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— INSTRUMENTATION —

MOTOROLA

Connecting Consumers to Entertainment — Over 50 Years of Innovations from Motorola Broadband.)

The year 1948 marked the foundation of the company that today is now known globally as Motorola Broadband. Back then, the notion of connecting homes to a wired network that delivered television programming was a radically new concept. Today, the evolution of those first cable television networks keep consumers informed, entertained, and connected like never before — through digital content, high-speed Internet access, video-on-demand (VOD) home networking, and more. Through it all, Motorola Broadband has continued to drive the industry forward, working to develop innovative new technologies and services.

Motorola Broadband began as Jerrold Electronics, a manufacturing company started by Milton Jerrold Shapp, the former governor of Pennsylvania. The company's first product was a signal booster, designed to enhance "snowy" pictures on a television screen. In his previous job as a door-to-door electronic parts salesman, Shapp foresaw a future market for such a gadget, especially as television sales were growing in the late 1940s and early 1950s.

To promote these signal boosters, Jerrold pioneered a "master antenna television system" (MATV) that would allow store showrooms to display more than one active TV at a time. In 1950, when a Philadelphia department store first used Jerrold equipment to show off multiple TVs, the technology was so exciting that the newspapers covered it.

The early success of MATV attracted the attention of a Lansford, Pa. appliance dealer, who wanted to sell television in the region located between Philadelphia and New York. Sales were slow because the area was shielded from the signals broadcast from the major metropolitan areas where television was just getting started. To compensate for the lack of signal, the dealer, Bob Tarleton, dropped an antenna on a nearby mountain and ran coaxial cable into town, boosting the signal using specially-redesigned Jerrold MATV amplifiers. The multi-billion dollar cable television industry was born.

From its headquarters in Hatboro, Pa., Jerrold Electronics continued to bring new innovations to the fledgling industry. The company expanded its product lines, providing everything entrepreneurs needed to build cable systems. In 1956 Jerrold introduced the "Golden Cascader" distribution amplifier that increased channel capacity from three to five.

Over the next few years, the greatest minds in the cable industry were occupied with the challenge of increasing channel capacity, and Jerrold was on the forefront of that innovation. The company's "Golden Cascader" distribution amplifier was introduced in 1956, increasing channel capacity from three to five. In 1959, Jerrold increased capacity to a full 12-channels, with a 216 MHz amplifier that would set the industry standard for the next six years.

In 1968, Jerrold again expanded channel capacity from 12 to 27, and for the first time, cable television could supply significantly more channels than available from over-the-air broadcast television. To help consumers receive those channels, Jerrold created the first set-top box — a 20-channel electro-mechanical cable converter displayed at the 1967 National Cable Television Association (NCTA) annual convention and exhibition. The company expanded on that development, introducing the industry's first remotely controlled set-top, in 1972.

From its beginning, the company has been involved in more than just bringing technology to market. The Company's history of working with partners to develop profitable business models stems back to 1958, when the Company helped to facilitate the first pay-TV experiment, in Bartlesville, Oklahoma. With the cooperation of a local theater owner and Columbia pictures, Jerrold technology brought the Pajama Game to television, before it hit the movie screen.

During the 1970s, spurred by the introduction of HBO, many premium entertainment networks were launched. Jerrold introduced multi-level scrambling/descrambling in 1979, helping cable operators offer multi-level product tiers for pay and basic programming.

Throughout the 1980s, Jerrold technological innovations paced the cable television industry. The Company introduced a store-and-forward mechanism for two-way cable plants, which boosted the developing pay-per-view industry by allowing consumers to order a show using a remote control. Jerrold also set industry standards in bandwidth, reaching 550 MHz distribution in 1983 and 750 MHz by 1989.

By 1990, Jerrold entered its sixth decade as the leading provider of technology for the cable industry. Now known as General Instrument Corporation (GI), from an earlier acquisition, the Company continued to drive the industry forward, with new ideas and new products.

GI was the first to bring a proposal to the Federal Communications Commission (FCC) for transitioning from analog to digital technology to drive high-definition television (HDTV) — a concept that no one else had considered. By the mid-1990s, GI had worked with Comcast Cable Corporation in the first volume commercial deployment of a digital cable system. Two years later, GI had shipped more than one-million digital cable set-tops — a number that

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uld increase to ten million by the year 2000. By the end he decade, the Company had added the first volume loyments of Internet access via cable (1998) and eo-on-demand (1999) to its list of impressive accom-hments.

In 2000, General Instrument merged with Motorola, in eal that brought together the industry leader in cable works with a global leader in wireless communications. s cable technologies would be part of a newly formed iness unit that combined the Company's historical suc-s in building advanced networks with Motorola's brand retail marketing experience. The Motorola Broadband nmunications Sector would bring the power of the adband network right to consumers.

Today, Motorola Broadband supplies the products that w consumers to experience a "connected home." The npany is the world's leading supplier of such proven he gateway products as digital set-tops (with more than million shipped) and cable modems (with more than 13 ion shipped), yet continues to innovate just as it did in early years. In 2002, the Company introduced the ustry's first integrated wireless cable modem gateway, the first home theater system to integrate a digital le box. Earlier this year, the Company announced a tal set-top that combines digital video recording (DVR) high-definition television (HDTV). Motorola will con-e to bring plug-and-play consumer electronics devices narket, helping consumers customize their home enter-ment experience.

Motorola continues to provide cable operators with a d network foundation, offering solutions that span d-end processing, transport, encoding, and modula-. The Company is one of the leading innovators in ro optical networking, GigE, and VOD transport. Fur-, Motorola MediaCipher® is recognized worldwide as leading conditional access system, providing content viders with an unsurpassed level of security.

Credited with more than 50 years of innovations, torola Broadband continues to be a driving force in the velopment of new technologies. True to its roots, the npany continues to connect people to information and ertainment, making their lives simpler and keeping m in sync with the things that are important to them, all ough the power of broadband communications.

OORE PRODUCTS

Founded as Moore Products Company in 1940, the company leased an 1800 square foot sec-ond floor on North Lawrence St. in Philadelphia, After 6 years in business, Moore Products created a or stir in 1946 with the introduction of its Nullmatic "stack" controller based upon principles C.B. Moore first published in 1945. Large case instruments were the standard in instrumentation in those days. Panel boards were huge and unwieldy and, it seemed, destined to stay that way. However, at the annual Instrument Society of America Show in Buffalo in the fall of 1947, Moore Products Co. introduced its new miniature control station that was piped to the stack controller. This station was a panel-which allowed the control room operator to manipulate and monitor the process control loop.

The 1950's were good years for Moore Products Co. It was a period of steady growth during which the Company established itself within the industry. Moore added a third plant and the first international operations began. New products introduced early in the decade included automatic dimensional measurement gages, leak test cabinets, differential pressure transmitters and an expanded variety of pneumatic relays. Top-mounted positioners were added to the valve positioner line. These products would provide steady business for decades to come.

By 1963, C.B. Moore had become one of the most recognizable men in the industry. Electronic controllers had been introduced in 1954, setting off the debate that would go on for nearly two decades. C.B. Moore quickly became one of the most successful, and entertaining, defenders of pneumatics as the superior and safer approach. Among other attention-getting devices, he would dip his hand (or a dollar bill) in alcohol and set it afire with an electronic device which emitted a current level less than that used by electronic control systems in order to demonstrate an inherent danger in those early devices.

Moore Products Co.'s wait-and-see approach was a logical decision, the wisdom of which is apparent in retrospect, since it was not until the introduction of integrated circuits in the late '60s that the real development of electronic controllers took place.

Moore Products was purchased by Siemens Energy & Automation, Inc., early in the year 2000. To fit with the overall Siemens product marketing structure, the previous Moore company was divided into three business units: the process systems business, the process instrumentation business, and the discrete measurement business. About the same time, Milltronics, Inc. Of Canada was purchased by Siemens of Canada. The Milltronics division in the US was merged with the former Moore process instrumentation business to form the current Process Instrumentation Business unit of Siemens Energy & Automation. The Process Instrumentation business joins the systems business and the analytics business in the newly formed Process Solutions Division of SE&A.

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GENERAL ATRONICS (DRS TECHNOLOGIES)

In 1955, David E. Sunstein left Philco where he was Associate Director of Research to become a private consultant. He opened offices on the third floor of a home on City Line in Bala Cynwyd, PA. Four other Philco engineers —George Laurent, Glenn Preston, Robert Roop, and Bernard Steinberg — joined him and together they formed General Atronics Corporation in December 1955. The story was often told that the name "Atronics" was coined by one of their wives under the influence of an unspecified number of martinis. The company rented offices in the basement of One Bala Avenue. Their interests were almost exclusively R&D. The first portable implantable heart pacemaker was invented by a General Atronics engineer. Innovative radar and communications equipment go to their start at One Bala — PRSD, Wholesale RAKE, KATHRYN, a sweep integrator, and more. Much of the worked was on the BMEWS (Ballistic Early Warning System) program for RCA.

By 1961, General Atronics had outgrown the basement and moved to its own building in West Conshohocken where, among other things, they worked on underwater communication devices and, in a branch office in Boston, trained carrier pigeons to read maps.

In 1964, General Atronics bought Electronic Tube Corporation in Wyndmoor, PA; the building was enlarged to provide offices and laboratories for the General Atronics engineers. Mr. Sunstein moved to new offices on Mermaid Lane and, when the addition was completed, the rest of the company relocated. Mr. Steinberg was the only co-founder to make the move; the others had all spun off with their own businesses. Soon space was again at a premium and Atronics rented part of the Voron Building in back of the Mermaid Lane building to house their new computer and the VELA group, working on seismic detection.

Magnavox acquired General Atronics in 1969, and soon after the company was forced to cut back its unmanageable large number of diverse activities and focused on HF radio data transmission and adaptive RF cancellers and arrays. The accompanying staff reduction and management reorganization gave them plenty of room. Mr. Sunstein left the company in 1970 and again became a private consultant; he died in 1979. In 1974, North American Phillips merged Magnavox into their family and General Atronics went along for the ride.

Several companies got their technology start from General Atronics. Atronics' engineers developed Magnafax, one of the first fax machines. The rapid reading bar codes during pill and bottle sorting for a pharmaceutical company led to a large now well-known local company dedicated to the high speed sorting process. General Atronics also developed the technology and produced more than 2.5 million RF tags used initially for tracking library books.

In 1984, a joint venture was created between General Atronics and Hollandse Signallapparaten of the Netherlands (Signaal) called the Magnavox Signaal Systems Company. The primary purpose was to conduct business with the U.S. Department of Defense, and other Ministries of Defense, manufacturing products and systems under a technology transfer agreement with Signaal. Thales eventually acquired Signaal, but the technology transfer agreement continued and thrived. Since its inception, the joint venture has successfully developed, built and delivered several surveillance, tracking, communications, and data handling systems — all proudly made here in the USA.

But changes for General Atronics were not over. In 1991, the management team of George Huffman, Howard Drown, and Dr. Michel Goutmann, brought General Atronics, and the majority position in the joint venture from Phillips. Huffman kept the General Atronics name and shortened name of the joint venture to MSSC. They managed the company, and its growth in ground, ship and airborne data link products through the turn of the century — nearly 45 years since its founding. After nearly nine years of being a "small company" again, DRS Technologies acquired General Atronics in June of 2000. With the acquisition came a name change to DRS Communications Company.

Today, DRS Communications Company provides data link communications, cryptographic, radar, and imaging systems for command and control of naval vessels and selected ground based systems. Well on its way to integrating technologies with its sister companies and establishing its position as a center of excellence within DRS Technologies, their customer base includes the U.S. Department of Defense, related agencies, and Ministries of Defense around the world.

DYNACO

David Hafler

David Hafler, of Rittenhouse Square in Philadelphia, was an audiophile who devoted his life to perfecting home high-fidelity sound components.

A resident of Merion Station, PA, before moving to Rittenhouse Square, Mr. Hafler owned homes in Boca Raton, Florida and London, England filled with music from quality sound systems he designed himself. (He didn't watch television.)

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Hafler received his mathematics degree from the Uni-ity of Pennsylvania in 1940. He enlisted in the Coast rd after the Japanese invaded Pearl Harbor. During war, while serving as communications specialist in the bbean, Mr. Hafler was exposed to the notion that nds could be reproduced faithfully.

After the war, Hafler worked for A.J. Wood, a market-earch firm in Philadelphia, until his love for music red him to design easy-to-assemble electronic sound pment for consumers.

n 1950, David Hafler founded Acrosound in Roxbor-, PA, which built and sold audio transformers. It was next venture, Dynaco, which he founded in 1954 in t Philadelphia, that set the standard for home music ems. Dynaco manufactured and sold amplifiers as -it-yourself kits. At the time, the average hi-fi enthusiast to assemble the parts for a home sound system. He Dynaco to Tyco in 1968 and served as an advisor 1971.

ne year later, he founded another company, David r Company, in Blackwood, Camden County, manu-rer of inexpensive kits and pre-assembled hi-fi gear. old that firm in the early 1990s to Rockford Corp. or be, Arizona.

1999, the trade magazine, Vacuum Tube Valley, said profile that Hafler "has probably been more instru-al in the development of component hi-fi or home hat anybody in the history of the industry." In 1984, as named to the Audio Hall of Fame.

ne of his products, the classic Dynaco Mk. II 50-watt ifier, was part of the media display in the Smithson-Museum of American History in Washington, D.C., in 990s.

he theme to Hafler's life was that if he couldn't be a layer, he could be a top manufacturer. He loved c, but didn't play well enough to play professionally, e manufactured the best sound equipment possible.

AGNETIC METALS

In 1942 W. P. Langworthy started the Magnetic Metals Corporation in Camden, NJ, manufacturing stamped, heat treated laminations for the distribu-f electrical power and fractional horsepower motors. and fan manufacturers in the Philadelphia area were ain customers. The company expanded quickly into elds of laminations for telecommunications through cooperation with Bell Laboratories and Western ic. Through the use of high-purity nickel-ron lamina-he company grew into a major supplier for the Bell m. Mr. Langworthy then hired a group of internation-D engineers and scientist in the 50's to develop new products, processes and test instruments for magnetic components. This resulted in new innovative products like high-permeability long E laminations of low distortion, controlled sizes of powder particles in nickel-iron cores with super square hysteresis loops for pulse generators and particle accelerators in cooperation with the University of Pennsylvania's LRSM Institute.

In the golden years of the magnetic amplifier the company started to produce tape cores in a new facility in *Pennsauken, NJ, made square loop nickel-iron alloys* by sintering powders for these tape cores and expanded into the production of Mopermalloy powder cores for telecommunications and into electromagnetic shields.

Shielded chambers with fields as low as a few gammas were built as well as low-cost shields for color television and chemically etched, magnetically shielding shadow masks. These developments came to a halt when RCA was sold to GE, the Bell Telephone system was broken up, and most of the Western Electric plants closed.

Luckily at that time a new requirement for supersensitive nickel-iron cores came about with the introduction of ground fault circuit interrupters, GFCI and hair drier protection: products found today in every house in the USA. These devices sense currents as small as 4mA missing from 15A currents and interrupt the current flow, thereby preventing muscle contraction or heart fibrillation in people touching the electrical circuit. Finally the ac current so dreaded by Edison was made much safer.

Magnetic Metals was a pioneer in the development of these devices and today produces millions of such devices for customers all over the world.

In 1977 Mr. Rowan purchased the Magnetic Metals Corporation. Mr. Rowan, owner of Inducotherm, is a major benefactor to the Rowan College in South Jersey.

Magnetic Metals is a good example of a company that has adapted its product lines to the requirements of this changing world and its markets. Although electricity is still produced according to Faraday's law, established in 1829, the generation, safe distribution and measuring systems for electricity are changing significantly. Magnetic Metals will play a vital role in that development.

KULICKE AND SOFFA INDUSTRIES

The 1951 partnership of Frederick W. Kulicke, Jr., and Albert Soffa evolved over 52 years into a worldwide innovative single-source semiconductor packaging assembly equipment and engineering provider, now headquartered in Willow Grove, PA.

The partnership began in Philadelphia with the Kulicke and Soffa Manufacturing Company working in a family

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attic and garage. The company expanded in 1953 to the second floor of a building at 110 West Pennsylvania Street, in Germantown and, in 1958, to more space at 447 Orianna Street in Philadelphia. Operations were subsequently consolidated at 1234 Callowhill Street, and in 1962, to 135 Commerce Drive in Fort Washington. In 1972, the company moved into a new 60,000 square foot plant in Horsham, PA, and in 1984 opened its Willow Grove headquarters.

During the 1950s, the company's products included the machinery to make metal edges for boxes, a case unloader and a machine to standardize the size of ground meat patties. Its journey to the electronic microworld began in the mid-1950s with a Western Electric contract to design a machine to connect tiny wires to a transistor. This micropositioner lead to K&S's first wire bonder. In 1961, K&S developed and manufactured an expanded line of capital equipment for the semiconductor industry. During 1976, K&S's automatic wire bonders improved the company to a dominant role in the marketplace. By 1979, the total world sales within the whole semiconductor industry reached $10 billion.

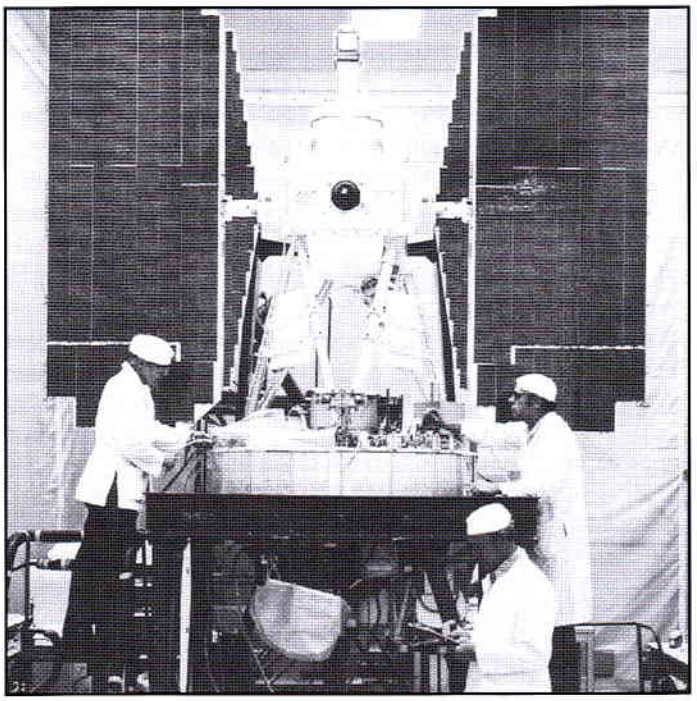
During 1981, the company introduced its 6300 die bonder, the 2406 semi-automatic wire bonder, and the 835 pattern recognition system for automatic wire bonders. In 1984, K&S increased its market by introducing the 797 wafer-dicing saw with a computer interface allowing it to be integrated into a factory automation system. In 1988, K&S began producing its 1484 automatic gold wire bonder. Its two largest customers, Motorola and National Semiconductors, had all of their 1484s in Asian facilities. In 1993, K&S introduced the new-generation 918 dicing system. Many new products were introduced in the late 1990s, including the acclaimed and best selling 8028 ball bonder.

IV. DEFENSE AND AEROSPACE

GENERAL ELECTRIC/ LOCKHEED MARTIN

Valley Forge – King of Prussia – Philadelphia

The year was 1960 when ground was broken for the complex of buildings that today is the headquarters of one of the nation's major aerospace companies, General Electric's Space Systems Division. Some of the most significant achievements in the space



Nimbus Weather Satellite

program have been developed, engineered, built and brought to fruition through the efforts of the men and women at the Valley Forge complex and its associated field operations.

The division received the National Space Club's Scoop Jackson Award for the most significant space achievements of 1960, the recovery of Discoverer XIII from orbit.

AEROSPACE — General Electric's close association with NASA's space exploration programs can be traced through the alphabet soup of NASA acronyms — OAO, BIOS, GEOS, GGTS, and more. In its work for NASA, earth atmosphere and resource monitoring have long been a specialty including the series of Nimbus weather satellites.

The 70s saw the advent of the highly successful Landsat series of satellites. This development introduced a new, experimental tool for collecting data with remote sensing instruments on a space platform and has been a system for examining and managing the earth's resources. Today many nations worldwide receive data directly from the satellite. Landsat images provide complete earth surface coverage and are recognized for their value in oil and mineral exploration, agriculture, land use planning, forestry, water management, map-making, and other endeavors.

GE has been involved in numerous successful manned spacecraft missions. During Apollo, GE was responsible for pre-launch checkout stations; launch-complex controls and checkout equipment; reliability assessment; and sys-

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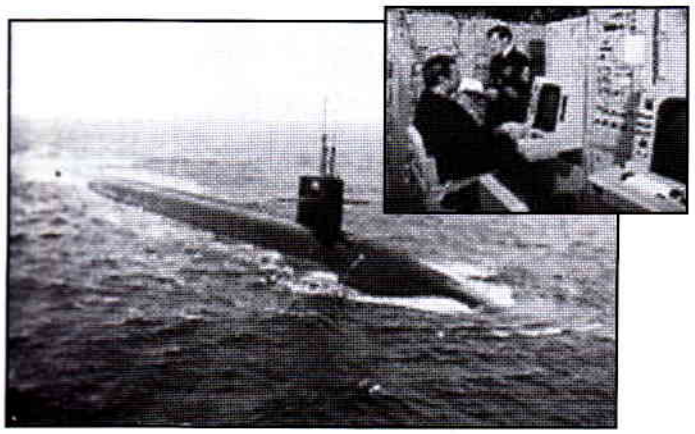
tems integration. It also handled the technical support of the static testing of the booster stage and engines for the Saturn rockets that carried the astronauts into space and to the moon. Today, Space Systems Division is similarly committed to the Space Shuttle program.

GE provided the deceleration module for the Galileo Probe. The module included entry thermal protection, parachute retardation, separation subsystems, lithium battery power supply, transit thermal control, and probe/orbiter adaptor.

GE was involved in a comprehensive NASA-directed research program to see how the chemistry of the upper atmosphere has been affected by the activities of mankind and if those activities are altering the protective shield of ozone.



1972 Trident IRR

DEFENSE — Supporting United States' efforts to maintain a deterrent defense structure, the division has over the years provided reentry systems for the Titan II and Minuteman II & III missiles. For the Army it has provided transportable DAS3 data automation systems for field combat service support and Combat Information use. GE also developed a maneuvering reentry system as an option for the Trident missile and the DSCS III — Defense Satellite Communications System capability. This system featured electronically steerable antennas on each spacecraft, achieving simultaneous connection of a wide range of users at different places. Four DSCS satellites in synchronous orbit provide global communications with long life and anti-jam capability. The first satellite launched in 1982. GE upgraded the DSCS III with solid-state amplifiers, EHF transmitters, and adaptive nulling processor capability. The Department of Defense's Worldwide Military Command and Control Systems, the U.S. Navy, the White House Communications Agency, NATO, and the United Kingdom use the system.

International Programs — GE designed and built for Japan the first communication satellite dedicated to TV direct broadcasting. Launched in 1978, it relayed two color TV channels throughout Japan. An improved version was launched in 1984.

Data Automation — GE developed the GES-CAN II high-speed search and retrieval system as a hardware solution to textual information search and retrieval applications. GESCAN is worked at the United States Government General Accounting Office.

RCA / GE / LOCKHEED MARTIN / L3

Camden NJ

RCA's heritage in communications systems dates back to 1919, the year the corporation was formed. Upon acquiring the Camden plant in 1929, RCA began manufacturing its own products and, with the formation of its first Government Department in 1931, began producing communications equipment for the Navy.

World War II caused RCA Camden to redirect its talents and efforts from commercial and consumer products to defense communications products. The division's technical advances in radio and television were applied to produce innovative yet practical tools to help the US and Allied forces win the War. The post-war era marked the beginning of the Space and Computer Age, and RCA Camden was at the forefront.

Throughout the 1950s and 1960s, RCA Camden increased its tempo in defense research, development, and production, supporting U.S. Forces in both the Korean conflict and the Vietnam War. The Cold War posed new challenges to the U.S. Defense Industry. The greatest challenge was winning the race to put the first human on the Moon. RCA Camden was an important contributor.

In the 1970s RCA Camden's diversified technical base was instrumental to the division's survival during a major economic downturn in U.S. Defense Industry.

By the 1980s the site was solely dedicated to aerospace and defense products. In 1986, GE acquired RCA, starting a cycle of change that became common practice throughout the defense industry in the 1990s. GE Aerospace sold to Martin Marietta Corporation in 1993. Martin Marietta merged with Lockheed Corporation forming Lockheed Martin Corporation in 1995. The Camden Division remained with Lockheed Martin until 1997, when nine communications products divisions of Lockheed Martin formed a new company, L-3 Communications Corporation.

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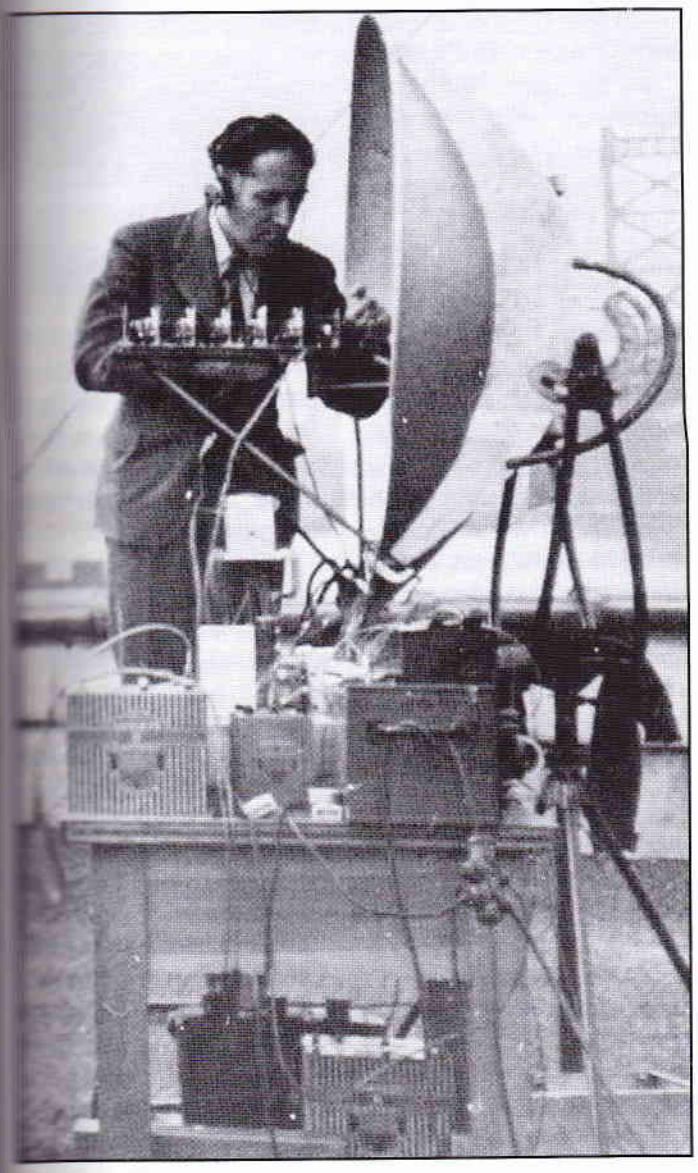
Major Camden Defense And Space Projects

1917–1918 — The U.S. enters WW I, Camden operations curtail commercial production. The company converts its manufacturing to produce rifle fittings; detonator cases; shell assemblies and rifle stocks; and fabric-covered wooden wings for the Navy Flying Boat airplanes.

