarding the electric effect when different metals are brought in contact and other problems added to his misfortunes.

In our present vocabulary the words galvanic, galvanizer, galvanism, galvanization, galvanometer, voltage, volt, voltaic, etc. come from the names of those two famous Italians. Do we have words in our lan- guage which came from the name of the American Perkins, who worked as they did on the effect of dissimilar metals in contact?

If one looks in our English dictionary one will see for the word Perkinism that Webster states "After Elisa Perkins of Norwich, Conn. who introduced it. Med. Tractation."

For the word Tractation Webster states "A kind of metallo-therapy first used by Elisha Perkins (1741-99) of Norwich, Conn. consisting in the operation of drawing over an affected part, the points of two small rods (called tractors) of different metals; Perkinism. It was used in local inflammation or pains, rheumatism etc.

CANDY... place—the lollipop and chewing gum, and each created its own industrial problem.

Lollipops (which were originally known as "suckers") attained wide distribution when a machine for their manufacture came out in 1908. The firm which introduced it, was wor- ried. "It makes almost 21,000,000 lollipops a year. That's more than we can possibly sell," they complained.

Shortly after the Curtiss bro- thers concocted the first sample of chewing gum on a Franklin terri- fied. In their best stab, they had a real product. What to name it? Consequently American Jeams began rhythmically moving to a product which was called everything from "Licorice Lulu," and/or "Four in Hand" to the patriotic, "American Flag".

In the United States today the manufacture of candy is far from "small peanuts". About 80 ingredients go into the various concoctions made to satisfy the requirements over 1.5 billion pounds of sugar, one billion pounds of corn syrup, one million pounds of cocoa and chocolate products—and 200 million pounds of peanuts. Some 1200 established companies transform all these concoctions annually into 4 billion pounds of candy, and a total of 30 pounds per capita, it is predicted, will be consumed within the next 12 months.

According to the "candy sci- entists" at Atlas Chemical laboratories there are three reasons for the great American sweet tooth. 1—Candy (under- standably) has never tasted so good. 2—Teenagers (who are top consumers) keep increasing in this country, and the more we have, the more they eat. 3—The shelf life of candy has been prolonged considerably, and this is an essential because large candy makers are shipping greater distances than ever before. Now their product can withstand rough handling and temperature changes with two "miracle" ingredients—an Atlas Sorbitol solution and a chocolate emulsifier blend which enables the candy to withstand rough handling and temperature extremes and to preserve color, texture and flavor far longer than ever before.

So the sweet problems of candy have been boiled down to achieve much sweeter solutions—which makes the "boiled sweets" (the English term for confections) a true "sweetest story ever told."

SANTA BARBARA... from Dr. Wade, his Faculty Advisor, who helped him recovering from eye surgery.

Dr. Skalnik greeted the new officer. "We're pleased to have you," he suggested some- ways in which they could be an asset to the University.

Dean of Engineering Albert Conradi addressed the students and guests. He too expressed the importance of a group giv- ing its time to the service of the school. He stated that a group cannot exist just for themselves. They have to perform some service to thrive and survive.

He told of his career in en- gineering and in the tolling, traced changes in curricula and tools of engineering. The most important instrument in the Electrical Engineering labora- tory when he was in school was the Wheatstone bridge.

He used the Wheatstone bridge as a symbol that engi- neers should lead a balanced life. He also pointed out the two disciplines stated in the induction cer- mony.

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Infographic: Hughes plans to substantially increase the number of fellowship awards leading to the degree of Engineer.

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