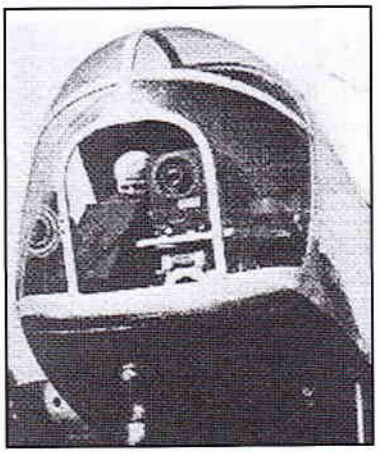
1937 — RCA Camden demonstrates a microwave scanning radar from the roof of a Camden Building that detects distance and location of ships passing in the nearby Delaware River. It is the first practical demonstration of a microwave scanning radar capable of identifying and locating moving ships.

1940 — First field tests conducted by Dr. Vladimir Zworykin on remotely controlled drones at Muroc Lake, CA. RCA produces miniaturized television cameras for the military. This leads to BLOCK/RING/MIMO programs and the first miniaturized airborne surveillance and TV guided missile systems for the U.S. in WW II.



The First Radar

1941–1945 — RCA produces massive quantities of miniaturized radio transceivers, employing radar principles and enclosed in a five-inch shell. The highly guarded project is known only as the *Madame X* program. It is the first *Variable-time* (VT), or proximity, fuse for bombs, and is successfully deployed by US Allied Forces to shoot down German V-1 bombs in Europe during WW II. Over 18,000 units per day are assembled. A total of 5.5 million units are produced by RCA during the War.



1941 TV Guided Missile System

1951 — RCA begins production of smaller, lightweight, backpack tactical radios. Known as *Walkie-Talkies*, these super-heterodyne radios are mass-produced for U.S. Forces fighting the Korean War.

1956 — A portable backpack TV camera system, built by RCA is unveiled by the U.S. Army Signal Corps for use by reconnaissance scouts to remotely transmit battlefield images to higher headquarters. It is the first man-portable TV surveillance system for the U.S. Army.

1956 Backpack TV

1961 — The first free flight of the Minuteman Intercontinental Ballistic Missile (ICBM) is successfully conducted at the U.S. Air Force Missile Test Center, Cape Canaveral, FL. RCA provides Command, Control & Communications (C3) systems for the program, and becomes a premier contractor with the U.S. Air Force and a major player in the U.S. Space Program.

1963 — RCA produces a magnetic tape recorder, capable of storing telemetry data continuously for four

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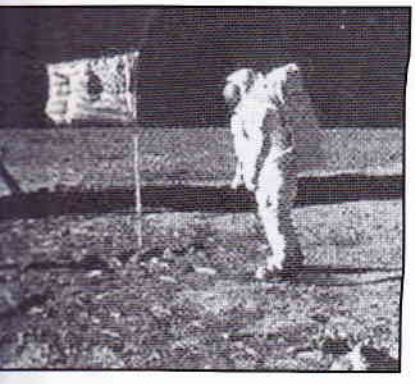
1961 ICBM

ours and replaying the entire tape in 11 minutes, for ASA's Gemini manned space program (deployed on all Gemini missions).

1965 — RCA begins production of military backpack dio, a fully transistorized, upgrade version introduced ur years earlier. The PRC-77 becomes the communica- ns workhorse for U.S. Ground Forces in Vietnam. It is e first all solid-state military backpack radio. 40,000 dios are produced throughout the 1960s.

1967 — RCA begins production of Ultra High Frequen- (UHF) transceiver for the U.S. Navy aircraft, which ong with the High Frequency (HF) model becomes one the most successful products in the history of RCA mden.

1969 — RCA as a major subcontractor to Grumman rporation produces the VHF voice communications bsystem for the Command Module (CM), the Lunar cursion Module (LEM), and the Extra Vehicular Com- unications System (EVCS) for NASA's Apollo manned ace program. The EVCS is successfully deployed in ollo 11 when, on July 20, 1969, the world hears astro- ut Neil Armstrong say *"That's one small step for man — e giant leap for mankind"* as he becomes the first man to step on the moon. RCA Camden's equipment support all Apollo missions, from *Apollo 7, 1968,* to Apollo 17, 1972.

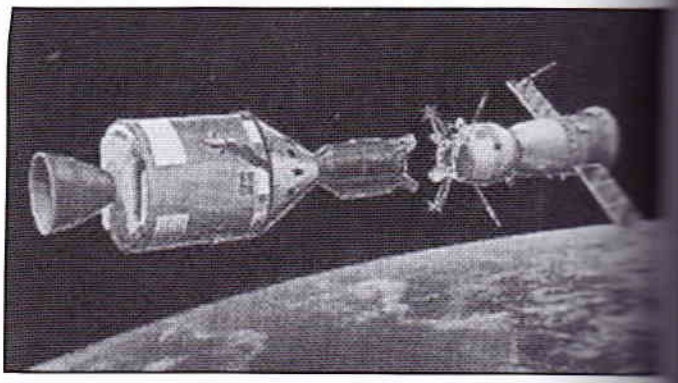


9 Moon Mission

1973–1974 — RCA supplies the VHF ranging system, VHF telemetry transmitter, video tape recorders, and Airlock Module (ALM) data recorders for NASA's phase Skylab Program, the first US space station ment. The video tape recorders are the world's first space qualified and proven.

1974 — RCA begins development of the STR- Standard Tape Recorder for NASA. Since 1978, the STR- 108 has been deployed on 26 satellites. RCA Camden receives the NASA Group Achievement Award in 1989 this unprecedented achievement. On December 1977, the STR-108 surpasses 4 million hours of failure- free performance in orbit.

1975 — RCA Camden supplies the VHF ranging sys- tem and video tape recorders used on the historic Apollo- Soyuz Test Project, the first international space station.



1975 Apollo-Soyuz

1978 — RCA is chosen by NASA to develop the Extra Vehicular Activity/Air Traffic Control (EVA/ATC) system. This is the first communications equipment for the U.S. Space Shuttle program. The EVA/ATC has been deployed on all Space Shuttle missions to the present day.

1979 — RCA receives a US Navy contract to design, develop and produce the Integrated Voice Communica- tions system (IVCS), the critical communications system for the new CG-47 *Ticonderoga* class AEGIS guided mis- sile cruiser.

1982 — RCA receives sole-source, follow-on US Satel- lite Communications Agency (SATCOM) contract for the Full Scale Production Phase of the Tactical Satellite Com- *munications Program.*

1985 — *RCA wins a National Security Agency contract* to develop the Future Secure Voice System. This is the first desktop-style telephone designed to protect against electronic eavesdropping.

1986 (Corporate Change) — GE completes its pur- chase of RCA. RCA Aerospace & Defense is combined *with GE Aerospace and renamed GE Aerospace Business* Group.

1987 — GE-RCA receives subcontract from McDonnell Douglas Astronautics Company to develop the communi- cations and tracking subsystem for NASA and the U.S.

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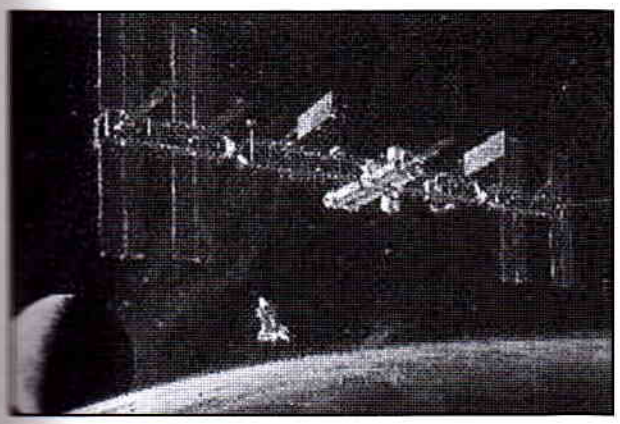
Space Station *Freedom* Program. The system is activated during a ten-day mission of the U.S. Space Shuttle *Endeavor*, launched on November 2000 to deliver and install a set of solar arrays on what has now become the International Space Station.



1987 Space Station

1993 (Corporate Change) — Martin Marietta Corporation completes its acquisition of GE Aerospace in April. GE Government Communications Systems Department Camden is renamed Martin Marietta Communications Systems.

1994 — Martin Marietta Camden fields the first Improved Remotely Monitored Battlefield Sensor System (REMBASS) a family of lighter-weight, miniaturized Unattended Ground Sensors for physical security applications, for the U.S. Army. The REMBASS program began in 1974 at RCA.

1995 (Corporate Change) — Lockheed Corporation and Martin Marietta Corporation merge on March 25th to form Lockheed Martin Corporation. The new Corporation becomes the nation's largest defense contractor. The Camden NJ division is renamed Lockheed Martin Communications Systems.

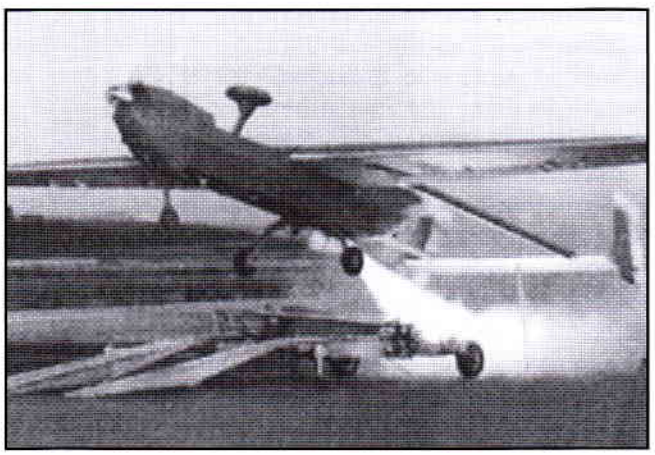
1995 — Lockheed Martin Camden wins a NSA contract to design and produce 300 units of Secure Telephone Equipment, the next generation of secure voice and data communications for the U.S. Government.

1996 — Lockheed Martin Camden wins a Navy contract to design, develop, and produce the Submarine Shipboard Circuit Switch, the first product in the MARCOM family of integrated switching systems, as an upgrade to the radio room on the SSN-688 *Los Angeles* class attack submarines.

1998 (Corporate Change) — The new company of former Lockheed Martin and Loral communications businesses is officially registered as L-3 Communications Corporation.

1998 — L-3 Communications Systems-East, Camden introduces the Strategic/Tactical Airborne Recorder (S/TAR), an innovative suite of solid-state storage products for airborne platforms. The S/TAR represents L-3 CS-E's continuation of a 40-year heritage in high performance recording systems for space-borne and airborne applications.

2000 — L-3 Communications Systems-East, Camden successfully demonstrates the Prophet Risk Mitigation Payload (PRMR), an advance flown onboard a Hunter Unmanned Aerial Vehicle (UAV), for the US Army at Ft. Huachuca, AZ. This is the first successful demonstration of an advanced SIGINT payload on a small, tactical UAV.



2000 PRMP — Prophet Risk Mitigation Payload

RCA/GE/LOCKHEED MARTIN—MOORESTOWN

Radar Systems for National Defense

Through the World War II, RCA built shipboard, airborne and land-based radars in Camden, NJ. When peace came, the company formed a group of engineers assigned to continue radar development work. In 1946 the Navy awarded RCA a contract to conduct a study for the Bumblebee Guided Missile Program.

Year after year, the Navy added work to the Bumblebee contract. Army and Air force contracts for other radar developments were awarded and RCA's "know how" increased to the point in 1950 when it was able to compete successfully for production programs. It was time to move the radar business out of Camden and into an engineering/production plant of its own.

RCA purchased a 430-acre site in Moorestown and began construction in the spring of 1952. In December 1953, RCA dedicated the new facility in Moorestown, NJ. The original engineering staff developed radars and military fire control systems considered more accurate than any seen before. The first major radar to be developed

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produced in Moorestown was AN/FPS-16 precision tracker, igned for the Navy and later put service by the Army and Air Force. ween 1953 and 1957 MSR built 50 nese radars, many of which are still ervice.

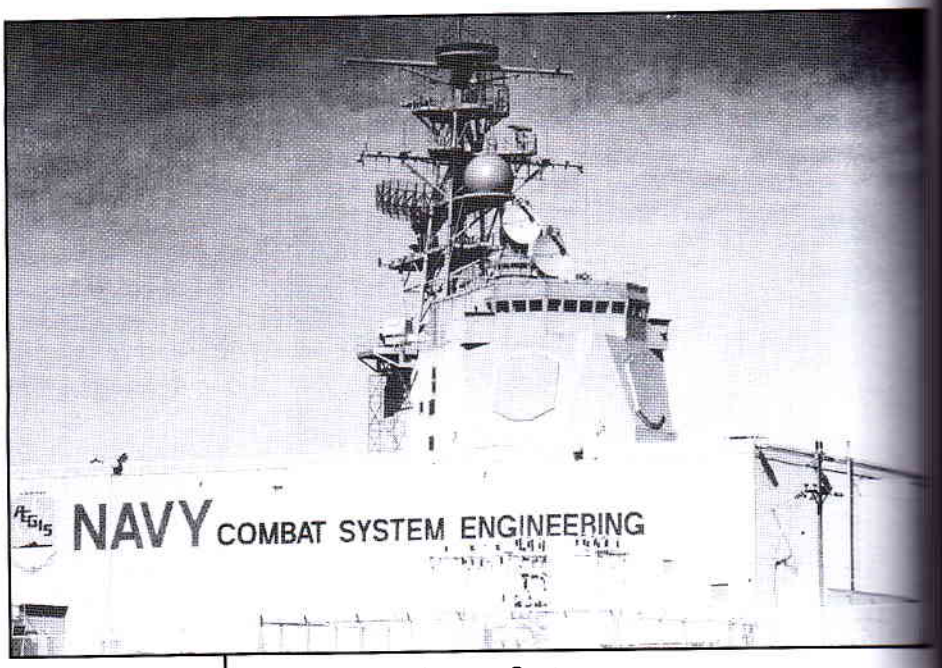
n the years that followed RCA won tracts for some of the nation's est defense projects, including:

he Ballistic Missile Early Warning ystem (BMEWS), one of the most dvanced electronic detection sys-ms of its time. The BMEWS radars Alaska, Greenland and England rovide a reliable warning system gainst missile attacks. BMEWS was ne of the largest single electronic omplexes ever assembled. It was he first time Moorestown was given omplete system responsibility for a rogram, including concept design, production and test, ite installation, integration and test, logistic support, nd site maintenance and operation. Hundreds of sub-ontractors located in dozens of states supported the ompany in this huge effort.

ALOS Defense Unit (TDU) program was established y the US Navy in 1954. Moorestown was selected to evelop the TDU. Born out of the need to defend against amikaze-like aircraft attacks, this land-based, surface air missile system was the first fully automated eapon system that could fire and control guided mis-les. The first TDU was delivered to the Army in 1957 r testing at White Sands Missile Range in New Mexi-. The Navy continued to rely on Talos for anti-air war-re until the Aegis Program was established. The Navy nded the Aegis study because Talos was designed for rcraft threats but not to counter the supersonic anti-hip missiles developed by the Soviet Union.

EGIS became the biggest project in Moorestown's his-ry. Now in its seventh generation, the Aegis Weapon ystem is the Navy's most advanced, capable weapon ystem and is the backbone of the nation's sea based issile defense effort. Several International Navies ave also chosen the Aegis Weapon System for their ombat system requirements. Japan, and Spain have hosen Aegis and Australia, Chile, Germany, Canada, aly, United Kingdom, United Arab Emirates, and Turkey ave expressed interest in the technology.

he AN/FPQ-6 computerized radar and its trans-ortable version, the AN/TPQ-18 descendants of the N/FPS-16 are considered some of the most precise acking radars in the world. These radars and other loorestown systems tracked the Apollo orbital flights om ships and shore installations.



The Aegis Weapon System

- **Erectable antennas** used by lunar astronauts on the moon's surface to transmit signals back to earth. Similar antennas were carried on the Lunar Rover vehicles.
- **Communication antennas** built at Moorestown and used in NASA's Viking Lander spacecraft sent to Mars in 1976.
- **The Target Resolution and Discrimination** (TRADEX) radar installed on the Kwajalein atoll in the Pacific Ocean. It has an 84-foot antenna that can accurately track multiple targets.
- **The Downrange Anti-Missile Measurement Program** (DAMP). This shipboard system gathers data on missile performance during flight and reentry to aid in development of systems for defense against ballistic missiles.
- **Hand-held radars** designated AN/PPS-9 through -13 developed for the Army, Air Force and Marine Corps. These radars were designed for battlefield surveillance and identification of moving targets in all weather conditions.
- **The AN/MPS-36** integrated circuit radar, a mobile system designed for precise measurement of missiles and reentry vehicles. This system can track targets as far away as 32,000 nautical miles and measure range with an accuracy of one yard.
- **Digital Instrumentation Radars** (DIR), developed for the Air Force and later adapted for use by the Army and Navy. DIR's handle a variety of tracking jobs, from range safety to scoring and evaluation.
- **The Generic Phased Array Radar**, a project for the Army. This system simulated various classes of radars, enabling researchers to duplicate the signals of the latest equipment developed by potential adversary nations.

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AEL INDUSTRIES INC.

American Electronic Laboratories was founded in 1950 at 641 Arch Street in Philadelphia. The founders Leon Riebman, Conrad Fowler and Robert Goodman were members of the research staff of the Moore School. The company was operated under the name of AEL Industries until 1966. At that time it was acquired by Tracor Inc. and became a division of Marconi, and then British Aerospace (BAE Systems). It continues to operate today in its plant in Montgomeryville, PA.

1950–1953 Medical products formed the basis for the company's original business, however, the award of military contracts from the Signal Corps at Fort Monmouth during 1953 and 1954 provided the basis for the key technical developments that were to ignite AEL's entry into the Electronic Defense business. At its peak it employed over 1500 people. In 1967 AEL started a firm in Israel (ELISRA). ELISRA was sold to TADIRAN, a large Israeli firm during the 1990s. AEL's major products were related to countermeasures equipment and major systems covering the frequency range from HF to the millimeter bands including: antennas; microwave components; solid-state components etc.

1954–1980 The core technology, which formed the basis of AEL's entry into Electronic Defense systems, involved direct detection crystal video receiving systems. Developed on the basis of Lee Riebman's theory enhancing the sensitivity of the diode detector while proving that the famous Radiation Lab series (Valley and Wallman) was in basic error in specifying a maximum theoretical limit of detection for a diode. This stimulated new ideas and techniques for broadband components in the field of spiral antennas, wide dynamic range transistorized logarithmic video amplifiers, etc. These were all critical elements in creating new classes of intercept systems with improved performance and broad frequency coverage.

Over the years AEL became the acknowledged leader in advancing both the technology and utilization of crystal video receiver applications in a wider variety of systems in the field of broadband surveillance and detection. As a derivative of its work on the AN/TLR-8 surveillance system for the Army, AEL significantly improved the previous limitation on sensitivity for this class of receivers, which allowed for a much broader range of use and application with greater range of detection.

This technology then formed the basis for AEL's entry into the field of radar warning receivers. The advent of the Russian SAM systems created a worldwide market for this technology since every military aircraft had such an installation. It was the concept and need for broadband systems that then led AEL into the active countermeasures area, involving broadband distributed amplifier technology for jamming applications. AEL was awarded a contract for development of various frequency bands of the AN/ALQ-99 system for use on the EA-6B aircraft, which is still in current use today.

Applications for naval intercept systems also developed and AEL was awarded a contract for the AN/SLQ-21 countermeasures system. It was designed to automatically recognize enemy missile signals and energize high power jammers for the protection of naval vessels. Of particular interest was the development of an intercept system for the battleship New Jersey while it was being retrofitted for use in the Vietnam conflict. The rooms that house the equipment off the main mast are still visible on the New Jersey in Camden today.

Concurrent with this component, equipment and system business AEL expanded into other related military areas including opening various airport locations, such as Monmouth County airport. This facility outside of Fort Monmouth provided specialized services for high performance fixed wing and rotary wing aircraft, including electronic systems installation, airframe and ground vehicle modifications, electromagnetic testing, etc.

In addition to its R&D programs this period saw AEL expand its production capability to handle large scale production not only of its own products, but to compete successfully for contracts on other military systems. Principle among these programs was the AN/VPS-2 radar, which was produced and sold throughout the free world.

1980-Present — A key phrase in the company was "integrated diversification", which implied an expansion of products based in utilizing new technology in multiple areas. Typical of this approach was the entrance into cable television equipment manufacturing utilizing broadband distributed amplifier technology from military systems. This in turn led to an entrance into cable system ownership throughout the country under the corporate entity UltraCom. Eventually the financial and marketing aspect of the business resulted in the sale of the system portfolio and departure from the CATV business. This provided for focusing the R&D budget on the core business of electronic defense.

BOEING INTEGRATED DEFENSE SYSTEMS

Piasecki — Vertol — Boeing

The history of Boeing Co's large helicopter plant in Ridley Park, Delaware County began in Philadelphia over 60 years ago when Frank Piasecki and Harold Venzi, engineering students at the University of Pennsylvania, established the P-V Engineer-

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ing Forum in 1940 and began designing rotary winged aircraft. In 1943 after incorporating the company's first aircraft, the single-seat PV-2, with Piasecki at the controls, completed its first flight at their Roxborough plant. Progress continued as follows:

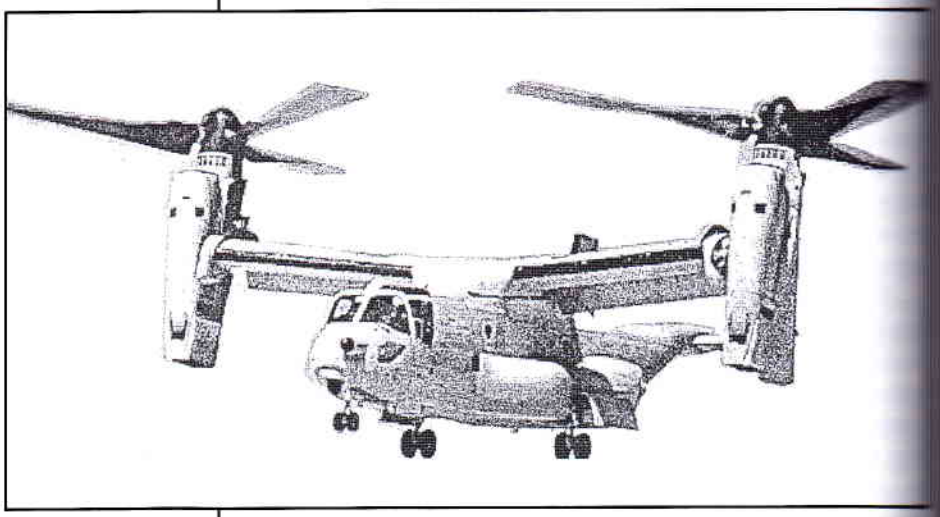
1940s — The Navy awarded a contract for development of a tandem rotor design. The result was a 10-place helicopter, the first large transport rotorcraft helicopter to feature counter-rotating tandem-rotor configuration, a design that improved aircraft balance and eliminated torque control problems. HRP helicopters demonstrated superior lift capability by lifting a one-ton jeep and later carrying 10 passengers, marking the start of modern helicopter transport. The Navy awarded another contract in 1946 to develop a utility rescue helicopter. The Army called on Piasecki for the design of a new long-range rescue rotorcraft. The company changed its name to Piasecki Helicopter Corporation in 1947 and opened a new manufacturing plant in Morton, PA.

1950s — During the Korean War, helicopter design, testing and production proceeded rapidly. The company was renamed Vertol Aircraft Corporation. Commercial production developed rapidly. In a busy 1958, a Vertol helicopter went into service with the New York Airline. At the same time the tilt-wing Vertol model, the world's first, successfully completed experimental test flights. The tandem-rotor transport helicopter, and a Chinook prototype were test flown, respectively. These proved to be two of the company's most successful designs.

1960s — The company was acquired by Boeing and renamed Boeing Vertol Division, closing down the Morton plant. During 1961 the Vertol helicopters began service with the Canadian and Swedish militaries and the Chinook completed its first flight. New York Airways began flight operations in 1962 and the U.S. Navy selected an assault transport helicopter and the Sea Knight was selected for the US Marine Corps. 1965 was the year when the armed/armored Chinook rolled off the assembly line just in time for the Vietnam War. At peak wartime production, Boeing engaged 14,000 people working three shifts to roll a Chinook and Sea Knight off the assembly line each day. The Chinook and Sea Knight perform with distinction at every subsequent US military engagement.

1970s — The first flight of Model 347, a modified Chinook developed for experimental test flight with tilting wing to improve maneuverability. Chinook International sales to Australia, Canada, Vietnam and Spain were completed. After Vietnam War Chinook production peaked, the company received its first contract for mass transit railcars from the Urban Mass Transportation Administration. In 1973 they began producing railcars for the Massachusetts Bay Transportation Authority, the San Francisco Municipal Railway Improvement Corporation and the Chicago Transit Authority. The company successfully tested a bearingless main rotor for helicopters and started construction of a new Flight Test Center in Wilmington, Delaware in 1978. British Airways placed the first order for a Boeing Model 234 Commercial Chinook.

1980s — Started with the first flight of the Boeing 234 Commercial Chinook. The U.S. Army awarded a developmental contract for the Advanced Digital Optical Control system (ADOCS). The Army also established the first production contract to modernize the Chinook fleet to the CH-47D configuration in 1981 and the company Training Center was opened. In 1983, the company announced a teaming agreement with Bell Helicopter Textron for JVX development and in 1985 a teaming agreement with Sikorsky Aircraft to develop a new light helicopter for the U.S. Army, the LHX. The Navy awarded the Bell Boeing partnership a full-scale development contract for the V-22 Osprey tilt rotor aircraft in 1986. The same year Boeing completed the first flight of the International Chinook. Japan began Chinook assembly and licensed production for its self-defense forces that year. CH-47Ds now operate in the United Kingdom, Spain, Greece, the Netherlands, Singapore, Japan, Australia and other Far Eastern nations. All together, about 20 nations operate Chinooks on six continents. The Boeing 360 tandem rotor helicopter, the world's largest all-composite aircraft to evaluate composite production techniques and integrated flight control system completed its first flight in 1987. During 1988 the first V-22 rolled out, flew in 1989, and accomplished its first full conversion from helicopter to airplane mode later that year. After several company-wide reorganizations and name changes, Boeing Vertol became Boeing Defense & Space Group, Helicopter Division.



V-22 Osprey Tilt Rotor Aircraft

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1990s — Began with modernization contracts for International Chinooks. In 1991 Bell Boeing received the 1990 Collier Trophy, a leading aerospace award for developing the V-22 Osprey. In 1995 the Boeing Sikorsky RAH-66 Comanche and the first production-representative V-22 fuselage rolled off the Boeing assembly line in Philadelphia and was shipped to Bell where its wing assembly was installed. Also, the Bell Boeing V-22 Joint Venture Agreement was signed. 1996 welcomed the first flight of the RAH-66 Comanche and the Civil Tiltrotor Memorandum of Agreement. In December, Boeing and McDonnell Douglas announced a merger, bringing formerly competing manufacturing facilities in Philadelphia and Mesa together in a process that continued through the decade's end. In 1998 Boeing announced a reorganization designed to focus on its military rotorcraft products, which would phase out Commercial Airplane Group support programs. In 2000 there were more organization transitions designed to bring the Philadelphia and Mesa facilities into closer alignment. During 2001 V-22 tests and low-rate production were suspended following two fatal mishaps until 2002 when the program resumed successful flight tests following extensive reviews. In 2002 the Boeing Integrated Defense Systems Division was created. The Ridley Park plant's present employment is approximately 4500.

PHILADELPHIA NAVAL SHIPYARD

194 years from 1801 to 1995

For 194 years the Federal Government maintained a US Navy Shipyard in Philadelphia with the purpose of building, repairing, outfitting and supplying Navy ships. 25 years after the Declaration of Independence, in 1801, Congress authorized the original Federal Street Navy Shipyard on a 10-acre site. During the Civil War, the site proved to be too cramped and 800 marsh acres, including the League Island, were obtained. Over the years many facilities including dry-docks, schools on damage control and ship operations, an ammunition depot, a systems engineering center, a propeller foundry, a testing center, facilities for docking inactive ships, a naval air station, etc. were added. The yard ultimately expanded to more than 1,400 acres, 1326 buildings and the Mustin Field Naval Air Station. Maximum employment was 47,000 during World War II.

The Navy base also became headquarters for the Fourth Naval District. During its 194 years the shipyard built over 200 ships and the air station assembled nearly 2500 airplanes from the 3 mast frigates built during the war of 1812 (USS Franklin 1st in 1815), to the famous World War II battleships USS New Jersey and USS Wisconsin — both 45,000 tons with 16" guns — and finally to the USS Blue Ridge in 1970, the Navy Shipyard built the best and finest. After 1970, the major effort of the shipyard was the Service Life Extension Program (SLEP) in which 146 vessels were modernized. Five aircraft carriers were in this effort to add at least 15 years to their service lives. The modernization of the USS John F. Kennedy marked the end of a Philadelphia industrial giant. On September 5, 1995, with the exception of three commands, the Navy base was closed. These commands are Naval Surface Warfare Center Ship System Engineering Station (NAVSSES), Naval Inactive Ship Storage and the Naval Foundry and Propeller Center.

NAVAL SURFACE WARFARE CENTER SHIP SYSTEM ENGINEERING STATION

Naval Surface Warfare Center Ship System Engineering Station (NAVSSES)/Carderrock Division of Naval Surface Warfare Center Situated within the old Philadelphia Navy base, NAVSSES includes the David Taylor model test Basin along with several other facilities to form the Carderock Division of the Naval Surface Warfare Center. It is responsible for propulsion, auxiliary, habitability and any other systems that make a ship operate and survive. NAVSSES employees number about 1600 including many engineers and specialists. Successful programs completed include:

- LHA mid-life upgrades,
- Submarine maintenance effectiveness reviews,
- Aegis program support,
- ISO 9001 certification
- Integrated condition assessment system delivery to the fleet,
- "Smart Ship" at sea testing

A major program is the Integrated Power Systems (IPS) study that promises to provide a revolutionary change in how US warships use power for propulsion, electric distribution and weapons needs. As a result, the 21st century Land Attack Destroyer (DD21) has been contracted for delivery by 2010. It will be the first US Navy Class of ships [DD(X)] to use the IPS for all ship power needs. Its use will eliminate the need for long drive shafts and reduction gears found in traditional naval ships, thus reducing cost, noise and maintenance demands. The Navy looks for benefits in 2 major areas, war fighting capability and quality of life with large amounts of space

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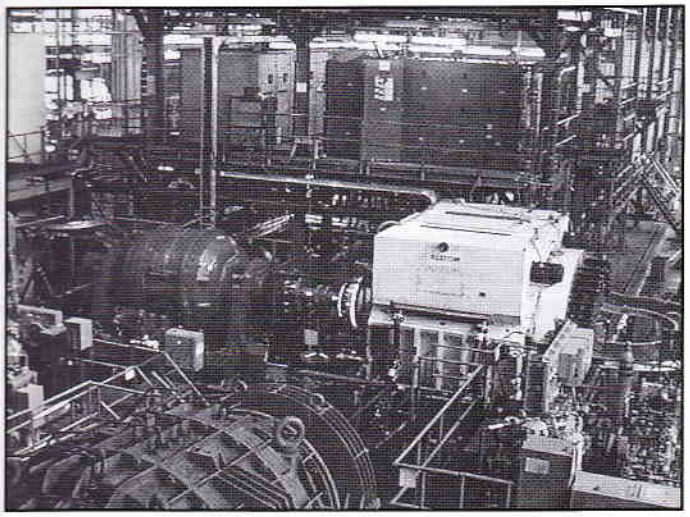

Test installation at the Naval Ship System Engineering Station (NAVSSES).

for crew habitability improvements. In addition, the DD(X) class ship will have a radical wave-piercing hull, stealth superstructure and two massive guns. The crew size will be substantially reduced.

Lockheed Martin continues to be a principal contributor to the development of the DD(X).

THE FRANKFORD ARSENAL

161 years of US Army Service

In May 1816, the Frankford Arsenal was founded as the 2nd of the "old line" arsenals. It was located 1/4 mile from the Delaware River, out of accurate canon range from warships on that river. When the Arsenal was retired in 1977, there were about 234 buildings within its 112 acres. In its beginning, the Arsenal was a principal depot for small arms and ammunition. Through the Mexican War (1846–48), the Civil War (1861–1865), Korean (1950–58) and Vietnam (1964–73), the technology and mission changed. After WWII, the Arsenal placed emphasis on engineering, testing and evaluation. There were 1200 engineers, scientists and technicians. As technology changed the Arsenal evolved into a principal research development and industrial engineering center.

The personnel complement of Frankford Arsenal at the height of World War II was 22,000 people. This dropped at the end of the war to approximately 7,000 and was further reduced in subsequent years. After 161 years of production and development, in 1977 the Arsenal was closed and its remaining functions moved to more remote locations. Over the years the Arsenal's involvement in electro technology was most pronounced before, during and following WWII. Optics technology and its use in fire control for anti aircraft, antitank and other purposes were extensive. The Arsenal could manufacture optical equipment without outside purchase while relying on industry for major production support. Its development engineering staff members accumulated "know-how" in the fields of servo-mechanism design and development from fractional to high horsepower levels; microwave circuitry for special and conventional needs, semiconductor application to high speed digital computers, analog computer and computer component design and development; digital computer logic applied to the solution of target acquisition and missile tracking problems; basic research, design and manufacture of precision optical equipment.

Vacuum tube (VT) Fuse activities, a Frankford Arsenal mission for many years, during and after WWII, were eventually transferred elsewhere. Experimental fuses, both electromechanically and electronic, for missiles, rockets, and artillery were developed, debugged, and readied for industrial mass production. Most spectacular of these was the VT proximity fuse, considered one of the more significant contributions to fire power of World War II. Since its founding, Frankford Arsenal had been a vital national resource.

NAVAL AIR DEVELOPMENT CENTER (NADC) 1944 TO 1996

Warminster Pennsylvania

NADC, had a 52 year history rich with advanced air research and development. It began in July 1944 at the Brewster aircraft factory in rural Bucks County, PA. The Brewster facility contained production shops and administration space with an adjacent airfield and hanger. Its original assigned task involved modification of new aircraft for combat use in the fleet. During 1947 the station was redesignated for centralized air research and development.

John H. Glenn, Jr. during astronaut training in Johnsville

Examples of systems developed in the post WWII to

Continued from Page 54 —

early 60s were: in radar early warning and control systems and high range resolution systems, anti-submarine warfare systems including acoustic sensors for sono buoys and systems for automatic carrier landing.

The station subsequently grew to become one of the leading Naval Air research laboratories. It was home for one of the earliest and largest dynamic flight simulators, a human centrifuge. This was used extensively for astronaut training for the Mercury and Gemini space programs, for the high accelerations experienced during reentry. All 12 lunar astronauts trained at NADC, namely Neil Armstrong, Buzz Aldrin, Pete Conrad, Alan Bean, Alan Shepard, Edgar Mitchell, David Scott, James Irwin, John Young, Charles Duke, Eugene Cernan, and Jack Schmitt.

On October 31, 1996 the Warminster Naval Air Warfare Center was closed as part of the post Cold War shrinkage.

Some of NADC's most notable projects are:

Airborne Early Warning and Control Systems (AEW/C) — Based on the pioneering work of the MIT Radiation Labora-tory, NADC conceived, developed and demonstrated successive Airborne Early Warning and Control systems in the laboratory, in airborne prototype form, and provided technical assistance to the production contractors. Of special note was the development of the APS-20B search radar, the APS-45 height finding radar, and APA-56 radar indicator. These became the elements of the WV-2 Constellation (AEW/C) in the late forties and early fifties. The concept for digital surveillance and control system with automatic detection and height finding and intercept control via data link was developed by NADC and the bureau of Aeronautics and featured the General Electric Company developed APS-96 radar and a large rotating radome atop the aircraft.

Avionics — In the P-3A Avionics system, the crew was rapidly becoming overloaded and ineffective because of the overwhelming volume of information needed to perform anti-submarine Warfare (ASW) tactics. Early center research, development, and systems integration including extensive analytical studies and simulation identified areas of greatest potential pay-off in coping with this problem. Subsequently the Center provided major updates to the P3C avionics, mission software, and system test software in a systematic stepwise enhancement of the capabilities of the P-3C. The basic concept featured a central digital computer to integrate and provide tactical support.

High Range Resolution Radar — Basic investigations into high resolution radars for the purpose of detecting small targets (snorkels) in a sea clutter environment was initiated in 1959. This effort led to a preliminary design specification for the radar in 1966. This was followed by the development of AN/APS-116.

Avionics

Igloo White — The Igloo White Program was assigned to NADC in 1965. The Igloo White System was composed of a sensor detection and encoding system plus an airborne and ground based processing/display system. NADC defined, developed, tested and prototyped the various elements. The Army, Navy, Marines and Air Force deployed this system in south East Asia.

Sonobuoys — Beginning in 1952, NADC conducted research and development in the use of acoustics for the detection, classification and localization of underwater vehicles. It provided leadership and expertise in the design and development of acoustic sensors for airborne ASW operations. The first significant airborne detection capability was the introduction of the Jezebel and Julie buoys in the late 1950s and the early 60s. Included with these was the airborne processors and other navigational aids and tactical displays.

Airborne Terminal — During the early 60s the Navy was in the process of developing an Automatic Carrier Landing System. This system accepts precision radar tracking data, converts and calculates ideal glide slope information and transmits the data to the aircraft for glide slope correction display and command data to the aircraft autopilot. Essential to the system was the requirement for a reliable airborne terminal of minimal size and weight. NADC proposed a program for in-house design development, fabrication and testing of micro-miniature airborne terminal equipment. Seven months after the date of assignment the breadboard version was flight-tested. This terminal provided the first scale use of digital microelectronic circuit technology for military aircraft avionic systems. More importantly the equipment fulfilled a Navy operational need.

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V. REGION ENGINEERING UNIVERSITIES

NIVERSITY OF PENNSYLVANIA

he Moore School of Electrical Engineering

Electrical engineering was started at the University of Pennsylvania in 1886 as part of a mechanical program and established as a separate department in 1914.

In 1923 it became the Moore School of Electrical Engineering by the bequest by Alfred Fitler Moore, a manufacturer of insulated wire, to create a school for the "proper education and instruction of young people in the science of electrical and engineering and its cognate branches."

In 1935 the world's largest mechanical computing machine was completed at The Moore School, modeled after the differential analyzer invented in the 1920s by Dr. Vannevar Bush, who initiated the founding of the National Science Foundation.

In 1946 the ENIAC, the world's first all electronic large-scale, general-purpose digital computer, was dedicated.

The Moore School shared in the birth of three engineering disciplines which emerged after World War II, computer and information science, bioengineering and systems. It offered the first graduate engineering systems program in 1953 and produced the first Ph.D. Program in Biomedical Electronic Engineering in the country.

In 1973 the College of Engineering and Applied Science was formed from the various engineering entities, including the Moore School.

Dr. Joseph Bordogna who became the Director of The Moore School in 1976 and the Dean of Engineering in 1981, built the undergraduate student body from a small number of some 400 students to well over 1,300. At this time, he is the Deputy Director of the National Science Foundation.

Electrical and Systems Engineering (ESE) Department

The Electrical and Systems Engineering (ESE) Department of the University of Pennsylvania is a new academic subgroup within the University's School of Engineering and Applied Science (SEAS), created in 2002 from the merger of the formerly separate Electrical Engineering and Systems Engineering departments.

Electrical engineering traditionally has concentrated on the acquisition, processing, communication, storing and displaying of information. Systems engineering dealt with the function and use of information in complex systems, and concerned itself with information specification, processing and analysis, decision-making, and deployment. However, these disciplines are quickly converging.

The field of networking and telecommunications illustrates this new reality: it covers a wide spectrum of areas ranging from network processing, physical layers, communications, optimization, and statistical processes to control and management, network economics, and pricing, none of which can be straightforwardly classified as 'electrical' or 'system' issues. Hybrid systems, sensor and wireless networks are areas that have wide application to transportation systems, so-called "smart" buildings and highways, and environmental monitoring. These are examples where electrical and systems engineering are converging.

Electrical and Systems Engineering aims to balance strong core of key disciplines and a robust set of application areas emerging from these disciplines. The expectation is that most of the innovative and exciting research developments will occur at the intersection of traditional fields.

The Department's three main research areas are: Electrosciences (electromagnetics and photonics, sensors, MEMS, VLSI, and nanotechnology); Systems Science (signal processing, optimization, simulation, control and cybernetics, complex adaptive systems, stochastic processes, and decision sciences); and Network Systems and Telecommunications (networks, communications, logistics and manufacturing, transportation, and infrastructure engineering).

DREXEL UNIVERSITY

Drexel University was founded as Drexel Institute of Technology and dedicated on December 17, 1891. The institution started "instruction in electricity" in 1893, with strong emphasis on practical training. The first formal program was a two-year course taught by Professor of Applied Electricity Arthur J. Rowland, a graduate of Johns Hopkins University. In 1898 a formal three-year standard program at college level was introduced. Until 1918 all these programs and courses, including laboratories were created and administered by one person, Arthur J. Rowland.

The association of Drexel with the American Institute of Electrical Engineering (AIEE) started in 1915, when Rowland encouraged upper classmen to join the Institute. In 1921 Drexel established a student branch of AIEE. Today its student chapter of the IEEE is one of the largest and fastest growing in the Delaware Valley.

Drexel played an important role in accreditation of technical schools and was accredited by the Association of Colleges and Secondary Schools of the Middle States

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and Maryland in 1927. In 1925 the cooperative education program was extended to five years in the face of criticism that there was not enough time for academic training in the 4-year version.

In 1939 Drexel started a program of National Defense, and was one of the 12 Pennsylvania Institutes who participated in the Federal program of engineering defense training well until the late 1940s. Throughout the years the university has maintained a leading role in research and as recent as 2001 one of its own, Paul Baran, was granted the $200,000 Bower Award for Achievement and Science for his creation of the concept known as "packet switching" an idea that has made the Internet possible.

VILLANOVA UNIVERSITY

The Augustinian Order of Priests and Brothers founded Villanova University in 1842. It resides on the Main Line 12 miles outside of Philadelphia. Its 6,300 full time undergraduate students are from 50 counties and all 50 states. Its selection as #1 in the US News' Best University Masters category for the North Region in 2003 and 12 other years demonstrate Villanova's quality.

During 1905, the College of Engineering's history began when Villanova's school of Technology initiated instruction with 12 students enrolled. Engineering was Villanova's 2nd degree granting program and it was the 4th Catholic engineering program in the U.S. after Catholic University (1896), Manhattan College (1896) and Notre Dame (1897). In the years following the Second World War, the College expanded its degree offerings to the master level, establishing graduate programs in each of its four engineering departments. A fifth undergraduate degree program in Computer Engineering was added in 1993. Beginning in 2003, the College of Engineering initiated a new interdisciplinary graduate program leading to a Doctorate of Engineering degree.

The Electrical and Computer Engineering Department has a tradition of offering innovative and up-to-date curricula and employs 19-full time faculty who are very actively involved with industrial and government sponsored research projects.

TEMPLE UNIVERSITY

Electrical Engineering at Temple University was established and accredited by ABET in the mid 1980's when the Electrical Engineering Department was chaired by Victor K. Schutz. Masters and PhD programs soon followed. Bachelor programs in Electrical Engineering Technology were in place in the early 1970's and phased out in 2003. The founding Dean, John L. Rumph, established the college of Engineering Technology in 1969. The college went through different name changes, reflecting the expansion of the academic programs, including the College of Engineering, Technology and Architecture to the present College of Engineering. It is one of 15 colleges and schools at Temple University.

ROWAN UNIVERSITY

The electrical engineering club at Rowan University was started in the winter of 1996. It grew in size over the next two years, and in the fall of 1998 became an official IEEE Student Branch. The student branch currently has over 50% of the electrical engineering students at Rowan as members, and this number is growing fast.

The College of Engineering graduated its first class in May 2000. One of the newest Colleges of Engineering in the U.S., this program was made possible by a transformational legacy from Henry and Betty Rowan, a $100 million pledge in 1992.

All of the programs including the electrical and computer engineering are ABET accredited.

SWARTHMORE UNIVERSITY

Swarthmore approach to engineering differs from that of other schools. Students are not required to commit to an engineering discipline before arrival and don't decide on their major until spring of their sophomore year. Engineering builds upon prerequisite courses of basic Math and Science. The educational process allows room for plenty of non-Engineering courses in the social sciences, humanities, and elsewhere (e.g., study abroad). Swarthmore College is a liberal arts college, and all our students, including the engineering majors, get a liberal arts education.

This approach results in degree students with a Bachelor of Science in Engineering, not one in ME, or EE, or CivE, or CompE, etc. Instead of trying to produce finished engineers the Swarthmore program produces students who are excellent candidates for graduate programs, or enlightened companies, to mold into specialists. As a result over 80% of the school's graduates go to graduate school eventually. This opens up a whole new set of career opportunities (both inside and outside of engineering) that

— Continued on Page 58

— Continued from Page

require creativity and intellectual agility throughout your whole life.

Swarthmore has many international students and students of virtually every background and ethnicity, and our engineering program reflects that diversity. It is extremely important to have many cultural differences among engineers, so that the solutions they produce are culturally appropriate for the end users. This is especially important in a global economy.

WIDENER UNIVERSITY

Widener University Department of Electrical Engineering is dedicated toward developing, through knowledge and experience, the ability of students to be immediately and continually productive in their professional endeavors. To accomplish this the curriculum focuses in establishing graduates with strong foundation in the basic sciences, engineering science and mathematics to enable them to identify and solve engineering problems. Emphasis for electrical engineering students is on design experience that is integrated across the undergraduate curriculum, which serves to underscore the relationships between theory and practice.

Also as important is to provide students with the basic skills to communicate effectively and to develop the ability to function as members of multi-disciplinary teams. This requires a broad-based education to understand the context in which engineering is practiced, develop a better sense of ethical and societal issues, which impact engineering, and appreciate the global nature of the engineering profession.

VI. IEEE-PHILADELPHIA SECTION PHOTO ESSAY

A chronological of the available photographs and special events photo essay of many familiar events and faces of the Philadelphia Section is presented following the Acknowledgements section. It is a scaled-down version of the twenty photo montage posters exhibited at the 100th Anniversary Awards Night of the IEEE-Philadelphia Section held on April 3, 2003, at the Union League.

VII. ACKNOWLEDGEMENTS

IEEE PHILADELPHIA SECTION

The 2003 Centennial Committee — Acknowledgment

The Delaware Valley has a rich history of electrical electronic and computer innovation, projects, services and products. The centennial committee was formed to record at least some of these accomplishments for our 100 year anniversary. The committee members were:

- Mr. Merrill Buckley Jr. (Chair) — RCA/GE (Retired), Past IEEE President
- Mr. Donald C. Dunn — PECO (Retired), Past Section Chair
- Mr. Thomas L. Fagan — Gestalt, LLC, Past Section Chair
- Mr. Fulvio E. Oliveto — Lockheed Martin, 2004 Section Vice Chair
- Mr. Kent Ringo — RCA/GE (Retired), Member Section Executive Committee
- Dr. Victor Schutz — Temple University, Past Section Chair
- Mr. Donald Schnorr — RCA/GE (Retired), Past Section Chapter Chair

The following are principal contributors to the committee's efforts:

1. I — Electric Power Industry (& Rail)

- Mr. Robert Cortlaus — Westinghouse (Retired)
- Mr. William Clune — PECO (Retired)
- Mr. Raymond Dotter — PJM
- Mr. Donald C. Dunn — PECO (Retired)
- Mr. Stanley Heyer — PECO
- Mr. William Kirn — PECO
- Mr. Peter Kudless — PSEGCO (Retired)
- Mr. Thomas Tonden — Stone and Webster

Continued from Page 58 —

II — Consumer, Commercial & Industrial Products and Communications

- Mr. Michael Adams — MZTV Museum
- Mr. Carlos A. Altgelt — Philco
- Mr. Frederick Barnum — L3 communications
- Mr. Emidio Cimini — Megger
- Ms. Mayling Eaves — L3 Communications
- Mr. Ronald Godlewski — DRS Communications
- Mr. C.W. Hargens — Franklin Institute (Retired)
- Mr. David Horowitz — Philco/CBS/HTT
- Mr. Robert Iadicicco — Philco
- Mr. Thomas Martin — Threshold Technology
- Mr. Harold "Penny" Pannepacker — KYW
- Mr. Ed Podell — RCA (Retired)
- Dr. Victor Schutz — Temple University

III — Computer and Instrumentation

- Mr. Paul Alfieri — Motorola
- Mr. Fred Barnum — L3 Communications
- Mr. Samuel Chappel — CSC
- Mr. Tom Fagan — Gestalt, LLC
- Mr. Guenter Finke — Magnetic Metals
- Mr. Griff Francis — Moore Products
- Mr. David Horowitz — Philco/CBS/HTT
- Mr. James Senior — Unisys
- Dr. Victor Schutz — Temple University
- Mr. Mark Soffa — K&S Industries

IV & V — Defense, Aerospace and Engineering Colleges

- Mr. Fred Barnum — L3 Communications*
- Dr. Onaral Banu — Drexel University
- Dr. Joseph Bordogna - National Science Foundation
- Dr. Bruce Eisenstein — Drexel University
- Mr. Tom Fagan — Gestalt, LLC
- Dr. Kenneth Fegley – University of Pennsylvania
- Mr. E. Alan Karpowitz — NAVSSES
- Mr. Ray Markowitz — AEL Industries (Retired)
- Mr. John McCormack — Boeing
- Dr. S.S. Rao — Villanova University
- Ms. Betty Rucker — NAVSSES
- Dr. Victor Schutz — Temple University
- Dr. Herman P. Schwan – University of Pennsylvania
- Dr. Cornelius Weygand – University of Pennsylvania
- Ms. Melinda Wismer — Lockheed Martin, M&Ds Valley Forge
- Mr. Thomas Woods — Philadelphia Naval Shipyard (Retired)
- Chief Warrant Officer Angelo Zuino — U.S. Navy
- Courtesy of Lockheed Martin, Moorestown — Communications Department.

* A considerable amount of material and photographs presented in this issue detailing the history of L3 Communications, including RCA and the Victor Talking Machine Company, was obtained with permission from the Copyrighted © 2003 Frederick O. Barnum III book titled *"His Master's Voice in America."* All rights reserved, no part of this section including text and images may be reproduced without the written consent of the author.

5. VI — IEEE-Philadelphia Section Photo Essay

- Mr. Fulvio E. Oliveto — Lockheed Martin

Also special thanks to:

- Mr. Ed Podell who edited the first three issues of this effort.
- Mr. Tasos Malapetsas for editing the fourth issue.
- Mr. Tom Fagan, Gestalt, LLC and L3 Communications for hosting the many committee meetings in Camden.

Valuable References:

- *First 100 years of IEEE (1985) in Delaware Valley* — Mr. John Bry, Editor
- *Historical publications from RCA, GE, L3, UPENN, Bell Telephone and K&S Industries.*
- *His Master's Voice in America (2003)* — Frederick O. Barnum III.

In The Beginning

Dr. George W. Patterson J. T. Brothers Dr. Weber Dr. C. C. Chambers
J. C. Teillier I. L. Auerbach J. A. Brusiman Dr. Herman Schwan

Dr. C. C. Chambers honored

J. A. Brusiman honored

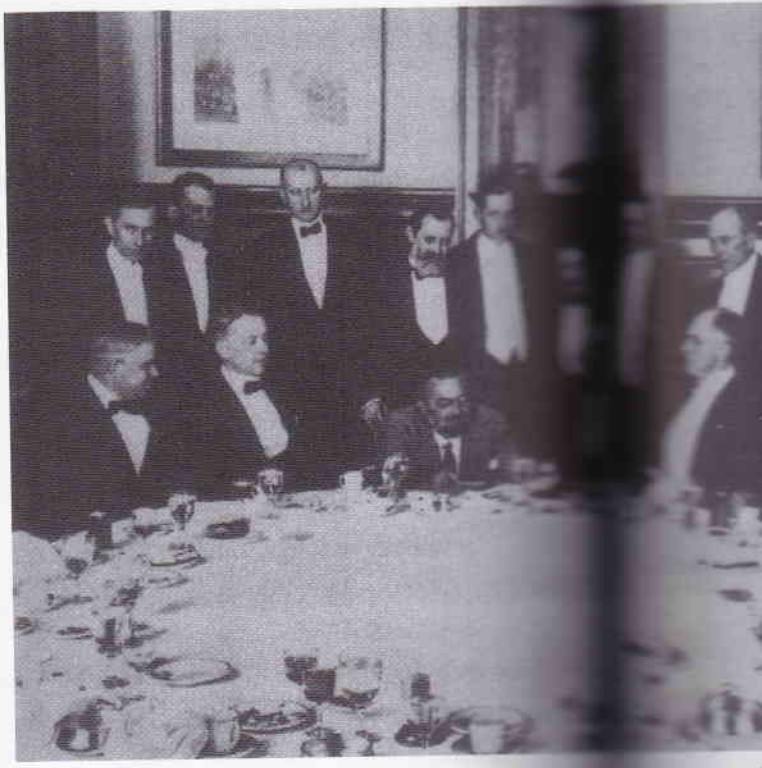
Dr. George W. Patterson honored

J. T. Brothers honored

Dr. Herman P. Schwan honored

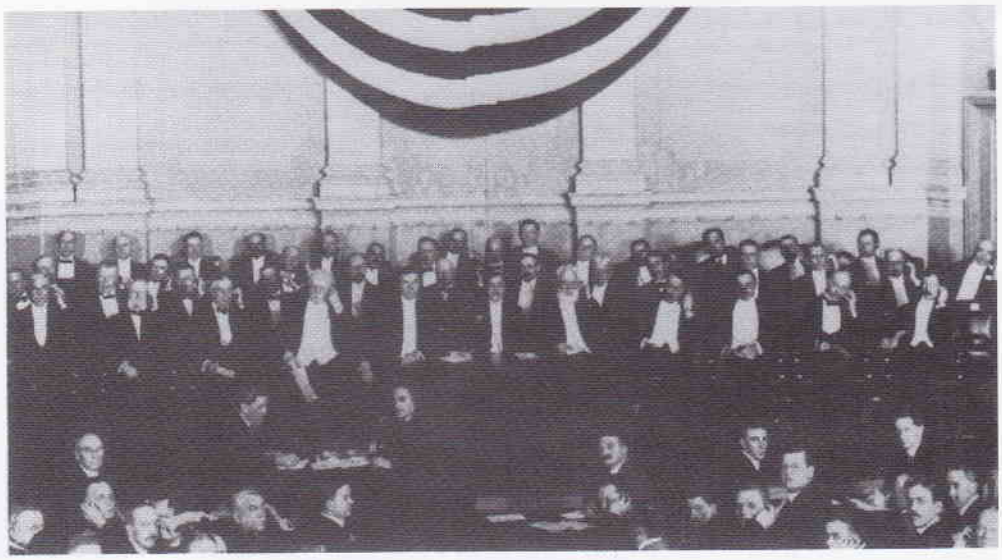
J. C. Teillier honored

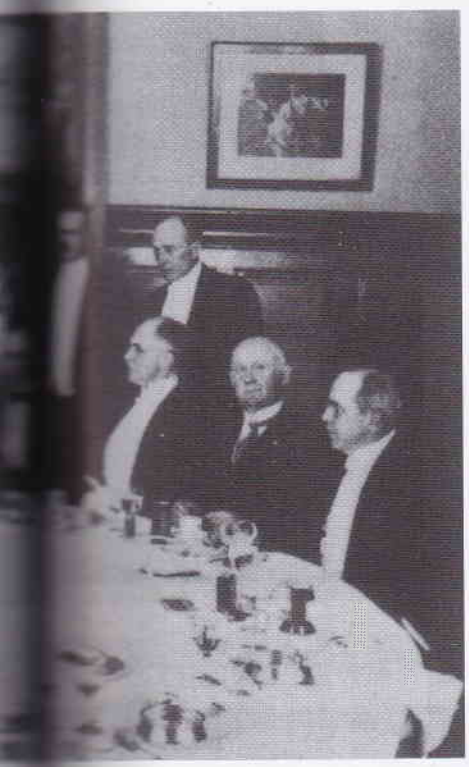
Over two hundred enjoyed the Fellow's Night Program held in February 1959 honoring newly elected Fellow of the IRE. Seven members of the Philadelphia Section were recipients of this honor. A. Eugene Anderson, recipient of the Fellow Award was unable to attend the program and receive his award in absentia.



Almanack Staff with Section

A Chat with David Sarnoff



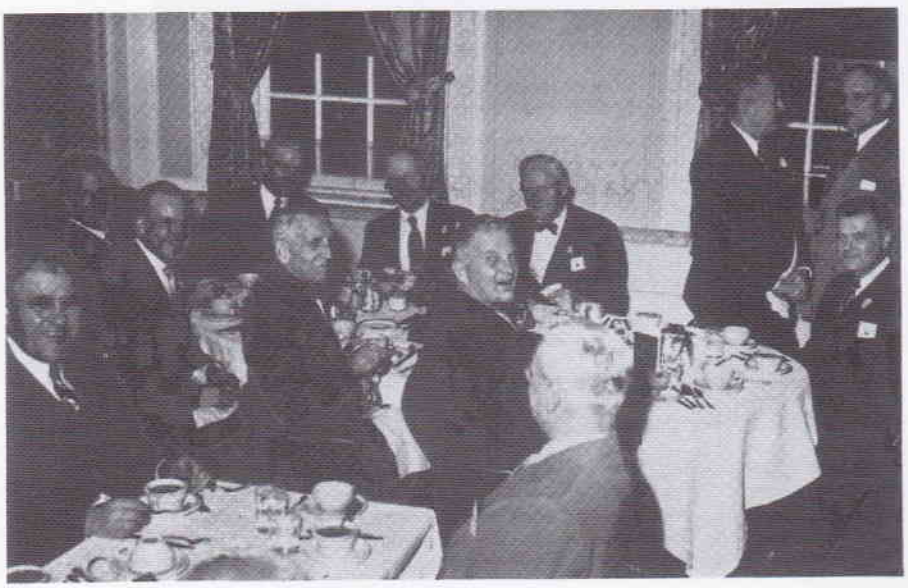


October 18, 1916

David Sarnoff Receiving First Medal – The David Sarnoff Gold Medal Award

[illegible] (left to right): Barbara Daniels, W. S. [illegible]chter, Helen Yonan, T. T. Paterson. [illegible]ng (left to right): W. R. Rowland, [illegible]. Casey, O. M. Salate, P. P. Harris Jr., W.W. [illegible]on, George Neborak, E. L. Burke and [illegible]y Zebrowitz

50TH ANNIVERSARY CELEBRATION – PHILADELPHIA SECTION, AIEE
FEBRUARY 9, 1953



FELLOWS AND PAST CHAIRMEN'S NIGHT

Dr. F. K. Willenbrock, IEEE President

HEAD TABLE

Seated from left to right: E. A. Fasko, Secretary, Mrs. E. A. Fasko, Stanley Zebrowitz, Vice Chairman, Mrs. Stanley Zebrowitz, Mr. D. Ports, Region 2 Director, Mrs. T. H. Lee, Dr. T. H. Lee, Chairman Awards Committee, Mrs. W. W. Middleton, Dr. F. K. Willenbrock, IEEE President, and Mr. W. W. Middleton, Chairman of the Philadelphia Section.

IEEE FELLOWS

Top row: E. S. Hallmann, L. A. Creamer, Jr., A. N. Green, award and F. B. Watz. Bottom row: H. N. Schneider, Dr. F. Willenbrock, S. B. Dixon, J. B. Owens and Dr. N. S. Prywes. Mr. R. P. Haviland was not present when the photo was taken.

SECTION OFFICERS & GUESTS

Stanley Zebrowitz, Vice Chairman; D. C. Ports, Region 2 Director; Dr. F. K. Willenbrock, IEEE President; W. W. Middleton, Chairman Philadelphia Section and E. A. Fasko, Secretary.

SECTION AWARD WINNERS

Standing left to right: Dr. E. W. Bowhers, Vernon Cox, Dr. F. K. Willenbrock, Dr. W. R. Clark and W. W. Middleton.

IEEE EXECUTIVE COMMITTEE PHILADELPHIA SECTION

Seated left to right: E. A. Fasko, Secretary; W. W. Middleton, Chairman; Miss Helen Yonan, Office Manager; Stanley Zebrowitz, Vice Chairman; Dr. O. M. Salati, former Treasurer.

Standing left to right: Joseph E. Kienle, Chairman Education Committee; J. J. Bonk, Chairman Fellowship & Attendance Committee; D. C. Dunn, Group Representative; P. Hahn, Section Meetings Committee; W. E. Scholz, Chairman Professional Relations Committee; Robert Mayer, Treasurer, N. Salatino, Chairman Membership and Transfers Committee; W. V. Stanfield, Group Representative; and W. J. Layer, Group Representative.

Those missing are: J.E. Casey, Junior Past Chairman; John E. Snook, Senior Past Chairman; D. I. Hagen, Chairman Finance Committee; W. S. Einwechter, Chairman Publicity Committee; R. F. Adams, Chairman Student Activities; C. Teacher, Group Representative; W. K Kinkead, Group Representative; J. A. Herrmann, Group Representative; Dr. T. H. Lee, Chairman Awards Committee; Harry Rappaport, Chairman of Community Relations Committee and C. H. Horn, Chairman of ByLaws Committee.

PAST CHAIRMEN'S NIGHT

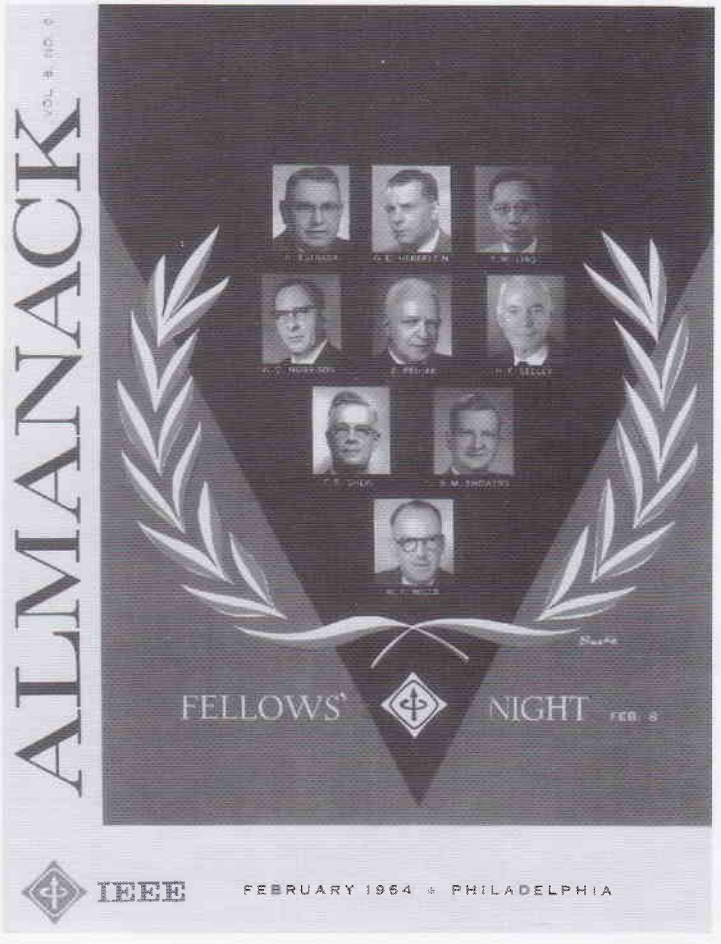
Above are Past Chairmen of AIEE, IRE and IEEE at Past Chairmen's Night on March 9, 1964. Left to right – C. R. Kraus, J. G. Brainerd, A. N. Curtiss, H. H. Sheppard, W. R. Clark, L. M. Rogers, C. T. Pearce, H. J. Woll, A. C.

e 60's

MAY 1964

...T. H. Story, E. P. Yerkes, R. N. Showers, C. M. Bur... D. Mascaro, H. S. Phelps, R. W. Wibraham, W. P. ... G. B. Schleicher, R. L. Haberstad, B. H. Zacherle, ... Chase, and M. S. Corrington.

Above are the members of the 1963-64 Philadelphia Section Executive Committee who attended the IEEE Past Chairmen's Night on March 9, 1964. *Seated, left to right* – W. P. Magee, T. H. Story, H. K. Emerson (1964-65 Chairman), E. W. Boehne, W. E. Scholz (1964-65 Vice Chairman), J. E. Casey (1964-65 Secretary) J. E. Snook (1964-65 Treasurer), H. Rappaport. *Second row, left to right* – W. D. Mascaro, E. S. Halfmann, J. A. Munnis, E. M. Callender, C. Horn, W. M. Broome, C. T. Pearce (representing S. R. Warren), T. W. Hissey. *Third row, left to right* – R. E. Murray, H. Kimel, R. M. Showers, H. Lauer. *Absent* – I. L. Auerbach, E. A. Fasko, A. P. Haggerty, R. L. Haney, W. M. Hennessey, J. Hickey, T. H. MacCauley, W. McLaughlin, V. R. Monshaw, S. R. Warren, R. F. Wood, Jr.



From left to right standing: George Nebosat, W. S. Ennenbach, E. Burke, T. T. Patterson, J. Cornelius, C. W. Fields, W. R. Rowland, A. Pinsky and W. R. Rowland. Seated: George Nebosat, Helen Yonan, Barbara Daniels and Theodore Burken.

Standing from left to right: W. S. Ennenbach, T. T. Patterson, E. Burke, J. Cornelius, C. W. Fields, Al Pinsky and W. R. Rowland. Seated: George Nebosat, Helen Yonan, Barbara Daniels and Theodore Burken.

Seated from left to right: George Nebosat, E. Burke, C. W. Fields, T. T. Patterson, J. Cornelius and Dr. G. M. Saleh.

From left to right: W. R. Rowland, Al Pinsky, John Snook, W. S. Ennenbach, Helen Yonan, J. E. Casey, Stanley Zabrowitz, J. Cornelius and Dr. G. M. Saleh.

FELLOWS TO BE HONORED

THOMAS A. BENHAM
For contributions to electronics for the blind.

RICHARD G. CLAPP
For contribution to color-television display systems.

WILLIAM H. FORSTER
For contribution to transistor development.

MORRIS RUBINOFF
For contributions to electronic computer developments and education.

GRACE M. HOPPER
For contributions in the field of automatic programming.

SPECIAL PHILA. SECTION AWARD

HERMAN P. SCHWAN
For his outstanding leadership in research and education in the electro-medical field, which has led to national recognition of Philadelphia as a center for such effort.

February 1963

7

PHILADELPHIA SECTION EXECUTIVE C

From left to right standing: N. N. Puri (Dr.), A. [illegible], C. L. Zoi, Francis Powell (Prof.), E. W. [illegible], K. H. Emerson, A. L. Bohlinger, H. O. Wood, [illegible], G. A. Kiessling.
From left to right seated: Helen B. Yonan, W. [illegible]

November 1966

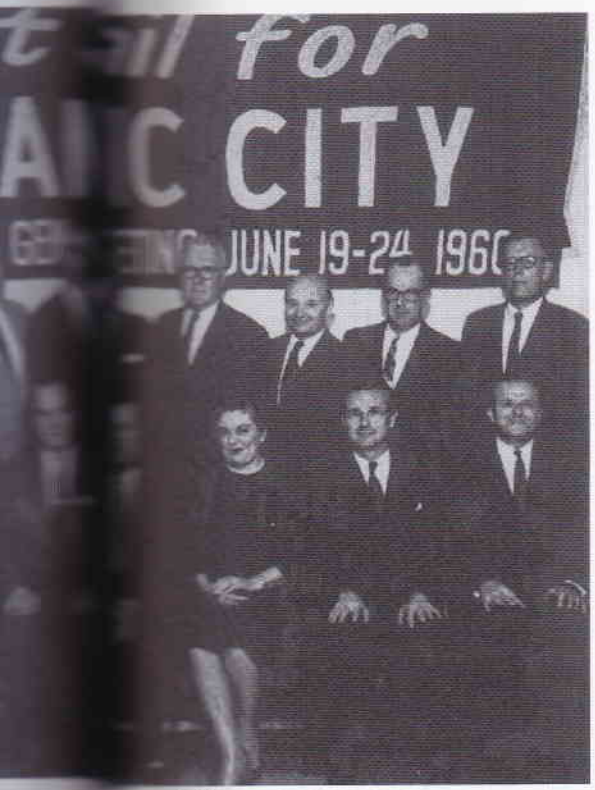
1960 AIEE

e 60's

EXECUTIVE COMMITTEE

J. E. Casey, W. W. Middleton, Stanley Zebrowitz.
from the picture: Anthony Bruno, Barry B. Latham,
Boyd Granger, Harry Kimel, C. A. Taylor,
J. E. Hickey, Harry Rappaport.

11



WINTER POWER MEETING

CHAIRMEN'S NIGHT

1968

Commander Hopper with Dr. E. W. Boehne, Chairman of the Philadelphia Section Awards Committee.

Chairman Casey congratulating Mr. Nathan Cohn, IEEE Lamme Award Recipient.

Bruce Cramer accepting a citation for a Fifty Year" attendance last year to the Group on Audio & Electro-Acoustics from President Hermann. Looking on are, right, Chairman Casey and standing, Stanley Zebrowitz, Philco Section Treasurer.

Chairman Casey presenting a certificate of appreciation for his efforts on behalf of the 1967 Power Industry Computer Applications Conference to J. W. Gallagher.

April, 1968

17

IEEE WOMEN'S AUXILIARY MEETING

Dr. Tristram P. Coffin, Speaker, Mrs. T. H. Story, Chairman of the Auxiliary and Mr. Bob Kelly, vocalist and guitarist.

Past Chairmen of the Auxiliary were recognized by present Chairman Mrs. T. H. Story.

Despite the heavy snowfall and the attendant difficulty of traveling on the snow covered streets and highways, the IEEE Women's Auxiliary held its scheduled meeting on February and had an attendance of over forty.

Members of the Auxiliary know that the programs are invariably so interesting that they should not be missed. This was especially true of February 5. The guest speaker, Dr. Tristram P. Coffin, a Professor of English and Folklore at the University of Pennsylvania, presented some new and interesting facts on folk singing which were illustrated by one of his graduate students, Mr. Bob Kelly, with song and guitar.

Dr. Coffin explained that in the early twentieth century, singing of re-written folk songs was used by unions as a means of encouraging membership. In fact, the development of this movement of mass rebellion was accompanied by folk music. As an example, Mr. Kelly sang "Which Side Are You On?" and "The Death of Harry Sims."

Dr. Coffin went on to say that, even in our present day, the Freedom movement has resorted to the re-written folk song to win approval of its actions as well as sympathy. The song sung to show this trend was "We Shall Overcome."

It was also pointed out that the youth of today has resorted to the singing of folk songs as a rebellion and in some cases it is termed folk music when in reality it is popular music.

Perhaps some of the ladies reading this article might be interested in becoming a member of this interesting and lively group. If you are related to an IEEE member, you are qualified for membership. Annual dues are only $3.00.

For further information you may contact either Mrs. E. W. Lewis (Membership Chairman) at MA 6-6758 or the IEEE Office at 594-8100 or 8131.

One of the guests, Miss Helen Yanos, Office Manager of the Philadelphia Section Office, being introduced by Mrs. T. H. Story, Chairman of the Auxiliary.

A partial view of those attending.

A view of the group present.

11

PHILADELPHIA SECTION EXECUTIVE COMMITTEE

PHILADELPHIA SECTION EXECUTIVE COMMITTEE

ated left to right: F. A. Fasko, Secretary; Stanley Zebrowitz, Chairman; Helen Yonan, Office Manager; Dr. O. M. Salati, hairman-elect; Robert Mayer, Treasurer.

anding left to right: C. F. Otis, Group Representative; C. H. Horn, Special Events Chairman; Dr. Peter Hahn, Section Meet- g Chairman; D. C. Dunn, Group Representative; Dr. T. H. Lee, Chairman Awards Committee; W. W. Middleton, Junior Past hairman; Dr. Fred Haber, Chairman Student Activities Committee; C. F. Teacher, Group Representative; John Herrmann, irector of Technical Activities; D. Breder, Chairman Fellowship & Attendance Committee.

hose missing from the picture are: Harris Wood, Vice Chairman; E. S. Halfmann, Comptroller; J. E. Casey, Senior Past Chair- an; M. T. Speights, Chairman Membership & Transfers Committee; W. S. Einwechter, Chairman Publicity & Publications ommittee; Eugene Wheeler, Chairman Education Committee; W. V. Stanfield, Group Representative; R. D. Goldblum, Group epresentative; W. K. Kinkead, Group Representative; W. E. Scholz, Chairman Professional Relations Committee; Harry appaport, Chairman Community Relations Committee.

nuary 1970

The 7

Front row, left to right: John C. Bry[illegible] Jr., Merrill W. Buckley, Jr., Dr. Victor K. Schutz, Donald C. Dunn, Thomas L. Fagan and Helen B. Yonan.

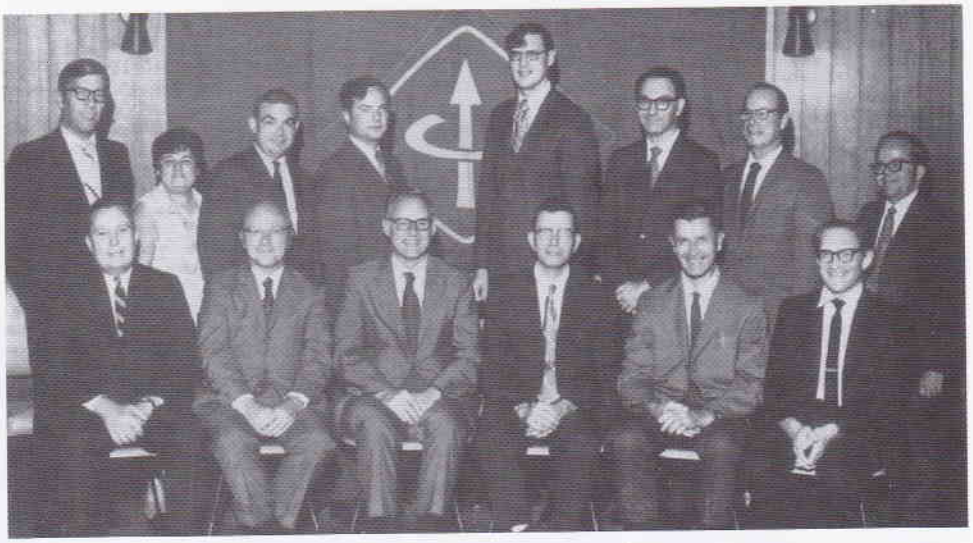
Top row, left to right: Edward J. Sweeney, Dr. Kenneth A. Fegley, Alan Kirsch, Dr. Earl Reigel, Gerry W. Gordon, Anthony L. M[illegible] and Fulvio O[illegible]

Missing are: Haber, W. E. K. V. Amatne Lehner, C. R. F. Adams and

70's

Anthony L. Milone, Dr. Michael Vartanian and Fulvio Oliveto.

Missing are: C. R. Williams, Dr. Fred Haber, W. E. Scholz, W. W. Middleton, E. V. Amatneck, W. R. Rowland, T. J. Lehner, C. R. Pope, Stan Heyer, Prof. R. F. Adams and Robert Mayer.



PHILADELPHIA SECTION EXECUTIVE COMMITTEE

Seated, left to right: Helen Yonan, Don Dunn, Dr. Fred Haber, Edward W. Halfmann, Charles Teacher, Dr. Victor K. Schutz, and Robert Mayer.

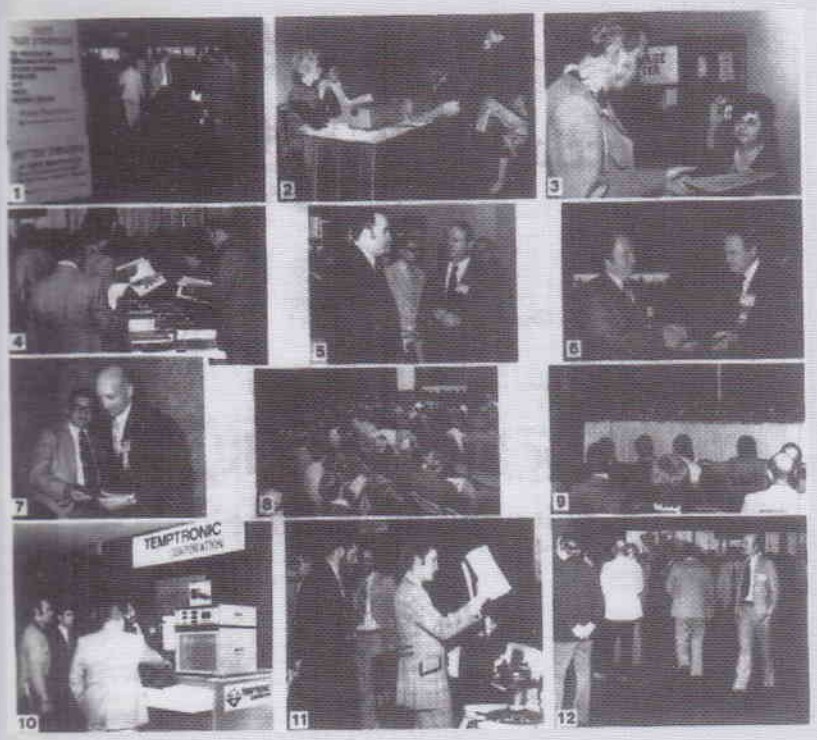
Standing, left to right: John C. Bry, Jr., Carrol Williams, Joseph Fischer, Fred Liguori, Dr. Michael Vartanian, William Ernst, Arthur Sellers, Dr. Peter Hahn, J. Alan Huntsman, Thomas Harley, Jr., Thomas Fagan and William Middleton.

Missing are: Harris Wood, Dr. W. Schaedia, R. Harper, G. W. Gordon, J. E. Kienle, W. S. Einwechter, W. Rowland, Harry Rappaport, W. E. Scholz, I. Benks and Ray Bennett.

CONDON ADDRESSES FAILURE ANALYSIS SEMINAR

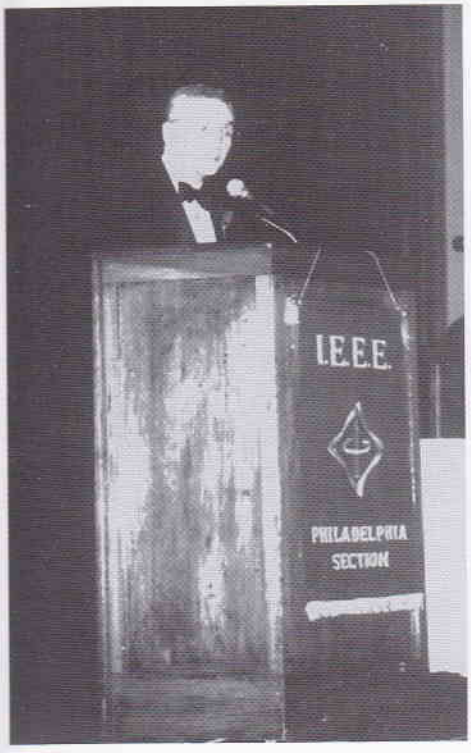
Seated, left to right: Mr. Stanley Zebrowitz, Miss Helen B. Yonan, Dr. S. Reid [illegible]. Condon addressing the luncheon group.

1977 ANNUAL SEMICONDUCTOR TEST SYMPOSIUM



SEMINAR SCENES: (1) Seminar Attendees arrive at Cherry Hill Hyatt Hotel. (2) Registration and arrangement staff provided guidance and assistance. (3) Miss Yoman hands out IEEE information. (4) Attendees reviewing available Seminar publications. (5) M. Buckley, F. Oliveto from Philadelphia Section chat with R. Wagnone Chairman of IEEE Ottawa Section. (6) L. J. Sevin of Mostek Corporation, Carrollton, Texas, accepts a plaque from John Bouer, General Chairman of the 1977 Semiconductor Test Symposium, in recognition of the Committee's appreciation of Mr. Sevin's support. (7) Bernard Vonderschmitt of RCA Solid State, Somerville, New Jersey, accepts a plaque from Ned Kornfeld, Advisory Committee member for the 1977 Semiconductor Test Symposium Committee, in recognition of the Committee's appreciation of Mr. Vonderschmitt's support. (8) Seminar Symposium in session. (9) M. Buckley Philadelphia Section Vice Chairman welcomes and congratulates 1977 Annual Semiconductor Test Symposium. (10) & (11) Attendees review and inspect latest test equipment display. (12) Informal gathering during technical session break.

January 1978 8 Almanack



1977 Annual Semiconductor Test Symposium LSI test area

Great Success – Attendance of approximately 1000, mirrors the increased interest in the Semiconductor.

70's

Seated at Head Table – Clockwise starting on left hand side:
J.R. Warren, Jr, W.F. Henn, A.P. Godsho, W. B. Morton, G.W. Bower, C.T. Pearce, P.H. Chase and H.H. Sheppard.

November-December 1978 Some Members Looking at a Copy of the Almanack Almanack

1975 - 1976 PHILADELPHIA SECTION EXECUTIVE COMMITTEE


IEEE AWARDS NIGHT
FEBRUARY 14, 1981
IEEE AWARDS NIGHT DANCE - FEBRUARY 14, 1981


AWARDS' NIGHT
1983

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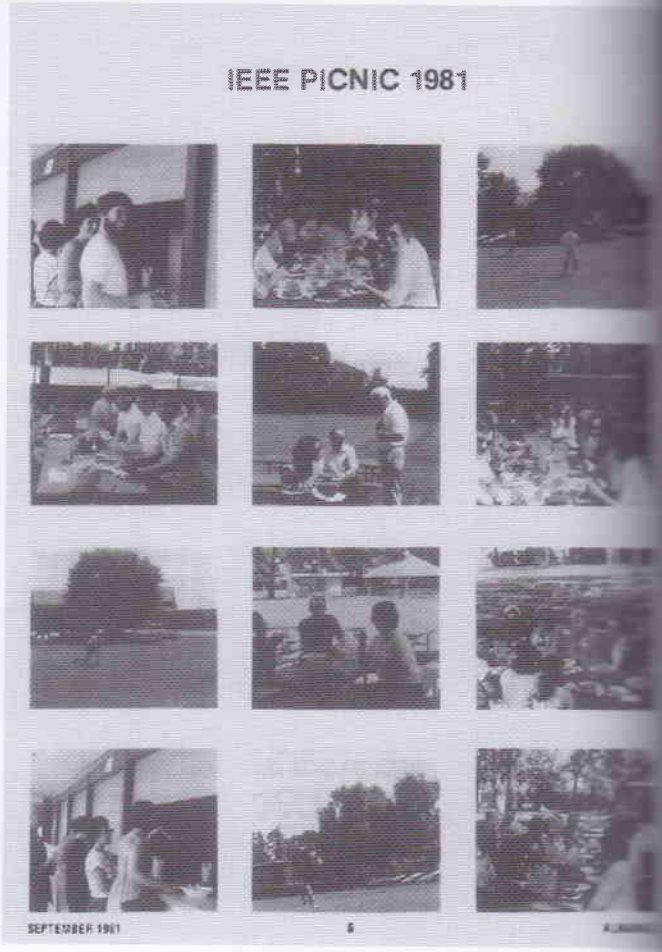
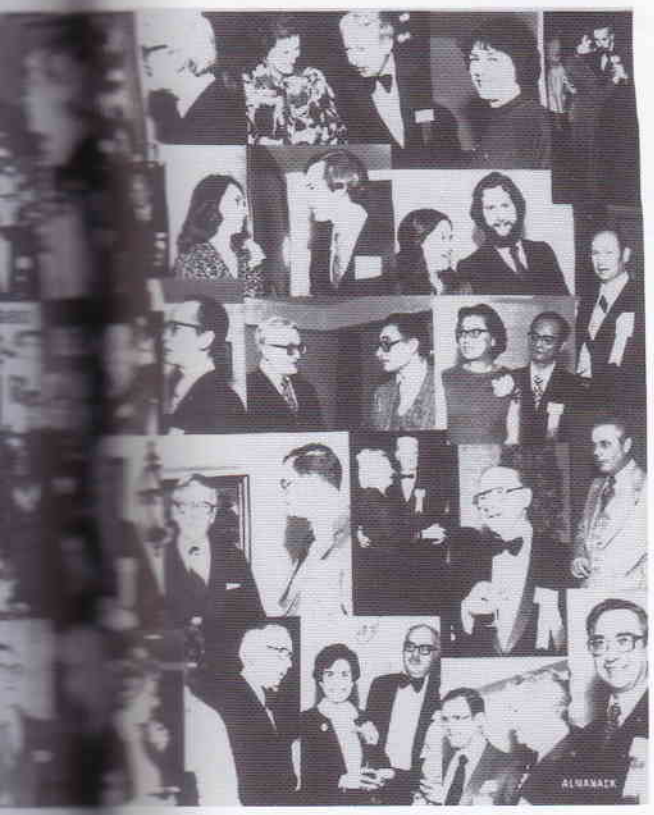
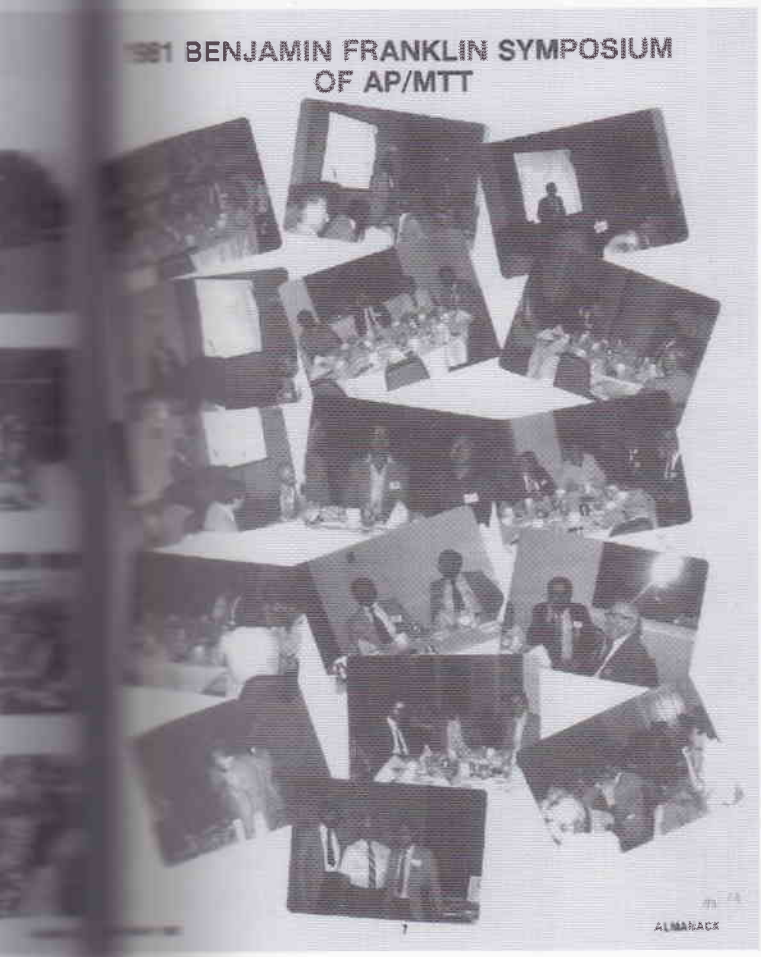
SOME VIEWS OF AWARDS NIGHT 1981

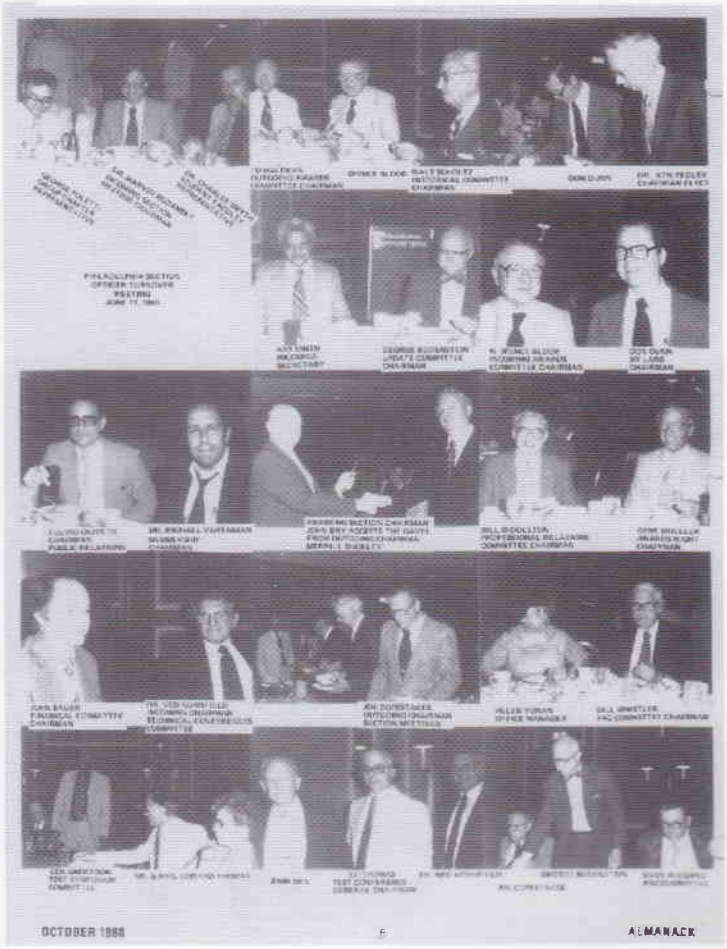

IEEE PICNIC 1981

80's



SOME VIEWS OF THE DINNER DANCE 1980





The 80's

PHILADELPHIA SECTION EXECUTIVE COMMITTEE

Standing, left to right: D.M. Weigand, T.J. Tucker, Dr. R. Chu, J.J. Hitt, Dr. K.A. Fegley, J.C. Bry, Jr., M.W. Buckley, Jr., K. Rieyo, W.W. Middleton, F. Oliveto and Dr. M. Rosansky.

Seated, left to right: M.M. Varsanian, J.E. Bauer, Q.W. Gordon, A.L. Smith and H.S. Yonan.

Missing are: E.S. Wheeler, P. Lynch, J.D. Kavanagh, W.S. Bloor, B. Fell, C. McKeough, G. Poletti, W.R. Rossland, T.J. Lehner, R.F. Adams, Dr. N. Kornfield, G.E. Bodenstein.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

PHILADELPHIA SECTION

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1982 ANNUAL CHERRY HILL
SEMICONDUCTOR TEST CONFERENCE
NOVEMBER 15, 16, 17 & 18, 1982
FRANKLIN PLAZA HOTEL

Some Views of Previous Conferences

See page 6 for details

OCTOBER 1982

SEMICONDUCTOR TEST CONFERENCE

TENTH ANNIVERSARY ATTRACTS RECORD ATTENDANCE

This annual event which is jointly sponsored by the Computer Society and the Philadelphia Section was attended by over 1300 people. Conference headquarters was the Cherry Hill Hyatt Hotel during October 23rd thru 25th, 1979.

Thomas Mitchell, Jr., Conference General Chairman formally opening the proceedings

Merrill W. Buckley, Jr., Chairman of the Philadelphia Section of the IEEE Welcoming the Attendees

Alexander d'Arbeloff, Chairman and President of Teradyne Corp. Delivering the Keynote Address

Raymond P. Eberly, Conference Program Chairman Outlining the Session Arrangements

Ned Kornfield, Conference Advisory Board Addressing the Assembly

THE CONFERENCE ORGANIZATIONAL STAFF

First Row – Hy Kaplar, Conference Advisory Board; Lynn Jenkin, Facilities Committee; Frank La Vigilante, Treasurer; Tom Mitchell, Secretary; Pete Baranski, Pavilion Chairman; Marshall Matthiessen, Session Program; Ivan Aberle, Program Committee; Bob Meckert, Program Committee.
Second Row – Ken Anderson, Conference Advisory Board; Connie Zagaya, Exhibits; Fabrio Oliveto, Philadelphia Section IEEE; Merrill Buckley, Philadelphia Section IEEE; Ned Kornfield, Conference Advisory Board; Tom Mitchell, Conference General Chairman; Ray Oberly, Program Chairman; Ed Thomas, Vice Chairman; Joe Tisnel, Program Co-Chairman; Lou Sobotka, Program Committee; Bill Hedrick, Program Committee

Attendees in Assembly for the Opening Proceedings

Tom Mitchell Congratulating Ned Kornfield for his Pioneering and Continuing Support of the Conference

Conference Registration and Informal Discussions


IEEE
COMMITTEE


WELCOME ICC 82
TECHNICAL SESSIONS - EXHIBITS
- AWARDS - SOCIAL ACTIVITIES


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ELECTRICAL AND
ELECTRONICS
ENGINEERS, INC.
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PHILADELPHIA SECTION
ISSN 0163-4496
USPS 014360
VOL. 26, NO. 23 NOVEMBER-DECEMBER, 1981
PART OF THE EXECUTIVE COMMITTEE, PHILADELPHIA SECTION
Top row left to right: A. DiPipi, C. McKeough, Dr. N. Kornfield, W. S. Bloor, M. S. Buckley, Jr., J. C. Bry, Jr., F. Lynch, F. Olivito, D. Drenning, E. S. Wheeler, M. Vartanian.
Seated left to right: J. E. Bauer, G. W. Gordon, Dr. K. A. Fegley, A. L. Smith, H. B. Yoman, and K. Ringo.
Missing are: A. L. Kirsch, Dr. M. Afifi, J. D. Kavanagh, R. Mayer, J. J. Hitt, G. Poletti, W. W. Middleton, T. J. Lehner, W. R. Rowland,


PHILADELPHIA SECTION
ISSN 0163-4496
USPS 014360
VOL. 27, NO. 3 NOVEMBER-DECEMBER 1982
STUDENTS' NIGHT Villanova University

PHILADELPHIA SECTION
ISSN 0163-4496
USPS 014360
VOL. 28, NO. 3 NOV.–DEC., 1983

1983-84 EXECUTIVE COMMITTEE

Seated left to right – Michael Vartanian, Merrill Buckley, Dr. Victor Schutz, Barry Fell, David Scheurer, Frank Farmer, Dave Welgand, William Middleton, and Gerald Gordon.

Standing left to right – Tony Strzelcyk, Frank Lynch, James Kavanagh, Dr. Kenneth Pegley, Dr. Marvin Rozansky, John Bauer, Arthur Smith, Dr. Ned Kornfield, Eugene Wheeler, Fulvio Oliveto, George Poletti, James Hitt and Helen Yonan.

Missing – Charles McKeough, W.S. Bloor, W.R. Rowland, T.J. Lehner, Dr. R. Yantorno, and G.E. Bodenstein.

AWARDS NIGHT 1985

AWARDS NIGHT 1984

1984-85 EXECUTIVE COMMITTEE, PHILADELPHIA SECTION

Seated Left to Right: Helen Yonan, Eugene Wheeler, John Bauer, Dr. Marvin Rozansky, Dr. Ned Kornfield

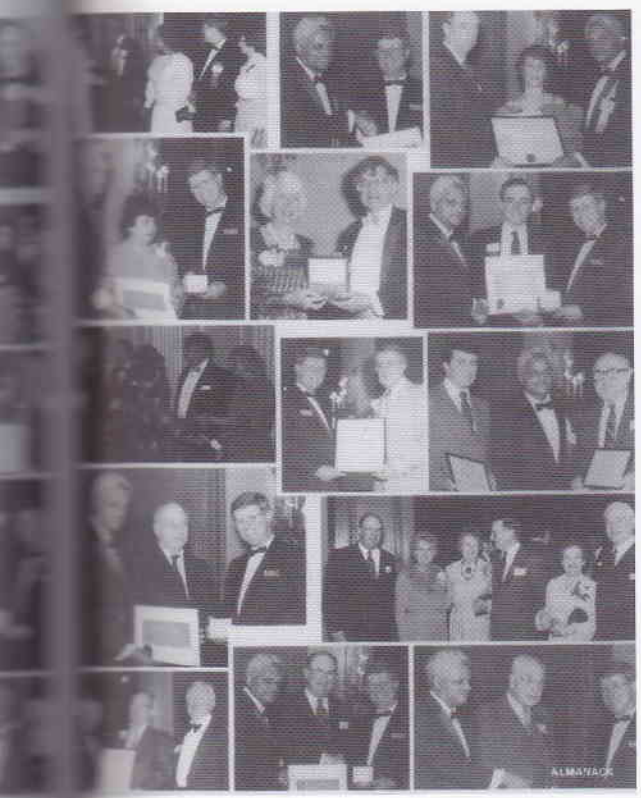
Standing Left to Right: Dr. Denis Silage, Gerald Gordon, Fulvio Oliveto, Walter Lucier, Arthur Smith, George Poletti, David Welgand, William Middleton, Michael Vartanian, Dr. Victor Schutz and Dr. Alfred Johnson.

Missing: Mark Zimmerman, James Kavanagh, Merrill Buckley, Barry Fell, Charles McKeough, Frank Farmer, W.R. Rowland, T.J. Lehner, M. Modi, G.E. Bodenstein

80's

PHILADELPHIA SECTION, IEEE, EXECUTIVE BOARD

Shown seated left to right are the Officers: Dr. Joseph Bordogna (Chairman-Elect), Laura Jacobs (Office Manager), Dr. Marvin Rozansky (Chairman), Dr. Bruce Eisenstein (Treasurer), and Barry Fell (Secretary). Not shown is Mark Zimmerman (Vice-Chairman). Standing from left to right are Frank Lynch, Robert Swint, Dr. Ned Kornfield, Rob Reider, John Bry, Eugene Wheeler, Edward Shamsi, Susan Daily, Merrill Buckley, George Poletti, Dave Weigand,



AWARDS NIGHT 1986

1985-86 EXECUTIVE COMMITTEE, PHILADELPHIA SECTION

Seated, left to right: Helen Yonan, Eugene Wheeler, Dr. Ned Kornfield, Dr. Marvin Rozansky, Dr. Bruce Eisenstein.
Standing, left to right: Kent Ringo, Wallace Skeleton, Dr. Victor Schutz, Gerald Gordon, Joseph Gallagher, David Weigand, Fulvio Oliveto, John Bauer and William Middleton.
Missing: Mark Zimmerman, Stephen Pettersen, Barry Fell, Merrill W. Buckley, Joseph Bissel, George Poletti,

The 80

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.
PHILADELPHIA SECTION

almanack

ISSN 0163-4496
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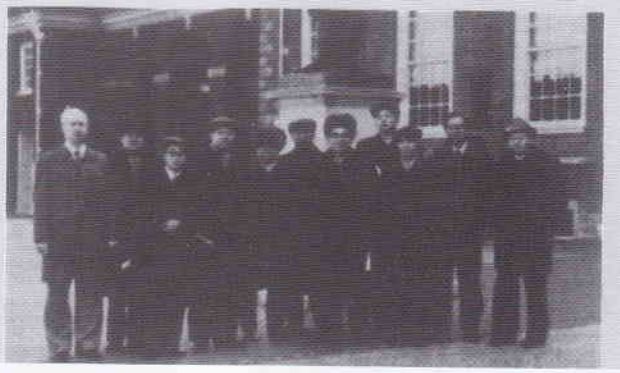
VOL. 27, NO. 7 APRIL

PHILADELPHIA SECTION ENTERTAINS CHINESE ENGINEERS



1988 AWARDS NIGHT

e 80's

1984-85 EXECUTIVE COMMITTEE, PHILADELPHIA SECTION

Seated Left to Right: Helen Yonan, Eugene Wheeler, John Bauer, Dr. Marvin Rozansky, Dr. Ned Kornfield
Standing Left to Right: Dr. Denis Silage, Gerald Gordon, Fulvio Oliveto, Walter Luciw, Arthur Smith, George Polatti, David Weigand, William Middleton, Michael Vartanian, Dr. Victor Schutz and Dr. Alfred Johnson.

1989-90 Executive Committee Started Work on June 13, 1989

September 1989 8 Almanack

Almanack 9 September 1989

April 1989 4 Almanack

Almanack 5 April 1989

IEEE Philadelphia Section Awards and Recognition for 1990

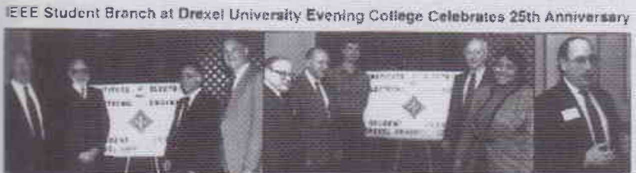
At its annual Awards Night at the Union League on Saturday Evening, March 3, 1990, the Philadelphia Section honored its new Fellows and others. These pictures show the awardees and a few others there.
Starting from the upper left: (1) Vicki Vaidi (Philadelphia Section Office Manager) and James Chuck Alexander (Awards Chair) and Pauline Drishbach with Harvey Glickenstein in background. (2) Fulvio Oliveto (Section Meetings Chair) with Mr. & Mrs. Stanley Yuen (Aerospace Electronic Systems Chapter Chair), (3) Mr. & Mrs. Walt Schoppe (Section Secretary), (4) Mr. & Mrs. Kent Ridge (Industrial Relations Chair), (5) Robert Heiman (Comptar Student Chair) and date, (6) Chuck Alexander and Pauline Drishbach, (7) Awards Committee: Bill Patton, Vic Schutz, Ken Foster, Bill Middleton, Chuck Alexander (Chair), Gerald Gordon and Nihat Bilgutay, (8) Michel M. Gantman (1990 Fellow), (9) Chuck Alexander and Bruce Eisenstein (Section Chair), (10) Fulvio Oliveto and Chuck Alexander, (11) Leonard Chin (1990 Fellow), (12) Section Officers: Mark Zimmerman (Jr. Past Chair), Stan Dunn (Chair-Elect), Chuck Alexander, Bruce Eisenstein, Walt Schoppe, Gary Ridge (Treasurer), and Bill Middleton (Recipient of USAB Citation of Honor), (13) Outstanding Student Raymond Ruwe (Drexel) flanked by Chuck Alexander and Bruce Eisenstein, (14) Bruce Eisenstein (Section Chair) presenting Past Chairman's Award to Mark Zimmerman, (15) Eisenstein presenting Chapter of the Year Award to Harvey Glickenstein (Vehicular Technology Chapter Chair), (16) Bruce & Toby Eisenstein, (17) Eisenstein presenting Section Award to Jay Bordogna (Jr. Past Chair), (18) Carleton Bayless (IEEE President and Kenneth Spencer) presenting Award to Jennings B. Beach, Jr. (1990 Fellow), (19) Best Student Team (from Temple for 4th straight year): Terry Lenney, Kevin Meck, Chuck Alexander (Engineering Dean), Brian Betz (Project Advisor), Andrew Blanch and Rob Finochio, (20) Mr. & Mrs. Bill Middleton, (21) Mr. & Mrs. Walt Grabb (Engineering Management Chapter Chair), (22) Mr. & Mrs. Len Chin (1990 Fellow), (23) Mr. & Mrs. Gerald Gordon (Past Section Chair), (24) Mr. & Mrs. Stanley Dunn, (25) Mr. & Mrs. Fulvio Oliveto, (26) Carl Bayless and Merrill & Mary Buckley, (27) Mr. & Mrs. Bill Patton, (28) Mr. & Mrs. Herb Heller (Region 2 Director), (29) Mr. & Mrs. Marlin Lovingston (1956-57 Phila. Section Chair), and (30) Maria Marrero (Editor of IEEE Potentials, International Student Publications) flanked by escort Bill Poole and Carl Bayless.

The 90

IEEE Philadelphia Section Awards and Recognition for 1993

New IEEE Fellows and others were honored on Saturday evening, March 6, 1993 at the Philadelphia Section's Annual Awards night. The new Fellows are: (1) Timothy P. Hulick, (2) Saleem A. Kassam, (3) Peter A. Lewin, (4) Banu Onaral, and (5) W. Thomas Weir. Other award winners are: Philadelphia Section Awards to (6) John D. Rittenhouse and (7) Bruce A. Eisenstein who was also recognized for over 10 years service as a Student Branch Counselor along with (8) Eugene Hebert; Outstanding Student (Kirsch Award) to (9) Marc Riefle of Swarthmore; Chapter of the Year Award to (10) Harvey M. Glickenstein (Vehicular Technology) and (11) Margaret H. Haag (Power Engineering/Industry Applications), the Past Chairman's Award to (12) Gary C. Ridge. IEEE Region 2 Outstanding Young Member Award to (13) Stanley M. Yuen; IEEE U.S. Activities Board Professional Achievement Award to (14) Stu Levy; and the IEEE Industry Applications Society Distinguished Service Award to James W. Patterson. As usual the outstanding event was the result of the efforts of the Awards Committee (15) including Barney Acler, Ken Foster, Howard Sheppard, Gerald Gordon (Co-Chair), Will Patton, Val Monshaw (Co-Chair), Margaret Haag, and Vic Schutz. The dais (16) included Walt Schoppe, Section Chairman, Art Van Gelder, Region 2 Director; Margaret Haag, Section Secretary, Dave Weigand, Section Treasurer, Gerald Gordon, Nihat Bilgutay, Section Chairman-Elect. The two keynote speakers were (17) Merrill W. Buckley, Jr., 1992 IEEE President and John D. Rittenhouse (6), Retiring GE Vice President. The able M.C. (18) Gerry Gordon did an excellent job. If you were there at the Union League, I'm sure you had an enjoyable evening sharing in the festivities and honoring those whose pictures appear above. If you weren't, there's always next year!

IEEE Student Branch at Drexel University Evening College Celebrates 25th Anniversary



Merrill Buckley, 1992 IEEE President; Edwin Pickell, Almanack Editor; Nihat Bilgutay, Section Chairman-Elect; and Walter Schoppe, Section Chairman — Gene Hebert, Branch Counselor; Harvey Portis, Faculty Advisor; Joseph Dougherty, Branch Secretary; William Hawkins, Director of Student Services; and Jacqueline A. Swearingen, Branch Chairperson — Bruce Eisenstein, IEEE Division VI Director

On February 19th, 1993, the IEEE Student Branch of the Drexel University Evening College marked the occasion of its 25th year with an anniversary dinner. The event was held at the Faculty Club in Macalister Hall. The keynote speakers were Mr. Merrill Buckley, past president of the IEEE, and Dr. Bruce Eisenstein, Head of the Electrical and Computer Engineering Department at Drexel. During their speeches, both speakers outlined the unique challenges and opportunities facing engineering students in the Nineties. They also stressed the importance of students becoming more actively involved in the planning and pursuit of their own educational and career goals.

THE 1993 VIDEO-CONFERENCE PROGRAM

TWO VIDEO CONFERENCES

For each one, registration is at 11:30 AM and Conference runs from noon to 3:00 PM. Cost for students is $5 and for IEEE members, $20. Because of IEEE subsidy, these Video Conferences are open only to IEEE members.

For registration or more information, call the IEEE office at (215) 893-8128 or Barney Acler at (215) 841-4741. Location to be determined.

May 20 **Delivering Software Products to the Global Marketplace**
Lead Presenter: Asmus Freytag, Microsoft Corporation

This videoconference will show you how to design and develop products which can be brought to the global market quickly and easily. It will focus on how to plan for the design of human-machine interfaces, worldwide manufacturing and service, product documentation, and conformance to international standards. You will see how to design products that will meet the needs of customers in Europe, the Far East, North America and developing countries, rather than retrofitting existing products into incompatible non-U.S. designs.

June 17 **Maintaining the Technical Currency of Our Workforce**
Lead Presenter: Shakil Ahmed, Director of Development, IBM

What are companies doing to avoid technical obsolescence in the workforce? How do you measure it? How do you correct it? What role does our world class university system play? These questions and more will be addressed by representatives from the National Academy of Engineering, by SRI International, through their project SEED activity, and by companies playing an active role in the solution to the problem.

IEEE Philadelphia Section Awards and Recognition for 1992

New IEEE Fellows and others were honored on Saturday evening, February 29, 1992 at the Philadelphia Section's Annual Awards night. The new Fellows are: (1) Charles Allen, (2) Rozelia Belzer, (3) Richard Flam, (4) Charles Heising, (5) Peter Joseph, (6) Arye Rosen, and (7) Joseph Van Niekerk. Other award winners are: Philadelphia Section Awards to (8) Merrill Buckley and (9) Herman Schwan; Outstanding Student (Kirsch Award) to (10) Bob Lasser (holding certificate) from Temple, shown with Brian Butz (Student Advisor); Charles Alexander (Region 2 Director), and Gary Ridge (Philadelphia Section Chairman); Chapter of the Year Award to Nastel Engineta (11) for the Americas and Propagation/Microwave Theory and Techniques joint chapter, the Past Chairman's Award to Stan Dixson (12) on right, shown with Chuck Alexander, and Young Engineer of the Year, Stanley Yuen (13). Only three people have won the Section Award twice (14): Bill Middleton (1974 & 1988), Merrill Buckley (1984 & 1992), and Herman Schwan (1963 & 1982). Another select group are those Fellows who have been Section Chairmen and who have also won Section Awards (15) seated from the left are Ned Kornfeld, Joseph Bordogna, Howard Sheppard and Merrill Buckley; standing are Ken Fegley, Octavio Salati, Tom Fagan, and Morton Carrington. Other Fellows (16) seated from the left are Unknown,* Dwight Jaggard, Rozelia Belzer, Arye Rosen, Richard Flamm, and Vic Monshaw; standing are Ken Fegley, Herman Schwan, Michael Grossman, Bill Patton, Lee Riedman, Harry Urkowitz, Steve Lipsky, Stan Dixson, and Y.H. Ku. Section award winners (17) seated from the left are Bill Middleton, Fulvio Olivetto, Lee Riedman and Vic Schutz. Standing are Gerald Gordon, John Bauer, and Kent Ringo. Section Chairmen (18) seated from the left are Bill Middleton, Marvin Boransky, Bruce Eisenstein, and Vic Schutz. Standing are Don Dunn, Gerald Gordon, John Bauer, Stan Dixson, Mark Zimmerman, and Gary Ridge. The Awards Committee (19) seated from the left are Barney Adler, Bill Middleton, Margaret Hoag, Vic Schutz, and John Patterson; standing are Chuck Alexander, Gary Gordon (Chairman), Bill Patton, Vic Monshaw, and Ken Foster. The Philadelphia Executive Committee (20) comprises the Section Officers and Committee Chairmen. Shown seated from the left are Pritpal Singh, Student Activities; George Polletti, Membership/Public Relations; Kent Ringo, Industrial Relations; Walt Schoppe, 1992-93 Chairman; Gary Ridge, 1991-92 Chairman; David Weigand 1992-93 Treasurer; standing are Bruce Eisenstein, Sr. Past Chairman; Ned Kornfeld, Bylaws; Stan Dixson, Jr. Past Chairman; Barney Adler, Section Archivist; Fulvio Olivetto, Section Meetings; Harris Zobrowitz, Education; Bob Lasser, Student Representative; Gerald Gordon, Awards; Bill Middleton, Professional Activities; Vic Monshaw, Awards; and Ed Postell, Almanack; or other places at this gala were (21) Mr. & Mrs. Walter Schoppe, 1992-93 Section Chairman; (22) Mr. & Mrs. Merrill W. Buckley, Jr., 1992 IEEE President; and Dr. & Mrs. Kenneth A. Fegley, Past Chairmen's Council; (23) Dr. & Mrs. Nihat Bilgutay, Treasurer; (24) Mr. & Mrs. Fulvio Olivetto, Section Meetings; (25) Mr. & Mrs. Edwin J. Podell, Almanack Editor; and (26) Gary Ridge, Section Chairman and Gerald Gordon, Awards Chairman.

*Please call (215) 379-7888 and identify this Fellow.

The 90's

IEEE Philadelphia Section Awards and Recognition for 1994

New IEEE Fellows and others were honored on Saturday evening, March 5, 1994 at the Philadelphia Section's Annual Awards Night. The new Fellows are: (1) Charles K. Alexander, (2) David J. Farber, (3) Robert Fischl, and (4) Donald W. Zipse. Other award winners are: Philadelphia Section Awards to (5) Stanley B. Dixson, (6) Robert D. Goldblum, and (7) Marvin Weitzenkorn and Stu Levy; Past Chairman's Award to (8) Walter Schoppe; and Chapter of the Year Award to (9) Moshe Kam (Circuits & Systems/Control Systems) and (10) Ari Naim (Communications/Information Theory). The outstanding event was the result of the efforts of the Awards Committee, including (11) (seated) Bill Middleton and Co-Chairs Gerry Gordon & Val Monshaw; (standing) Harry Urkowitz, Moshe Kam, Stan Dixson, unknown and not on Committee, Walt Shoppe and Vic Schutz. The cast (12) included L. Troy Nagle, IEEE President; Ken Laker, Section Chair-Elect; Charles K. Alexander, IEEE VP for Professional Activities; Marge Haag, Section Treasurer; Stu Levy, Section Secretary; Nihat Bilgutay, Section Chair; Gerry Gordon, Awards Committee Chair; and Art Van Gelder, Region 2 Director. As always, the Section thanks Howard Sheppard (13), shown with his wife, for arranging the affair at the Union League. The complete cast (14) comprised those in (12) and their guests. The Keynote Speaker was L. Troy Nagle, IEEE President (15) who gave out the awards along with Art Van Gelder, Region 2 Director (16) and Nihat Bilgutay, Section Chair (17). The MC, Gerry Gordon (18), did an outstanding job both in the preparation and execution of the event and was aided by Vinit Vaish (19), IEEE Office Manager. The people at this table (20) are all from AEL, a long time supporter of the Philadelphia Section. Seated (from left) are Sue Evans, Judy and Ray Mandeville, Donna and Jim Schoenthaler, and Karen Marcus; standing (from left) are Al Evans, Bill and Barbara Heskin, Baruch and Vered Even-Or, and Steve Mazzo.

1994 Awards Night Supporters Appreciated

The 1994 Section Awards Night on March 5 was another resounding success. On behalf of the Section Executive Committee, Gerry Gordon and Val Monshaw, Philadelphia Section Awards Committee Co-Chairs, express their appreciation for the outstanding support from individuals and from the organizations listed on the right.

Without the support of these organizations, Awards Night could not have been the success it was. We look forward to their continuing participation next year and urge other organizations to join in this event that brings together engineers from all areas of the electrical, electronics and computer engineering fields, and from all levels in their organizations.

- AEL Industries
- Bell Atlantic
- Consultants' Network
- Drexel University
- Thomas K. Dyer, Inc.
- Flam and Russell
- General Atronics
- Martin Marietta
- NPD Concepts
- PECO Energy
- R&B Enterprises
- Temple University
- Tetlex Instruments
- University of Pennsylvania
- Villanova University
- Widener University

IEEE Philadelphia Section 1999 Awards and Recognition

Deserving IEEE volunteers and student members were honored on Saturday evening, March 6, 1999 at the Section's Annual Awards and Recognition Night Banquet in the Rose garden Banquet Room of the Bellevue Hotel. First to greet the many members and guests was Sandra Doyle (1), Section Office manager and member of the Banquet Arrangements Committee. The program included four IEEE Presidents from the Section (2): Merrill Buckley, 1992 IEEE President and IEEE-USA President-Elect, Bruce Eisenstein, IEEE President-Elect, Kenneth Laker, IEEE President, and Joseph Bordogna, IEEE Immediate Past President. **(This is the only time that the top three volunteers in the IEEE — President-Elect, President and Immediate Past President — come from the same section; Philadelphia is proud!)** Joe Bordogna holds the Region 2 Pinnacle Award (3) which he just received from Marvin Weilerstein, Section Chairman (on left) while Bill Middleton (Mr. IEEE as far as the Editor is concerned for all he has done for the Institute) is reading the citation. Bill was also recognized for receiving the "IEEE-USA Award for Distinguished Contributions to Engineering Professionalism." The main presentation, "Interactive Multimedia Intelligent Tutoring System (IMITS), was given by a group of Temple Students (4): Mathew Bartels, a senior in Broadcasting, Telecommunications and Mass Media; Michael Duane, an EE senior; Dr. Brian P. Butz, inventor of IMITS, EE Professor, and Section Vice Chair/Chair Elect; Zhongxin Li (Julie), an EE graduate student and teaching assistant; Jerome Loreski, an EE senior and IEEE member; and Edward W. Gathers III, a senior in Music composition. Amo Shah (5), a junior at Rowan University with a double major in Electrical Engineering and Computer Science, received the Allen L. Kirsch Outstanding IEEE Student Member Award from Val Monshaw (on left), Investment Chair, and Barney Adler (on right), Student Activities Chair. Gerald Gordon, Technical Conferences Chair, received the 1998 Regional Activities Board (RAB) Leadership Award from Ken Laker. Moshe Kam (7) received the Past Chair Award from Merrill Buckley (left) and Gerald Gordon. Chapter of the Year awards were presented by Past Section Chairs Marvin Rozansky (left) and Victor Schultz (right) to Edwin Podell (6), Professional Communications, and to John Sudano (9), Aerospace and Electronic Systems. The highest IEEE member grade, Fellow, was bestowed on Dr. Afshin Daryoush for contributions to the Field of Nonlinear Microwave Photonics with Application in High-speed Fiberoptic Links. Dr. Daryoush (10) on right received the award from Bruce Eisenstein and Ken Laker. Four active members of the Section Executive Committee are Mr. & Mrs. James Kubeck (11), Treasurer; Mr. & Mrs. Stu Levy (12), PACE Co-Chair; Mr. & Mrs. Val Monshaw (13) and Mr. & Mrs. Edwin Jay Podell (14), Almanack Editor and PACE Co-Chair. The Section Officers (15) are Brian Butz, Vice Chair/Chair Elect; Moshe Kam, Jr. Past Chair; Marvin Weilerstein, Chairman; Jim Kubeck, treasurer; and Jason Malpetsas, Secretary. Receiving awards in absentia were Alfred T. Johnson Jr. and Howard H. Sheppard (Section Award) and Theodore W. Hissey Jr. (Fellow).

Needless to say the 160 people attending had a great time. You should come next year and enjoy the comraderie, fun and festivities as well as a gourmet meal.

May 1999 6 Almanack Almanack 7 May 1999

IEEE Philadelphia Section 1996 Awards and Recognition at The Union League

Four new IEEE **fellows** from the Philadelphia Section and others were honored on Saturday evening, March 9, 1996 at the Section's Annual Awards Night Banquet. The new Fellows are: (1) **Gershon Buchsbaum**, University of Pennsylvania; (2) **David Carlson**, Solarex; (3) **Nadar Engheta**, University of Pennsylvania (next to **Wally Read**, IEEE President); and (4) **Richard Klafter**, Temple University. Philadelphia Section Awards went to (5) **Val Monshaw** (who took all the other pictures), Lockheed Martin, retired (flanked by **Marge Haag**, Section Chair, and **Dan Benigni**, Region 2 Director); (6) **Lee Riebman**, CEO of AEL Industries, and (7) **Harry Urkowitz**, Lockheed Martin. Chapter of the Year was awarded to (8) **Ahmad Hoorfar**, Antennas and Propagation/Microwave Theory and Techniques; and Past Chair to (9) **Ken Laker**. The dais (10) included **Stu Levy**, Section Chair-Elect; **Wally Read**, **Marge Haag**, **Marv Weilerstein**, Section Secretary, **Moshe Kam**, Section Treasurer and Awards Committee Chair; and **Dan Benigni**. A special guest was (11) **Helen Yonan**, IEEE Office Manager for 25 years, who retired in 1986. We continue to honor outstanding IEEE members at the Union League, thanks to **Howard Sheppard** (12) shown with his wife, Margaret. **Join the festivities next year, early in March.**

IEEE INTRODUCES
CAREER MANAGEMENT AND PLANNING GUIDE

A new guide to help engineers maintain viable careers in today's rapidly changing technical environment is available from the IEEE. Called the IEEE Career Asset Manager (CAM), the comprehensive career management and planning program provides a structured approach for defining personal career goals, preparing a professional development plan, and maintaining records from résumé generation and job searches.

The three-part program features numerous tips on how to prepare for improvement and change. The first section, CAMinfo, contains information on licensing and certification, career options, tactics for dealing with corporate downsizing, and strategies for maintaining technical vitality. It also highlights the value of life-long learning and the role of the professional organization in fostering professional growth. The second section, CAMwork, helps the user to keep records of professional training and education. It also provides a format for rapidly generating up-to-date resumes. In the third section, CAMplan, the program offers a step-by-step process to design a professional development plan through self-evaluation and goal-setting exercises.

The Career Asset Manager also includes a basis for measuring career growth and contains information on other IEEE resources for career planning. The program is available in a loose-leaf format. A software edition will be offered in 1997.

For more information about the IEEE Career Asset Manager, contact Gale Lazzio, IEEE Educational Activities, 445 Hoes Lane, Piscataway, NJ 08855-1331, or (908) 562-5526. E-mail g.lazzio@ieee.org

May 1996 4 Almanack Almanack 5 May 1996

IEEE Philadelphia Section 1997 Awards and Recognition at the Union League

One new IEEE Fellow and others were honored on Saturday evening, March 9, 1997 at the Section's Annual Awards Night banquet. The new Fellow is (1) Harry Kwatny, Drexel University, between Joe Bordogna, IEEE President-Elect (on left) and Lynn Carpenter, Region 2 Director. The Philadelphia Section Award went to (2) Moeness Amin, Villanova University. Philadelphia Section Special Awards went to (3) Bruce Eisenstein, Drexel University — with Nihat Bilgutay, Past Section Chair, to his right— and (4) Ken Laker, University of Pennsylvania, with Gerry Gordon, Peco (retired), on his left. Chapter of the year was awarded to (5) Fred Childs, Vehicular Technology; and Past chair to (6) Marge Hagg. Special Guests were (7) the "original programmers" (see Chair's Message on page 2) Betty Jennings Bartik, Betty Holberton and Kathleen Mauchly Antonelli. Others there were (8) Stu Levy, Section chair; (9) Merrill Buckley, 1992 IEEE President, and Ed Podell, Almanack Editor; (10) Mr. & Mrs. Marv Weilerstein, Section Treasurer; (11) Mr. & Mrs. Val Monshaw (who took all the pictures except this one); (12) Mr. & Mrs. Fulvio Oliveto, Sections Meetings/Special Events Chair, flanked by Mr. & Mrs. John Sudano, a new IEEE Senior Member; (13) Sandy Gordon; and (14) Mr. & Mrs. Howard Sheppard, who books the Union League each year for this affair. Some of the awards are shown in (15).

May 1997 6 Almanack | Almanack 7 May 1997

90's

IEEE Philadelphia Section Awards and Recognition for 1995

At its annual Awards Night at the Union League on Saturday evening, March 11, 1995, the Philadelphia Section honored its outstanding students, chapters that displayed outstanding activities, Immediate Past Chairman, Philadelphia Section Award winners, new Fellows, and winner of the IEEE Region 2 Pinnacle Award. These pictures show the [illegible] and many of those who gave their tribute by their presence. Starting at the upper left are (1) [illegible] New York to Philadelphia [illegible] from the left are [illegible] Section chairman Ken Laker presenting the awards; (2) Outstanding Student John Taylor [illegible] from Temple University; Chapter of the Year Awards [illegible] for Electromagnetic Compatibility and [illegible] (4) for Vehicular Technology; (5) Past Chairman's Award presented by Ken Laker to Nihat Bilgutay; Section Awards presented by Laker to [illegible] and by Dan Benigni, Region 2 Director, to Walt Schoppe [illegible] special award to Joe Bordogna, candidate for IEEE President-Elect. The [illegible] IEEE Fellow from the Philadelphia Section is William W. [illegible] for [illegible], planning and management of large communication

networks [illegible] Wally Read [illegible]. The IEEE Region 2 Pinnacle Award was presented to Merrill W. Buckley, 1992 IEEE President by Laker (10). Those who sat at the dais (11) are (standing) Walt Schoppe, Ken Laker, Wally Read, Joe Bordogna, and (seated) Dan Benigni, Nihat Bilgutay, and Vijay Bhargava, Regional Activities VP; the same men are shown (12) with their wives [illegible] Bordogna, Maureen Benigni, Kathy Bilgutay and Mary Ellen Laker. Attendees at some of the tables (from the left are AIL) (13) [illegible] Chris Reitman, Lee

Reitman, Char Gerhe, Steve Mazzo (hidden), Karen Mazzo, Mal Gerhe, Al Evans, Susan Evans, Donna Schuchardt, Vered Chen-Or, and [illegible] (Section Executive Committee (14)) Ed Podell (Almanack Editor), Marv Weilerstein (Technical Activities) & Lillian Weilerstein, [illegible] (Treasurer), Linda [illegible] & Maryanne Adler; (15) [illegible], Margaret Bhargava, [illegible], Sandra & Gerry Gordon (Technical Conferences), Marge Hagg (Vice Chair [illegible]), Howard Sheppard (Union League Liaison), [illegible] (PACE), and

Joyce McAllister, Lockheed Martin, Moorestown; (16) [illegible] (hidden), [illegible], Dave Weigand, Linda & James Melton, [illegible] (Section Meetings), & Maria Oliveto; (17) Larry & Edith Nork, Harry Urkowitz, Janice Kubiack, Edith Urkowitz, Mick & Jennifer [illegible], John Kubiack, Marv & Sharon Mazanesky; (18) Linda & Jerry Goldkrantz, Lauretta & Ed Schermerhorn, Sue & Jay Haimson, Barbara & Jim Wilhelm, and Mary & Mike Sullivan; (19) Mary & Merrill Buckley, Val (Membership) & Harriet Monshaw, Caroline Ringo, Lois Fagan, Kent Ringo (Industrial & Public Relations), Tom Fagan, Karen & Don Dunn, Lockheed Martin, Princeton (20) Paul & [illegible] Fleissner, Eiko & Kiyo Tomiyasu, Jim and Beatrice D'Arcy, Milton & Clara Berkowitz, and Robert & Victoria Chiao (both hidden), Drexel University (21) Dorothy Fraser, Dick Tinkler, Moeness Amin (Secretary), [illegible] Fatouros, Antonios Zavaliagkos, Terry Eisenstein, Anne & Hermann Schauer, Bruce Eisenstein and Peter (hidden) & Ellen Levin, University of Pennsylvania (22) Fred & Dolly Katherr, May Berkowitz, Susan Hunt, Tay (hidden) & Maria Tallati, [illegible] Rabb, Ken & Virginia Fogley, Ray Bordogna (hidden) and Agnes Seidman. Other photos show (23) Ed Fennen, Bruce Eisenstein, Ray & Joe Bordogna, and (24) attendees enjoying cocktails before dinner.

May 1995 4 Almanack | Almanack 5 May 1995

Philadelphia Section Chairs for AIEE and IRE (1903–1963)

The following 95 engineers served as Chairs of the AIEE and IRE in Philadelphia, before the IEEE was formed in 1963.

1903-04	C. Kemp, AIEE	1918-19	E. W. Carpenter, IRE	1948-49	P. M. Craig, IRE
1904-05	C. E. Bowen, AIEE	1919-20	L. Bassett, AIEE	1949-50	A. P. Godwin, AIEE
1905-06	B. A. Foster, AIEE	1920-21	H. W. Byers, IRE	1950-51	A. N. Curtiss, IRE
1906-07	C. W. Price, AIEE	1921-22	P. S. Hardaye, AIEE	1951-52	W. F. Rose, AIEE
1907-08	W. C. L. Eglin, AIEE	1922-23	W. J. Diehl, IRE	1952-53	J. T. Brothers, IRE
1908-09	J. Stevens, AIEE	1923-24	H. C. Albrecht, AIEE	1953-54	S. R. Warner, Jr., AIEE
1909-10	P. Spencer, AIEE	1924-25	E. D. Cook, IRE	1954-55	C. A. Gorcher, IRE
1910-11	G. Bradley, AIEE	1925-26	R. W. Whitehead, AIEE	1955-56	H. H. Sheppard, AIEE
1911-12	C. Young, AIEE	1926-27	E. McIlwain, IRE	1956-57	E. M. Rodgers, IRE
1912-13	B. A. Mease, AIEE	1927-28	O. C. Traver, AIEE	1957-58	L. R. Gaby, AIEE
1913-14	A. R. Cheney, AIEE	1928-29	S. G. Wolff, IRE	1958-59	C. M. Slinker, IRE
1914-15	H. Knowles, AIEE	1929-30	J. D. Harris, Jr., AIEE	1959-60	W. F. Dankhorst, AIEE
1915-16	J. H. Tracy, AIEE	1930-31	A. E. Morris, IRE	1960-61	J. G. Brainerd, IRE
1916-17	H. P. Liversidge, AIEE	1931-32	O. S. Phelps, AIEE	1961-62	A. E. Priede, Jr., AIEE
1917-18	N. Hayward, AIEE	1932-33	H. J. Schrader, IRE	1962-63	A. C. Spielman, IRE
1918-19	W. P. Jones, AIEE	1933-34	E. P. Yerkes, AIEE	1963-64	T. E. Shoemaker, AIEE
1919-20	C. E. Clewell, AIEE	1934-35	R. S. Hayes, IRE		
1920-21	C. E. Bowen, AIEE	1935-36	O. C. Price, AIEE		
1921-22	P. H. Cline, AIEE	1936-37	C. M. Burrell, IRE		
1922-23	E. Turtle, AIEE	1937-38	W. B. Morton, AIEE		
1923-24	R. B. Moore, AIEE	1938-39	C. C. Chambers, IRE		
1924-25	C. D. Fawcett, AIEE	1939-40	G. W. Bowen, AIEE		
1925-26	N. Slate, AIEE	1940-41	L. B. Coleman, IRE		
1926-27	S. Ballantine, IRE	1941-42	E. H. Mcamy, AIEE		
1927-28	L. T. Coar, AIEE	1942-43	W. P. Wise, IRE		
1928-29	J. C. Van Horn, IRE	1943-44	A. C. Monr, AIEE		
1929-30	J. M. Ross, AIEE	1944-45	T. A. Smith, AIEE		
1930-31	L. M. Deming, AIEE	1945-46	C. F. Pearce, AIEE		
1931-32	R. H. Kline, AIEE	1946-47	O. B. Shish, IRE		
1932-33	H. H. Kelley, AIEE	1947-48	H. A. Doherty, AIEE		
1933-34	W. R. G. Baker, IRE	1948-49	S. Cahn, IRE		
1934-35	C. N. Johnson, AIEE	1949-50	W. R. Cox, AIEE		

Philadelphia Section Chairs for IEEE (1963–2003)

The following 40 Engineers served as Chairs of the IEEE in Philadelphia.

YEAR	CHAIR	COMPANY	YEAR	CHAIR	COMPANY
1963-64	F. W. Seeber	ITE Incorporated	1983-84	A. L. Smith	Honeywell
1964-65	K. H. Emerson	Philco-Ford	1984-85	L. E. Bauer	Naval Engr
1965-66	W. E. Schilz	PECO	1985-86	Ned Kornfield	Widener
1966-67	J. E. Stock		1986-87	Marvin Rotkovsky	RCA
1967-68	J. E. Casey		1987-88	Joseph A. Bordogna	UofP
1968-69	W. W. Middleton	Bell of PA	1988-89	Mark S. Zimmerman	Magnavox
1969-70	S. Zebrowski	Philco Ford	1989-90	Bruce A. Eisenstein	Drexel
1970-71	G. M. Saini	U of P	1990-91	Stanley R. Dorsey	Consultant
1971-72	H. O. Wood	Burd Aero	1991-92	Gary C. Bridge	Bell Atlantic
1972-73	R. Mayer	Sun Tech., G.E.	1992-93	Walter Schopge	SADC
1973-74	E. F. Hallmann	PECO	1993-94	Nihal Bilgutay	Drexel
1974-75	Fred Hahn	U of P	1994-95	Kenneth R. Laker	U of P
1975-76	C. Williams	Bell of PA	1996	Margaret Hinz	PECO
1976-77	D. C. Dunn	PECO	1997	Stu Levy	Consultant
1977-78	V. K. Schutt	Temple	1998	Moshe Kam	Drexel
1978-79	T. L. Fagin	GE	1999	Mark Weiderhorn	Consultant
1979-80	M. W. Buckley, Jr.	RCA	2000	Brian Butz	Temple
1980-81	J. C. Bry, Jr.	RCA	2001	Jim Kubeck	Lockheed Martin
1981-82	K. A. Fegley	U of P	2002	Tasos Malapetsas	Aeroix International
1982-83	G. W. Gordon	PECO	2003	Janet Rothcutt	Lockheed Martin

IEEE Philadelphia Section Presents Awards at the 54th Annual Delaware Valley Science Fair

For over 20 years the IEEE Philadelphia Section has presented awards to high school students at the Delaware Valley Science Fair, held this year on April 10, 2002. Four winners were selected by (from the left in Photo 1): Kent Ringo, Ed Podell (both IEEE Life Senior Members), Vic Monshaw (Life Fellow), John Tamburo (Senior Member), and John Anderson (Member) who took the photos of the winners' exhibits.

The Awards were presented by Section Chair Tasos Malapetsas to (from the left in Photo 2): **Eric Steigelman**, a junior at Germantown Academy High School – First Prize (plaque and $200) for *Internet Bridged Telepresence Robotics* (Photo 3); **Andrew Muth**, a junior at North Penn High School – Second Prize (certificate and $150) for *A Tale of Two Robots: Cooperative Exploration & Intelligence in the Robotic World* (Photo 4); **Andrew Steinberg**, a junior at Neshaminy High School – Third Prize (certificate and $100) for *Accurate Mobile Robot Positioning* (Photo 5); and **Inna Alecksandrovich**, 8th grade at Abrams Hebrew Academy – Honorable Mention (certificate) for *Ohm's Law At Work* (Photo 6).

IEEE Philadelphia Section 2001 Awards and Recognition

Deserving IEEE volunteers and student members were honored on Saturday evening, March 3, 2001 at the Sections Annual Awards and Recognition Night Banquet in the Marriott Hotel in Philadelphia (1). The highlight of the evening was when six IEEE Senior Members became IEEE Fellows: (2) Muthanna Amin (on the right receiving his plaque from Joe Snyder, IEEE President); (3) Karl W. Boer; (4) Moshe Kam (on the right receiving his award from Bruce Eisenstein, 2000 IEEE President); (5) Houp Lee; (6) Jonathan Smith; and Roch Guerin (not present). Other awards presented were Section Awards to Edwin Jay Podell (7) (flanked by Harry Lindowitz and Kent Ringo, former recipients of this award); Main Presentation (s: (8) David Brooks and Kevin Lenhart (2000 Drexel graduates); Outstanding IEEE Student Member Award (9) to Barbara Sellers from Vic Monshaw and Barney Adler; Most improved Student Chapter in Region 2 to Barbara Sellers (10) from Mark Adler, Region 2 Director; Past Chair Award to Brian Butz (11) (holding plaque) from Merrill Buckley and Gerard Gordon; and Region 2 Pinnacle Award to Bruce Eisenstein (12).

Among the outstanding attendees were the Section Chair Jim Kubeck (13) and his wife and Joe Bordogna (14), 1996 IEEE President and recently in command at the National Science Foundation.

As shown in (15), those attending paid rapt attention to the interesting presentations.

Needless to say the 180 people attending, some shown in photo 15, had a great time. You should come next year and enjoy the comraderie, fun, and festivities as well as a gourmet meal.

The New Millennium

2003 Philadelphia Section Executive Committee

(l to r) Barney Adler, Student Activities; Ed Podell, Almanack Editor; Kent Ringo, Industry & Public Relations; Nick Ipri, GOLD; Fulvio Oliveto, Section Meetings/Special Events; Janet Rochester, Section Chair; Merrill Buckley, Awards & Recognition; Kevin Hanlon (hidden), Student Representative; Narisa Chu, Section Treasurer; John McCormack, Section Secretary; Marvin Weiler-stein, Technical Activities; and Tasos Malapetsas, Jr. Past Chair.

IEEE Medalists & Award Recipients In The Philadelphia Section

MEDALISTS

M. L. Leeds – Edison 1948
N. Cohn – Lamme 1968
Y. H. Ku – Lamme 1972
J. C. Bridwell – Founders 1975
N. Cohn – Edison 1982
Herman E. Schwan – Edison 1985
Joseph F. Thompson – Simon Ramo 1995

FIELD AWARDS

E. J. Bingler – Zworykin 1956
C. S. Schifreen – Haburtian 1964
W. E. Skeats – Haburtian 1965
R. A. Stumpf – Diamond 1967
A. E. Williams, Jr. – Leeds 1968
A. C. Schroeder – Zworykin 1971
E. G. Rautberg – Sarnoff 1972
E. W. Boehne – Haburtian 1973
J. P. Eckert – Pinto 1978
J. W. Mauchly – Pinto 1978
R. M. Showers – Steinmetz 1982
E. J. Buckley – Steinmetz 1991

SERVICE AWARD

W. W. Middleton – Barnden Pratt 1984

IEEE-USA AWARDS

DISTINGUISHED CONTRIBUTIONS TO ENGINEERING PROFESSIONALISM
W. W. Middleton – 1998

PROFESSIONAL ACHIEVEMENT AWARD
E. J. Podell – 2002

REGIONAL ACTIVITIES AWARDS

WILLIAM W. MIDDLETON AWARD FOR DISTINGUISHED CONTRIBUTIONS
W. W. Middleton – 1990

LEADERSHIP AWARD
G. W. Gordon – 1990

ACHIEVEMENT AWARD
R. B. Adler – 2002

Philadelphia Section Award Recipients

I. L. Auerbach	1961	G. L. Fredendall	1981
W. E. Bradley	1962	W. R. Rowland	1981
H. P. Schwan	1963	T. L. Fagan	1982
L. Stegg	1964	L. T. Klauder	1983
J. P. Eckert, Jr.	1965	J. B. Owens	1983
J. W. Mauchly	1965	M. W. Buckley, Jr.	1984
G. E. Beggs, Jr.	1966	B. Chance	1984
W. E. Scholz	1967	B. Fell	1984
W. M. Scott, Jr.	1967	N. A. Ringo	1984
J. G. Brainerd	1968	J. C. Bry, Jr.	1985
Grace Hopper	1968	G. W. Gordon	1986
W. R. Clark, Jr.	1969	K. A. Pegley	1986
E. W. Boehne	1969	G. E. Bodensteen	1987
V. Cox	1969	N. Kornfield	1988
C. T. Penroe	1970	E. S. Wheeler	1989
O. E. Heberlin	1970	W. W. Middleton	1989
S. K. Warren, Jr.	1970	J. Bordogna	1990
T. Travis	1970	D. Jaron	1991
I. Richman	1971	V. K. Schutz	1991
H. J. Woll	1971	M. W. Buckley, Jr.	1992
O. M. Salati	1972	H. P. Schwan	1992
G. M. Gunther	1972	B. A. Eisenstein	1993
C. R. Kratz	1972	J. D. Rittenhouse	1993
C. C. Chambers	1973	S. B. Dixon	1994
P. J. Bingley	1973	R. G. Goldblum	1994
A. Williams, Jr.	1973	S. Levy	1994
M. S. Corrington	1974	M. Weilenstein	1994
W. Middleton	1974	J. Bordogna	1995
N. Cohn	1975	F. Oliveto	1995
B. R. Paxson	1975	W. Schoppe	1995
J. F. Fisher	1976	V. Monastero	1996
C. N Weygandt	1976	L. Rieberman	1996
R. Mayer	1977	H. Urkowitz	1996
H. H. Sheppard	1977	M. Amin	1997
K. V. Armistead	1978	B. A. Eisenstein	1997
H. Rappaport	1978	K. R. Laker	1997
S. Zebrowitz	1978	R. B. Adler	1998
F. Oliveto	1979	A. Johnson, Jr.	1999
Emily Sirjane	1976	H. H. Sheppard	1999
C. Williams	1979	N. Bilgutay	2000
J. E. Baier	1980	E. J. Podell	2001
R. M. Showers	1980	S. R. Showalter	2002
Helen Yonan	1980	D. Graham	2002

75th Anniversary Celeb

75TH ANNIVERSARY KICK-OFF

CUTTING THE CAKE AT THE DINNER DANCE

From left to right: Dr. Kenneth Fegley, Merrill Buckley, Jr., Dr. Victor Schutz, Thomas Fagan, William Middleton and David Drenning.

November-December 1978 16

ONE OF THE MEETINGS HELD AT THE FRANKLIN INSTITUTE

Thomas Fagan, Chairman, and Dr. Victor Schutz, Junior Past Chairman Philadelphia Section.

November-December 1978

A CHANGE IN CHARACTER?

During the past 75 years, the members and officers have built the Philadelphia Section into one of the largest and strongest in the world. Its objectives have been primarily educational and to advance the science of electrical and electronics engineering. Today a major change is taking place in the character of the IEEE which, in turn, is changing the character of the Philadelphia Section. The amendment of the IEEE constitution in 1972 encourages professional activities and non-technical programs in our Section. This is a healthy and important expansion of our activities for the benefit of our 5000 members. At the same time the Philadelphia Section has no intention of weakening its past commitment to education and engineering. Thus we can look back to our accomplishments with pride and satisfaction and to the next 75 years with confidence.

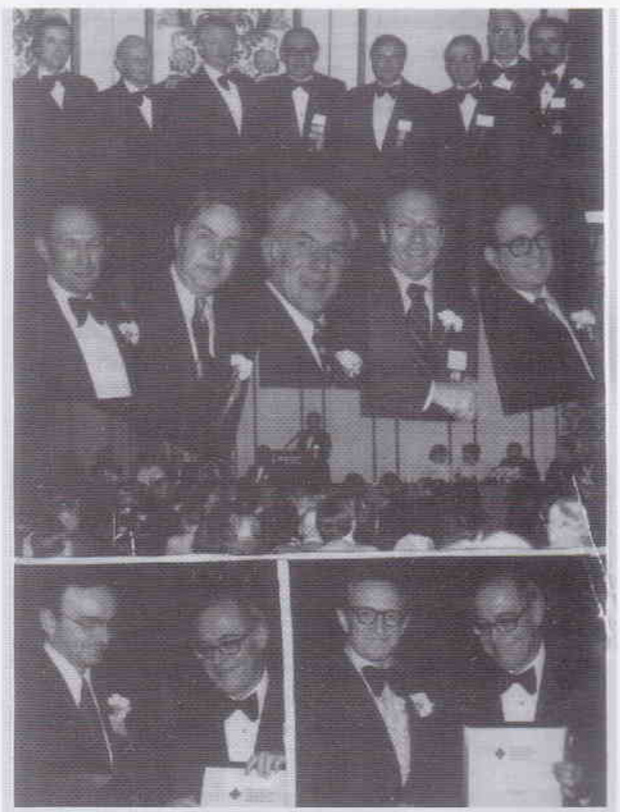
Victor K. Schut
Chairman 1977-7
Philadelphia Sectio

Celebration

PHILADELPHIA SECTION, EXECUTIVE COMMITTEE

left to right: Alan Kirsch, Merrill Buckley, Thomas Fagan, John Bry, Dr. Kenneth Fegley

from left to right: Dr. Victor Schutz, Helen Yonan, William Middleton, John Loftus, Walter Scholz, Arthur Sellers, Charles Phillips, Donald Dunn, Theodore Burkett, Gerald Gordon and Mark Zimmerman



Special

IEEE Presidential Candidates' Debate

The Philadelphia Section of the IEEE did it again. For the eighth time, we had the IEEE Presidential Candidates debate. On the front page of *The Institute*, under the headline: "A Meeting in Philadelphia," was a picture of the two candidates for 1997 IEEE President-Elect, Joseph Bordogna and Vijay Bhargava, with Margaret Haag, the Philadelphia Section Chair; pages 9-10 contain the substance of the debate. The *Electronic Engineering Times* also covered the debate in detail.

On June 25, the evening started with a reception which included heavy hors d'oeuvres and beverages (Photo 1) enjoyed by about 35 IEEE members and their spouses. The main event, of course, was the appearance of the two candidates (Photo 2), Joe Bordogna (left) and Vijay Bhargava, who are also shown (Photo 3), with Fulvio Oliveto, (Special Events Chair), Margaret Haag (Section Chair) and Merrill Buckley (Moderator), and again (Photo 4) listening to questions from the audience (Photo 5).

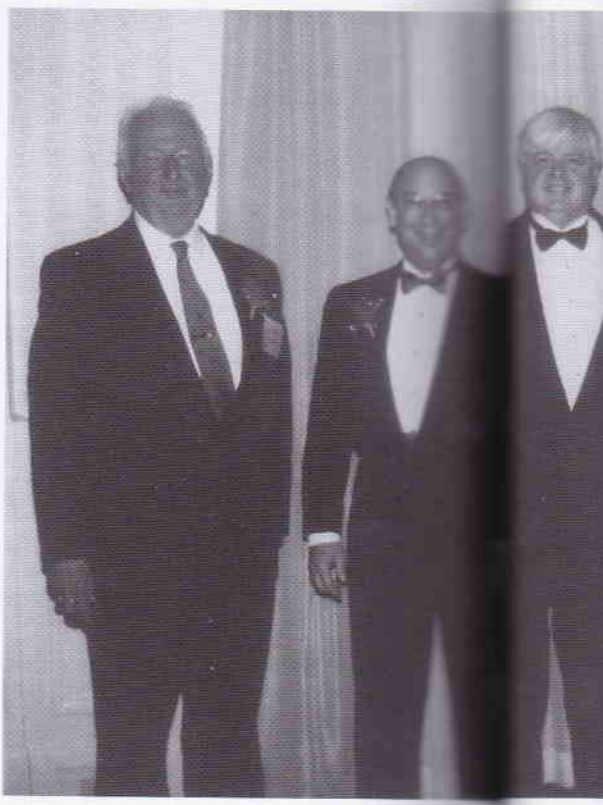
The remainder of this article was contributed by John C. Bry (Past Section Chair).

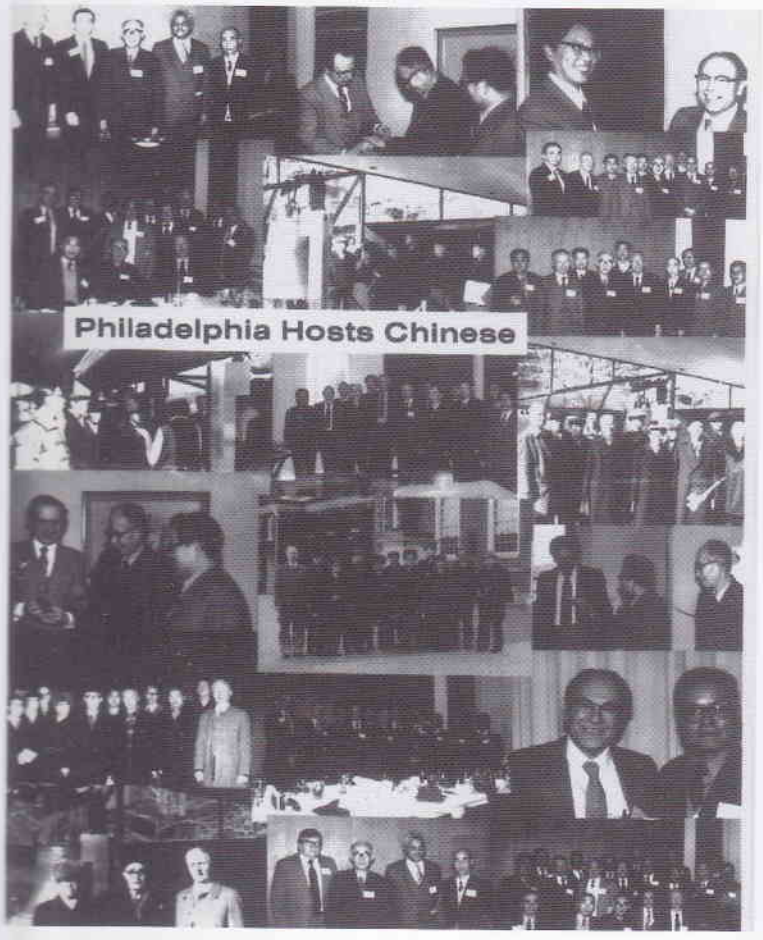
Opening Statements

Vijay K. Bhargava — His goals are to: (a) provide direction for IEEE which will yield a strong partnership with industry, (b) assure dissemination of IEEE products on a truly global basic, (c) allow member choices without compromising goals and increasing member's dues, (d) establish strategic alliances with other organizations and entities both within and outside IEEE, (e) secure electronic processing of IEEE membership applications and down loading of specific papers on request, and (g) emphasize the need for a sound IEEE fiscal policy.

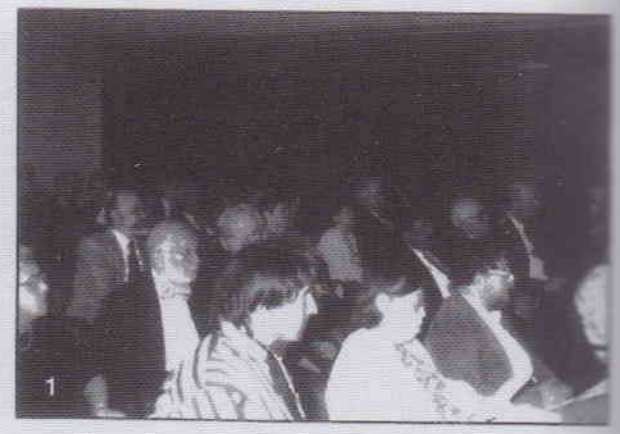
Joseph Bordogna — The IEEE (originally AIEEE) was initiated by men concerned with knowledge transfer. The present purpose of IEEE is threefold: (1) enable the membership (increasing members ability to perform in the market place), (2) provide membership with technical knowledge, and (3) provide networking and opportunities for colleagueal communications. His goals are to (a) emphasize Government/industry partnerships, and (b) enable Members to move into the future with both intellectual and technical knowledge and also with the necessary professional acumen demanded by the global market place.

Past IEEE Presidents (L to R): Merr Buckley, Jr. 1992, Dr. Bruce Eisenstei 2000, Dr. Kenneth Laker 1999, and Dr. Joseph Bordogna 1998.





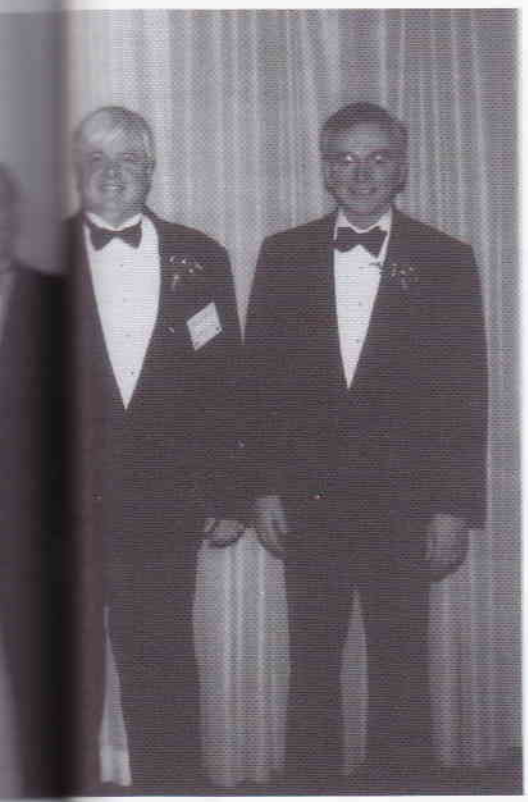
Philadelphia Hosts Chinese



Some of the members listening attentively to the candidates for IEEE President-Elect.

Almanack

Events



Candidates for IEEE President-Elect as they appeared at Drexel in June, flanked by Marvin Weilerstein, Moderator and Section Chairman (on the left) and Fulvio Oliveto, Section Special Events Chair, who arranged the event (on the right). The candidates (from the left) are Edward A. Parrish, Joel B. Snyder, Ray Findlay, and Pete Morley.

September 1999

At IEEE Presidential Candidates Night

The photo at top left shows Bill Middleton, Section PACE Chairman and moderator of the debate; Troy Nagle; Ed Bertnoll; and Fulvio Oliveto, Section Meetings Chairman. The other pictures are candid shots showing the dynamics of the event.

Almanack 9 **September 1992**

FELLOWSHIP NIGHT – A SPECIAL EVENT that honored new section members members who have upgraded and the membership development committee.

February 1980 5 Almanack

PHILADELPHIA SECTION MEETING

SECTION MEETING JOINT WITH THE ENGINEERING MANAGEMENT AND SYSTEMS MAN & CYBERNETICS SOCIETIES AND THE RELIABILITY GROUP.

MANKIND AT THE TURNING POINT, CLUB OF ROME – ACT TWO

TUESDAY, FEBRUARY 25, 1975

The publication of The Limits to Growth, put up sponsor, the Club of Rome, on the future-sight map two years ago. The book warned that exponential economic and population growth cannot continue indefinitely on a finite planet. It also predicted that unless growth was stopped most of the human race would suffocate in pollution or starve soon after the turn of the century. The forecast stirred international controversy and some criticism of the computer model on which the predictions were based.

The Club of Rome has presented its second report, Mankind at the Turning Point; the study is a sort of "Son of Limits." Like the first book, it focuses on the intricate interplay of population, resources and environment, and insists that technology alone cannot solve global problems. It, too, deploys a computer model to deal with its variables. Again, man's prospects seem precarious.

But this time the Club of Rome has tried not to repeat its previous errors. Mankind's authors, Mihajlo Mesarovic, director of Case Western Reserve University's Systems Research Center in Cleveland, and Eduard Pestel, head of Germany's Institute of Mechanics at the Technical University of Hannover, are subdued in tone and, if anything, more optimistic than pessimistic. Their computer treats the world not as a monolithic entity but as ten interdependent regions, each with its peculiar economic, social and geophysical characteristics. Further, the new model is used merely to indicate the possible consequences of actions or lack of them. Unlike Limits, the new book does not use questionable logic or mathematics to support a bleak, inequitable philosophy of no growth. Indeed, it promotes the idea of selective growth: less industrialization in the rich countries to counterbalance more in the poor nations.

Through a series of scenarios, the study discusses population control, the energy crisis, economic partnerships, investments, etc., in its search for solutions. The model and its implications will be the subject of a panel discussion.

(Cont'd on page 5)

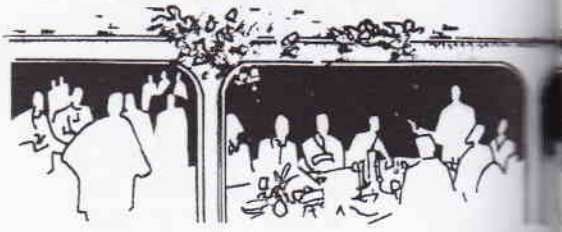
Meeting time:	8 P.M. Tuesday, February 25, 1975
Meeting Place:	Rittenhouse Lab., Rm. A-1, 33rd & Walnut Streets
Dinner time:	6:30 P.M.
Dinner place:	Faculty Club, 36th & Walnut Streets

Reservations for dinner will be necessary IN ADVANCE. Call IEEE office at 243-8166 or 8144.

Free Parking: Lot on Walnut Street, between 33rd & 34th Streets.

I.E.E.E. IGHT

THE PHILADELPHIA SECTION



Joint with
Reliability (S-7) & Systems (S-4)

PART I. FAILURE DISTRIBUTIONS AND GROUP REPLACEMENT

by Dr. Joseph R. Troxell

FIBER OP
LONG WA

PHILADELPHIA SECTION

A partial view of those who attended the October 11, 1965 Section Meeting. The speaker, Alexander Pother, is in the foreground.

Presentation of the past chairman's pin to the former chairman of the Philadelphia Section, Kenneth H. Emerson, at the October 11, 1965 Section Meeting by Mr. Schultz.

October 11 Section Meeting
From left to right — Alexander Pother, Speaker; W. W. Middleton, Secretary of the Philadelphia Section IEEE; W. F. Schultz, Chairman Philadelphia Section IEEE.

October 14 Meeting of the Group on Engineering in Medicine and Biology

The September meeting started with Dr. Zenem Zudans, Sr. VP, Franklin Institute, who spoke about the lessons of Three Mile Island.

Dr. Zudans was followed by Bruce Bagner of RCA, whose topic was police use of radar for traffic control. In this photo, Mr. Bagner is being briefed before his talk, by John Bry (facing camera).

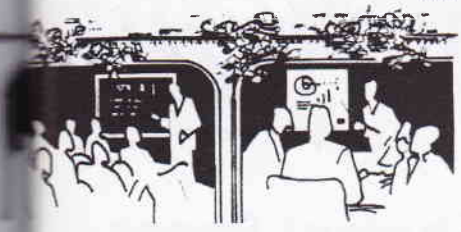
This photo, taken at the October meeting, shows Merrill Buckley and John Bry flanking Dr. Margloff, VP, Publicker Chemical Corp., who reviewed pros and cons of gasohol, and Mr. O'Leary, of RCA, whose topic was operational availability of military systems.

Here Joseph Copestakes and Merrill Buckley flank the two speakers at the January meeting. Dr. George Champine, from Sperry Univac and Exxon, spoke on trends in computer research. Mr. George Axelson, RCA Corp., described a new data storage device.

Those two photos are from the February meeting. The left photo shows Dr. Frank Maloney, Villanova University astronomer, describing his NASA group's search for extraterrestrial intelligence. The right photo shows Maloney greeting the second speaker, Dr. Jacob Kolff, Professor Of Surgery, Temple University, who described his group's experiments in the forefront of artificial heart research.

GHT

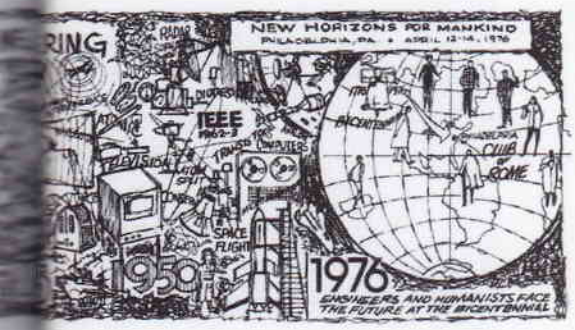
Tuesday, November 15, 1983



ms (S-4)

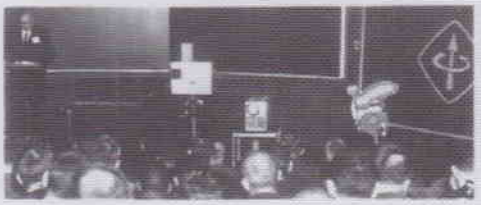
FIBER OPTICS COMMUNICATION AT LONG WAVELENGTHS

by Dr. Gregory Olsen

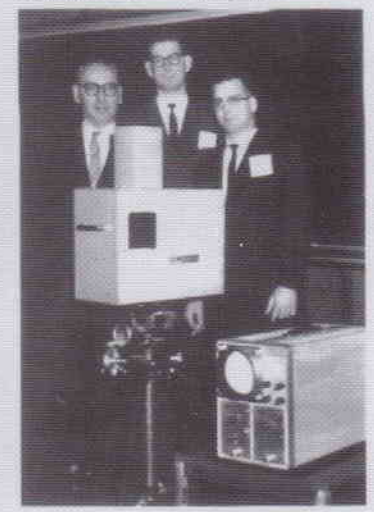


IEEE Section Meeting on January 17 at the Philco Corporation in Blue Bell, Pennsylvania.

Partial view of those attending the meeting.



A view of the Chairman, Walter F. Schulz, addressing the



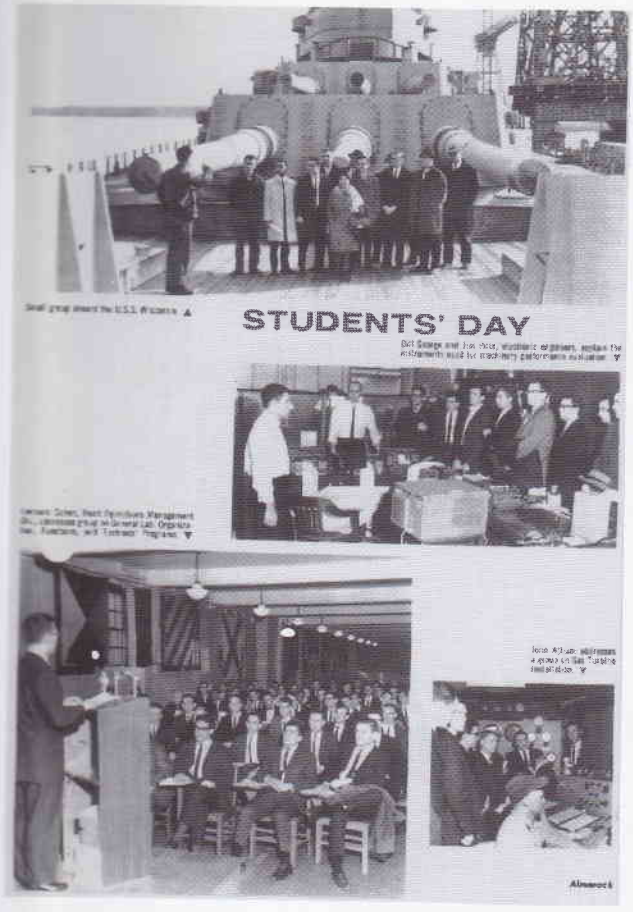
DR. GEORGE REVESZ
MR. WILLIAM BERGER
MR. BRUCE MARKS

Special Events

You have doubtless noticed that every issue of the Almanack carries an announcement of "IEEE Night". These monthly informal gatherings for dinner and stimulating speeches have become an outstanding success, and one attendee said recently that the "IEEE" in "IEEE Night" means "Interesting, Exciting, Eventful and Entertaining". If you haven't attended an IEEE Night, you should call Helen Yonan and make your dinner reservation for the next one.

The concept of IEEE Night was introduced in the Philadelphia Section in September, 1977 and it has proved very successful. Attendance has been good, and prestigious speakers have been heard, representing a wide range of outlooks and disciplines. Moreover the monthly dinners afford members of the Section an opportunity to meet new friends and to renew acquaintanceships with other engineers working in the Delaware Valley. The subjects presented by the after-dinner speakers are designed to be of interest to almost everyone and to relate to current problems of our era.

Student Night an



Student Paper Contest Winners

BY

Conferees for Students' Night, November 15, 1965
Drexel Institute Student Activities Center

Members of the Students' Night Panel, November 15, 1965, at Drexel Institute of Technology Student Activities Center and other guests at the head table for the banquet preceding the meeting.

Condon McDonough—General Electric Co., Hardon H. McFarland—Bell Telephone Co., Mike Sikorski—Drexel Institute, Randy Shumaker—University of Pennsylvania, Ralph Shrader—University of Pennsylvania, Arthur Simons—University of Pennsylvania, Craig Smaller—Temple University, Charles B. Lutz—General Electric Co.

Richard Ellison—Bell Telephone Co. of Penna., Henry Grass—Drexel Institute, Lee Griffith—Drexel Institute, Herb Grier—Spring Garden Institute, J. Fallon—University of Pennsylvania, P. B. Prattura—Bradley Corporation, Thomas Gore—Temple University.

STUDENTS' NIGHT–1967

Reading from left to right: Dr. Robert R. Coon, Dr. Robert B. Goldman, F. W. Myers, R. L. Halberstadt, Wilson W. Middleton, Dr. O. M. Salati, Sam P. Ace and Robert Mason.

Reading from left to right: F. W. Myers, Dr. Robert R. Coon, R. L. Halberstadt, Sam P. Ace and Dr. Robert B. Goldman.

From a letter received in the IEEE Office:

"All of us from St. Joseph's, both the students and myself, enjoyed this year's Students' Night Program. The speakers were good and the dinner was great — thank you for an evening well spent."

Sincerely,
Thomas P. Feley,
IEEE Branch Counselor

The future of IEEE lies with our students and we are encouraged by such responses as the above. The IEEE will continue its efforts to interest students in our many activities. We wish to acknowledge the participation and support of the following companies at the recent Students' Night Program:

American Electronic Laboratories, Inc.
Atlantic Richfield Company
Auerbach Corporation
Bell Telephone Company of Pennsylvania
E. I. du Pont de Nemours & Company
General Atronics Corporation
General Electric Company
Honeywell, Inc.
I-T-E Circuit Breaker Company
Leeds & Northrup Company
Radio Corporation of America
Rohm & Haas
Ramsey Electric Corporation
Stockwell Rubber Company
Sun Oil Company
United Engineers & Constructors, Inc.
UNIVAC
Westinghouse Electric Corporation

and Activities

BY JOHN R. SCHANELY

Swarthmore College Takes the Cheese in Philadelphia Section's Seventh Annual MicroMouse Contest

On Saturday, March 17 in the lobby of Temple University's Engineering Building, three teams assembled before an awesome [illegible] foot square platform upon which had been assembled a previously undisclosed maze [illegible] (Photo 1) with each team [illegible] its own autonomous [illegible] "mouse." The occasion was the Philadelphia Section's Seventh Annual MicroMouse Competition.

Returning this year was Swabot, the [illegible]-based two-year reigning champion handled by Swarthmore students [illegible] (2). Also returning was the [illegible] 386-based Temple Mouse. The Temple handlers [illegible] (3), were hopeful that their mouse would not repeat a crucial navigational error that placed it into a close second place last year (after winning the contest in 1999). The new comer in 2001 was a Z-80 based mouse fielded by a Widener team (4) [illegible]

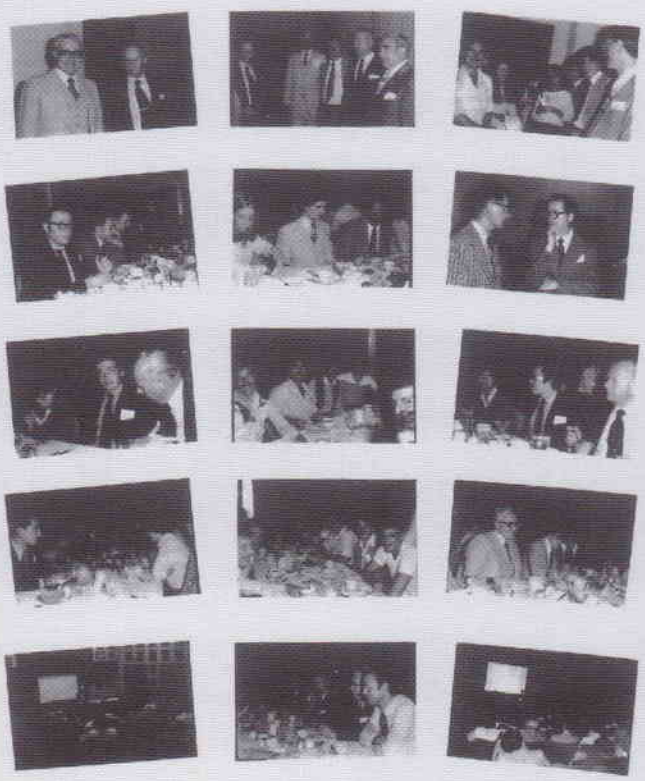
Lamont Furman. An earlier incarnation of this mouse nearly beat Swabot in 1997.

The outcome: Swabot successfully defended the crown with its fifth victory. [illegible] The Temple mouse, after some initial difficulty [illegible] the starting shoot, found the center of the maze in 1 min 45 sec. [illegible] The electronic compass worked great, always aligning the mouse parallel to the corridors of the maze, until the battery gave out. The Widener mouse decided to be shy and refused to leave the starting gate. The Widener handlers are confident that their mouse just needs a little more training and more confidence. They are looking forward to a triumphant return next year.

There was a good turn-out for the competition, with the crowd (1) [illegible] impressed by the intelligence of the autonomous micro-beasts. Temple professor Robert Yantorno (5, top right) did an outstanding job announcing the contest. [illegible] Section Office Manager Sandra Doyle was on hand with her pet mouse and a digital camera, so be sure to check out the Philadelphia Section web site.

A special thanks to Barney Adler (5, top left) who not only wrote this column, except for this paragraph, but also arranged the entire contest.

Almanack 9 *May 2001*



STUDENTS' NIGHT — OCTOBER, 1980

JANUARY 1981 8 ALMANACK

STUDENTS' NIGHT

October 29, 1968 at Villanova University

Reading from left to right: Presenters R. F. Adams, G. A. Etzweiler, A. S. Hummer, W. S. Kleinbach and our Chairman, W. W. Middleton.

From left to right: Chairman Middleton, K. G. Springer, R. J. O'Connell and R. L. Stone.

12 Almanack

UNIVERSITY of PENNSYLVANIA

Almanac

Tuesday, February 6, 1996
Volume 42 Number 19

Countdown to February 14
...please see pages 10-13

ENIAC 50
The Birth of the Information Age

Above: Two of the women who worked on ENIAC, Frances Bilas and Elizabeth Jennings, with a portion of the giant "electronic brain" of 1946.

Center: Undergraduate students Roger Wallace, Jesus Marquez and Irene Leung with surviving ENIAC components and a laptop computer.

Below: James Au and Lee Ping Ang with test models of the chip they designed, replicating the architecture and capacity of ENIAC in a teaching tool. (See pages 12-13 for more on these projects.)

Fifty Years Smaller

In this issue
2 Transition at VPUSC
Dr. Patton/Dr. O'Donnell
Brownlee Chair to Dr. Matter
SEC Agenda 2/7/96
3 ROTC Exchange
Honor Council: New Members
4 Greek System in the 21st Century
Speaking Out: PFSNI, visions
6 SENATE: Economic Status Report
8 PennExpertise: Update Time
9 Research Foundation Awards
10-14 Compass Features
10 Engineering's ENIAC Enthusiast
12 A Silicon Chip off the Ol' Block
13 Penn Has the Write Stuff
14 Students United for Art
15 OPPORTUNITIES
16 Bulletins
19 Update/CrimeStats
20 Visions and Parables to Recollections Revisited

ENIAC Designated an IEEE Milestone

PHILADELPHIA SECTION, IEEE

almanack

November/December 1987
Vol. 32, No. 3

ENIAC has been designated an IEEE MILESTONE.

1946

ENIAC

ELECTRICAL ENGINEERING MILESTONE

(Photo courtesy of the Moore School of Electrical Engineering, University of Pennsylvania)

Those Who Were Key to ENIAC Development. J. Presper Eckert, Jr. and Professor J.G. Brainerd appear first and second from the right, respectively.

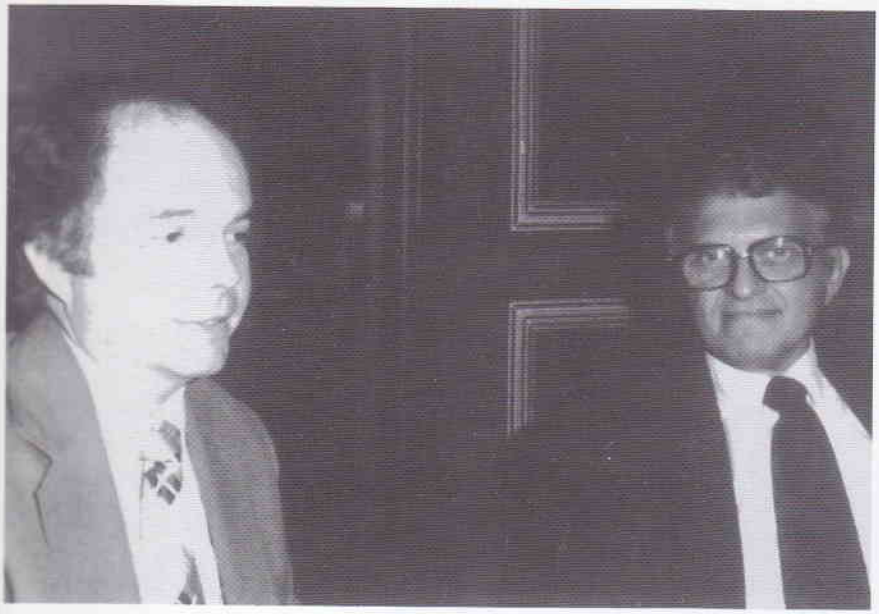
PHILADELPHIA SECTION, IEEE, EXECUTIVE BOARD

Seated left to right are Dr. Bruce Eisenstein (Vice-Chairman), Dr. Joseph Bordogna (Chairman), and Mark Zimmerman (Chairman-Elect). Standing left to right are Ric Shore, Joe Gallagher (Secretary), Ed Shamsi, Peter Hahn, George Poletti, Gene Wheeler, Merrill Buckley, Dave Weigand, Barry Fell (Treasurer), Fulvio Oliveto, Shari Rodway, Rob Reider, Gary Ridge, Dr. Ken Fegley, Dr. Jorge Santiago, Luke Forrest, Dr. Ned Kornfield, Dr. Marv Rozansky, and

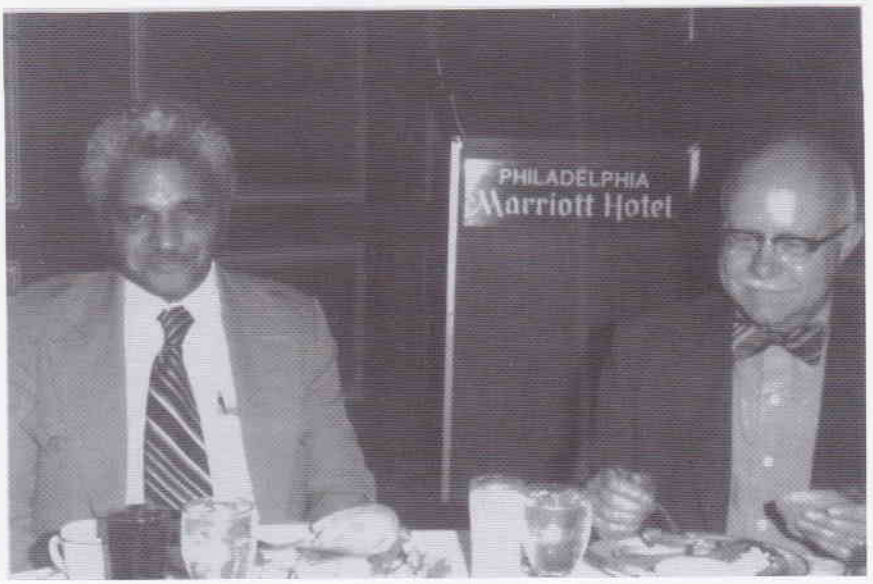
PHILADELPHIA SECTION, IEEE, EXECUTIVE BOARD

Shown seated left to right are the Officers: Dr. Joseph Bordogna (Chairman-Elect), Laura Jacobs (Office Manager), Dr. Marvin Rozansky (Chairman), Dr. Bruce Eisenstein (Treasurer), and Barry Fell (Secretary). Not shown is Mark Zimmerman (Vice-Chairman). Standing from left to right are Frank Lynch, Robert Swint, Dr. Ned Kornfield, Rob Reider, John Bry, Eugene Wheeler, Edward Shamsi, Susan Daily, Merrill Buckley, George Poletti, Dave Weigand, Edwin Podell, Kent Ringo, Fulvio Oliveto, Joe Gallagher, William Middleton and Rick Blum.

Turnover Night




10


PHILADELPHIA
Marriott Hotel

April 1999

Life Members C

visit the Atwater Kent Museum

by Merrill Buckley

Some of the Life Members at the Atwater Kent Museum

Outings

PHILADELPHIA SECTION IEEE EXECUTIVE COMMITTEE

Seated, left to right: *Harry Rappaport, Anthony Bruno, Octavio Salati, Stanley Zebrowitz, Helen Yonan, Joseph Casey and Dr. J. G. Brainerd.* Standing, left to right: *Robert Murray, John Snook, Harris Wood, Charles Taylor, Donald Dunn, Barry Latham, John Niewenhous, D. H. Glueck, Charles Horn, and Dr. Fred Haber.* Missing members: *William Middleton, Walter Scholz, Dr. E. W. Boehne, J. J. Bonk, William Magee, J. E. Hickey, Jr., T. T. Patterson, Robert Mayer, Walter Layer, H. N. Boyd, Wilson Kinkead and J. A. Herrmann.*

PHILADELPHIA SECTION IEEE EXECUTIVE COMMITTEE

Seated left to right: Helen Yonan, Don Dunn, Dr. Fred Haber, Edward S. Hoffmann, Charles Fiocchi, Dr. Victor K. Schutz, and Robert Mayer.

Standing left to right: John C. Bry, Jr., Carroll Williams, Joseph Fischer, Fred Lipson, Dr. Michael Vartanian, William Ernst, Arthur Sellers, Dr. Peter Haber, J. Alan Hirshman, Thomas Barley, Jr., Thomas Fagan and William Middleton.

Missing are: Harris Wood, Dr. W. Schmidt, E. Harper, O. W. Gordon, J. E. Keenan, W. S. Blumenthal, W. Rowland, Harry Rappaport, W. E. Scholz, J. Brooks and Ray Bennett.

FELLOWS' & PAST CHAIRMEN'S NIGHT — 1970

Stanley Zebrowitz, Section Chairman, presenting Certificate to Past Chairman, William W. Middleton.

Partial View of those attending

Stanley Zebrowitz, Section Chairman, Dr. J. Granger, Institute President, presenting Certificate to new Fellow, E. Gary Clark.

Stanley Zebrowitz, Section Chairman, Dr. J. Granger, Institute President, presenting Certificate to new Fellow, Herman Lukoff.

Stanley Zebrowitz, Section Chairman, Dr. J. Granger, Institute President, presenting Certificate to new Fellow, A. S. Robinson.

D. Potts, Region II Director, Dr. J. Granger, Institute President, C. T. Pearce, recipient of Philadelphia Section Award and Stanley Zebrowitz, Section Chm.

Dr. T. H. Lee, Chairman Awards Committee, presenting Dr. Irwin Travis the Philadelphia Section Achievement Award

Dr. T. H. Lee, Chairman Awards Committee, Stanley Zebrowitz, Section Chairman, presenting a Special Section Award to B. E. Heberlein.

Dr. T. H. Lee, Chairman Awards Committee, Stanley Zebrowitz, Section Chairman, presenting Section Special Award to Dr. S. Reid Warren, Jr.

IEEE DINNER DANCE
May 9, 1970 — Treadway Inn
St. Davids, Pa.
Social Hour: 6:30 P.M.
Dinner: 7:30 P.M.
$19.00 per couple
Dancing 'Till 1 to the Ray Smyth Orchestra
Dress: Optional
Reservations close May 1, 1970
Reservations: Call Helen Yonan,
IEEE Office, 594-8106 or 8134.

Miscela

SECTION OFFICERS

Left to Right: W. W. Middleton, *Secretary;* W. E. Scholz, *Chairman;* J. E. Snook, *Vice Chairman;* J. E. Casey, *Treasurer.*

September 1965

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W. E
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K. H
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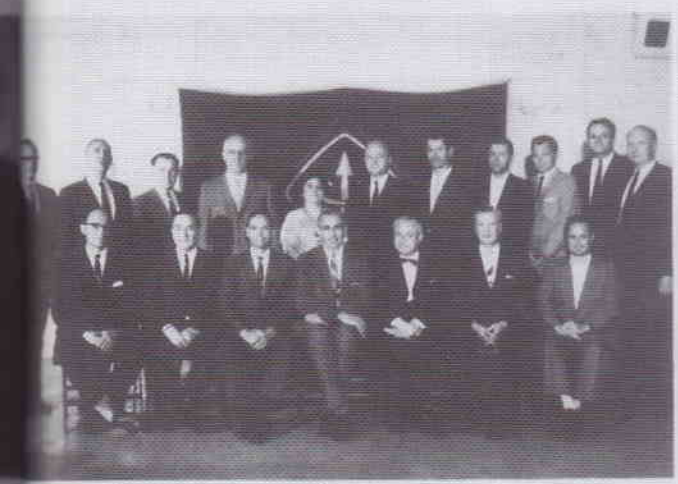
SECTION EXECUTIVE COMMITTEE



Front Row: (Left to Right) H. W. Carlson, Meyer Ziev, J. E. Snook, E. E. Scholz, J. E. Casey, G. W. Bower, H. Rappaport.
Back Row: (Left to Right) J. J. Bonk, T. H. Story, W. P. Magee, H. Emerson, Miss H. B. Yonan, E. S. Halfmann, O. M. Salati, Meyer, T. W. Hissey, E. M. Callender, W. E. Hunt.
Not Present: W. W. Middleton, Dr. E. W. Boehne, C. R. Kraus, H. Horn, J. E. Hickey, Jr., S. Zebrowitz, Dr. N. R. Kornfield, Bruno.

13

1996 Executive Committee Started Work on December 5, 1995

Margaret H. Haag, the 1996 Chair of the IEEE Philadelphia Section, is shown in the upper left corner shaking hands with Kenneth R. Laker, 1995 Chair. Individual photos of all attendees at the Section's Turnover Meeting on December 5, 1995, are shown in alphabetical order: Moeness Amin, outgoing Signal Processing/Broadcast Technology/ Consumer Electronics Chair; Nihal Bilgutay, Sr. Past Section Chair; Merrill Buckley, Finance and Historical Chairs; Fred Childs, Vehicular Technology Chair; Mike Daniele, Electromagnetic Compatibility Chair; Tom Floyd, Group Chapter Rep; Marge Haag, Section Chair; Ahmad Hoorfar, outgoing Antenna Propagation/Microwave Theory & Techniques Chair; Al Johnson, Education Chair; Moshe Kam, Treasurer; Ken Laker, Jr. Past Chair; Stu Levy, Vice Chair/Chair-Elect; Bryan Lorenz, Magnetics Chair & Group Chapter Rep.; Bill Middleton, PACE Chair; Bijan Mobasseri, Signal Processing/Broadcast Technology/ Consumer Electronics Chair; Val Monshaw, Membership Chair and Section Photographer; Chika Nwankpa, Power Engineering/Industry Applications Chair; Ed Portell, Almanack Editor and Professional Communication Chair; Kent Ringo, Industrial & Public Relations Chair; Steve Sokasic, Consultants' Network Chair; and Andrew Spicer, Assistant Student Chapter Rep.

Philadelphia Section Chairs for AIEE and IRE (1903–1963)

The following 95 engineers served as Chairs of the AIEE and IRE in Philadelphia, before the IEEE was formed in 1963.

1903-04	C. Hering, AIEE	1931-32	G. W. Carpenter, IRE	1947-48	P. M. Craig, IRE
1904-05	C. E. Hewitt, AIEE	1932-33	L. Fussell, AIEE	1948-49	A. P. Godsho, AIEE
1905-06	H. A. Foster, AIEE	1932-33	H. W. Byler, IRE	1948-49	A. N. Curtiss, IRE
1906-07	C. W. Pike, AIEE	1933-34	P. S. Harkins, AIEE	1949-50	W. F. Henn, AIEE
1907-08	W. C. L. Eglin, AIEE	1933-34	W. F. Diehl, IRE	1949-50	J. T. Brothers, IRE
1908-09	J. Stevens, AIEE	1934-35	H. C. Albrecht, AIEE	1950-51	S. R. Warren, Jr., AIEE
1909-10	P. Spencer, AIEE	1934-35	E. D. Cook, IRE	1950-51	C. A. Gunther, IRE
1910-11	G. Hoadley, AIEE	1935-36	R. W. Wilbraham, AIEE	1951-52	H. H. Sheppard, AIEE
1911-12	C. Young, AIEE	1935-36	K. McIlwain, IRE	1951-52	L. M. Rodgers, IRE
1912-13	H. A. Homer, AIEE	1936-37	O. C. Traver, AIEE	1952-53	L. R. Gafy, AIEE
1913-14	A. R. Cheney, AIEE	1936-37	I. G. Wolff, IRE	1952-53	C. M. Sinnett, IRE
1914-15	H. Sanville, AIEE	1937-38	J. B. Harris, Jr., AIEE	1953-54	W. F. Denkhaus, AIEE
1915-16	J. H. Tracy, AIEE	1937-38	A. F. Murray, IRE	1953-54	J. G. Brainerd, IRE
1916-17	H. P. Liversidge, AIEE	1938-39	H. S. Phelps, AIEE	1954-55	A. E. Pringle, II, AIEE
1917-18	N. Hayward, AIEE	1938-39	H. J. Schrader, IRE	1954-55	S. C. Spielman, IRE
1918-19	W. F. Jones, AIEE	1939-40	E. P. Yerkes, AIEE	1955-56	T. E. Shieber, AIEE
1919-20	C. E. Clewell, AIEE	1939-40	R. S. Hayes, IRE	1955-56	C. R. Kraus, IRE
1920-21	C. E. Bonnie, AIEE	1940-41	D. C. Prince, AIEE	1956-57	M. J. A. Dugan, AIEE
1921-22	P. H. Chase, AIEE	1940-41	C. M. Burrill, IRE	1956-57	M. S. Corington, IRE
1922-23	E. Tuttle, AIEE	1941-42	W. B. Morton, AIEE	1957-58	B. H. Zacherle, AIEE
1923-24	R. B. Mateer, AIEE	1941-42	C. C. Chambers, IRE	1957-58	N. Johnson, IRE
1924-25	C. D. Fawcett, AIEE	1942-43	G. W. Bower, AIEE	1958-59	G. B. Schleicher, AIEE
1925-26	N. Shute, AIEE	1942-43	J. B. Coleman, IRE	1958-59	I. L. Auerbach, IRE
1925-26	S. Ballantine, IRE	1943-44	H. E. Strang, AIEE	1959-60	R. S. Hewett, AIEE
1926-27	L. J. Costa, AIEE	1943-44	W. P. West, IRE	1959-60	W. A. Howard, IRE
1926-30	J. C. Van Horn, IRE	1944-45	A. C. Muir, AIEE	1960-61	R. L. Halberstadt, AIEE
1927-28	I. M. Stein, AIEE	1944-45	T. A. Smith, AIEE	1960-61	W. T. Sumerlin, IRE
1928-29	L. M. Derning, AIEE	1945-46	C. T. Pearce, AIEE	1961-62	W. O. Mascaro, AIEE
1929-30	R. H. Silbert, AIEE	1945-46	D. B. Smith, IRE	1961-62	R. M. Showers, IRE
1930-31	D. H. Kelley, AIEE	1946-47	H. A. Dambly, AIEE	1962-63	T. H. Story, AIEE/IEEE
1930-31	W. R. G. Baker, IRE	1946-47	S. Gubin, IRE	1962-63	H. J. Woll, IRE/IEEE
1931-32	C. N. Johnson, AIEE	1947-48	W. R. Clark, AIEE		

Philadelphia Section Chairs for IEEE (1963–2003)

The following 40 Engineers served as Chairs of the IEEE in Philadelphia.

YEAR	CHAIR	COMPANY
1963-64	E. W. Boehne	ITE Incorporated
1964-65	K. H. Emerson	Philco-Ford
1965-66	W. E. Scholz	PECO
1966-67	J. E. Snook	
1967-68	J. E. Casey	
1968-69	W. W. Middleton	Bell of PA
1969-70	S. Zebrowitz	Philco-Ford
1970-71	O. M. Salati	U of P
1971-72	H. O. Wood	Ford Aero
1972-73	R. Mayer	Sun Tech., G.P.
1973-74	E. F. Halfmann	PECO
1974-75	Fred Haber	U of P
1975-76	C. Williams	Bell of PA
1976-77	D. C. Dunn	PECO
1977-78	V, K. Schutz	Temple
1978-79	T. L. Fagan	GE
1979-80	M. W. Buckley, Jr.	RCA
1980-81	J. C. Bry, Jr.	RCA
1981-82	K. A. Fegley	U of P
1982-83	G. W. Gordon	PECO
1983-84	A. L. Smith	Honeywell
1984-85	J. E. Bauer	Naval Engr.
1985-86	Ned Kornfield	Widener
1986-87	Marvin Rozansky	RCA
1987-88	Joseph A. Bordogna	U of P
1988-89	Mark S. Zimmerman	Magnavox
1989-90	Bruce A. Eisenstein	Drexel
1990-91	Stanley B. Disson	Consultant
1991-92	Gary C. Ridge	Bell Atlantic
1992-93	Walter Schoppe	NADC
1993-94	Nihat Bilgutay	Drexel
1994-95	Kenneth R. Laker	U of P
1996	Margaret Haag	PECO
1997	Stu Levy	Consultant
1998	Moshe Kam	Drexel
1999	Marv Weilerstein	Consultant
2000	Brian Butz	Temple
2001	Jim Kubeck	Lockheed Martin
2002	Tasos Malapetsas	Access International
2003	Janet Rochester	Lockheed Martin

IEEE Medalists & Award Recipients
In The Philadelphia Section

MEDALISTS

M. E. Leeds – Edison 1948
N. Cohn – Lamme 1968
Y. H. Ku – Lamme 1972
J. C. Brainerd – Founders 1975
N. Cohn – Edison 1982
Herman P. Schwan – Edison 1983
Joseph T. Threston – Simon Ramo 1995

FIELD AWARDS

F. J. Bingley – Zworykin 1956
C. S. Schifreen – Habirshaw 1964
W. F. Skeats – Habirshaw 1965
R. A. Stampfl – Diamond 1967
A. J. Williams, Jr. – Leeds 1968
A. C. Schoeder – Zworykin 1971
E. G. Ramberg – Sarnoff 1972
E. W. Boehne – Habirshaw 1973
J. P. Eckert – Piore 1978
J. W. Mauchly – Piore 1978
R. M. Showers – Steinmetz 1982
F. J. Buckley – Stienmetz 1991

SERVICE AWARD

W. W. Middleton – Haraden Pratt 1984

IEEE-USA AWARDS

Distinguished Contributions to Engineering Professionalism

W. W. Middleton – 1998

Professional Achievement Award

E. J. Podell – 2002

REGIONAL ACTIVITIES AWARDS

William W. Middleton Award for Distinguished Contributions

W. W. Middleton – 1990

Leadership Award

G. W. Gordon – 1999

Achievement Award

R. B. Adler – 2002

Philadelphia Section Award Recipients

I. L. Auerbach	1961	G. L. Fredendall	1981
W. E. Bradley	1962	W. R. Rowland	1981
H. P. Schwan	1963	T. L. Fagan	1982
L. Stegg	1964	L.T. Klauder	1983
J. P. Eckert, Jr.	1965	J. B. Owens	1983
J. W. Mauchly	1965	M. W. Buckley, Jr.	1984
G. E. Beggs, Jr.	1966	B. Chance	1984
W. E. Scholz	1967	B. Fell	1984
W. M. Scott, Jr.	1967	K. A. Ringo	1984
J. G. Brainerd	1968	J. C. Bry, Jr.	1985
Grace Hopper	1968	G. W. Gordon	1986
W. R. Clark, Jr.	1969	K. A. Fegley	1986
E. W. Boehne	1969	G. E. Bodenstein	1987
V. Cox	1969	N. Kornfield	1988
C. T. Pearce	1970	E. S. Wheeler	1988
G. E. Heberlin	1970	W. W. Middleton	1989
S. R. Warren, Jr	1970	J. Bordogna	1990
T. Travis	1970	D. Jaron	1991
I. Riebman	1971	V. K. Schutz	1991
H. J. Woll	1971	M. W. Buckley, Jr.	1992
O. M. Salati	1972	H. P. Schwan	1992
G. M. Gunther	1972	B. A. Eisenstein	1993
C. R. Kraus	1972	J. D. Rittenhouse	1993
C. C. Chambers	1973	S. B. Disson	1994
P. J. Bingley	1973	R. G. Goldblum	1994
A. Williams, Jr.	1973	S. Levy	1994
M. S. Corrington	1974	M. Weilerstein	1994
W. Middleton	1974	J. Bordogna	1995
N. Cohn	1975	F. Oliveto	1995
H. R. Paxson	1975	W. Schoppe	1994
J. F. Fisher	1976	V. Monshaw	1996
C. N Weygandt	1976	L. Riebman	1996
R. Mayer	1977	H. Urkowitz	1996
H. H. Sheppard	1977	M. Amin	1997
K. V. Amatneck	1978	B. A. Eisenstein	1997
H. Rappaport	1978	K. R. Laker	1997
S. Zebrowitz	1978	R. B. Adler	1998
F. Oliveto	1979	A. Johnson, Jr.	1999
Emily Sirjane	1976	H. H. Sheppard	1999
C. Williams	1979	N. Bilgutay	2000
J. E. Bauer	1980	E. J. Podell	2001
R. M. Showers	1980	S. R. Showdhury	2002
Helen Yonan	1980	D. Graham	2002

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