A Century of Honors 1884-1984
A Century of Honors
Past to Present

A Century of Honors
A Century of Honors

The First One-Hundred Years of Award Winners, Honorary Members, Past Presidents, and Fellows of the Institute

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A Legacy of Excellence

May 13, 1984 marks the centennial of the world’s largest engineering society. That key event, the founding of the IEEE under the banner of the American Institute of Electrical Engineers in 1884, also signaled the emergence of electrical engineering as a recognized profession. Therefore, 1984 is truly a significant milestone for electrical engineering.

At this special moment when we can look back with pride on a century of electrical progress, it is appropriate that we give particular recognition to those whose contributions were most responsible for that progress. Towards that end, the following pages bring together the names of a select group of individuals who have been the most highly honored by the IEEE and its predecessors, the American Institute of Electrical Engineers and the Institute of Radio Engineers, during these past 100 years.

Whether as President of the Institute, as recipient of a major award, or as Fellow of the Institute, collectively these individuals have succeeded in building an esteemed profession, a vigorous Institute to serve it, and a rich base of accomplishments for others to build upon. Together they form the honor roll of our profession.

As our first century ends, we express our grateful appreciation to those listed in this special volume for their outstanding legacy of engineering excellence. As our second century begins, it becomes our opportunity and obligation to begin building our own legacy of excellence and of even greater service to mankind.

Richard J. Gowen
IEEE President, 1984
Introduction

IN 1984, the Institute of Electrical and Electronics Engineers (IEEE) celebrates an important milestone—its one-hundredth anniversary. From the vantage point of the IEEE centennial, the Institute's members can look back on a century of outstanding progress and achievements and can count as colleagues, past and present, the giants of electrical technology. This book is a compilation of the honors bestowed upon those great men and women by their fellow engineers. Thanks to the contributions of these and others, our society is, in part, the product of electrical engineering. Indeed, the history of the IEEE and its predecessors, the American Institute of Electrical Engineers (AIEE) and the Institute of Radio Engineers (IRE), is part of the record of the impact of electrical science and technology on the shaping of the twentieth century.

The AIEE was born during a period of optimism and enthusiasm. By 1884, applications for electricity were rapidly increasing, progress in electrical theory and practice were accelerating, and scientists and electricians, as well as entrepreneurs and investors, saw only greater growth ahead. With such growth, electrical technology was becoming more complex, and practitioners began to feel the need for a national forum to exchange ideas and experiences and an organization to define and guide a new profession.

In the spring of 1884, a call was issued for a meeting to form a national electrical society, and after some preliminary gatherings, the American Institute of Electrical Engineers was established in New York City on May 13. Impetus had been given to the new organization by the planning for an International Electrical Exhibition to be held by the Franklin Institute in Philadelphia later that year, and the AIEE quickly gained recognition as a spokesman for American electrical engineers.

From the beginning, wire communications and light and power systems were the major interests of the AIEE. An early and active participant in the development of standards for the electrical industry, the Institute became the primary arbiter for electrical standards in the United States. During the first three decades of its existence, the AIEE confronted and resolved such internal concerns as locating permanent headquarters for the organization; providing mechanisms for contact with a far-flung membership and with students; and fostering new technical interests through committees that were established to meet the challenge of increasing specialization.

By 1912, however, the interests and needs of those specializing in the expanding field of radio could no longer be satisfied by a technical committee meeting two or three times a year. In that year, two largely local radio organizations—The Society of Wireless Telegraph Engineers and the Wireless Institute—merged to form a national society for scientists and engineers involved in the development of wireless communication—the Institute of Radio Engineers. Many of the original members of the IRE were members of the AIEE and both organizations continued to have members in common until they merged in 1963.

The structural development and general activities of the IRE were similar to those of the AIEE. Specialized segments were gathered into professional groups under a central governing body; geographical units and student branches were formed; the creation of an extensive literature and the exchange of knowledge was facilitated through meetings and publications; membership grades were established; and standards were, from the beginning, a major concern.

The nature of radio technology meant that the interests of the IRE went beyond national boundaries. Therefore, the new organization sought and attracted members from many countries and eventually established units in several areas throughout the world.

In the 1930's, the word "electronics" became part of the vocabulary of electrical engineering. Electronics engineers tended to become members of the IRE, but the applications of electron tube technology became so extensive that the technical boundaries differentiating the IRE and the AIEE became difficult to distinguish. After World War II, the two organizations became increasingly competitive. Problems of overlap and duplication of effort arose, only partially resolved by joint committees and meetings.
Finally, in 1961, the leadership of both the IRE and the AIEE resolved to seek an end to these difficulties through consolidation. The next year a merger plan was formulated and approved, becoming effective on January 1, 1963. Plans were made for melding the technical activities and geographical units of the two societies and for establishing a unified publications program for the new organization, the Institute of Electrical and Electronics Engineers.

Throughout the past one-hundred years the IEEE and its predecessors developed ways to honor the achievements of outstanding electrical engineers. These accolades include awards, Honorary Membership, and the grade of Fellow.

The Edison Medal, the oldest of the awards, was conceived by a group of Thomas Edison's associates in 1904 and first awarded in 1909 to Elihu Thomson, under the auspices of the AIEE. The Medal of Honor was the IRE's first medal; it was initially given to Edwin Armstrong in 1917 and is now the highest award given by the IEEE. In addition to these, the Institute presently awards six Major Annual Medals, fourteen Field Awards for outstanding achievement in specific fields of electrical and electronics engineering, a Service Award, and three Prize Paper Awards for outstanding papers in IEEE publications. Part I of A Century of Honors explains the purpose and origin of each of these awards, and lists the past and present winners of each.

Part I also contains a list of Honorary Members. The AIEE established Honorary Membership at its founding in 1884, and first awarded the grade to Sir William Preece that same year. While the AIEE did not initially define the qualifications for Honorary Membership, the grade was clearly reserved for those with truly great accomplishments. In its first ten years the honor went to such men as Cyrus Field, William Thomson (Lord Kelvin), and Hermann von Helmholtz. In 1901 the Institute stipulated in its constitution that Honorary Members were to be chosen "from among those who have rendered acknowledged eminent service to electrical engineering or its allied sciences." In 1957 it broadened the definition by making eligible those who had "rendered meritorious service to mankind in engineering or other allied fields." During the seventy-nine years that the AIEE existed as an independent organization, it elected a total of 49 men as Honorary Members, the last two being Philip Sporn and Allen B. DuMont in 1961.

The first constitution of the Institute of Radio Engineers provided that persons who had "rendered acknowledged eminent service to the art or science of radio transmission" could be elected Honorary Members. The IRE never awarded the grade, however, and all reference to Honorary Members was dropped from its constitution in 1931.

When the AIEE and IRE merged in 1963, provision for Honorary Members was made in the bylaws of the new Institute of Electrical and Electronics Engineers, but no new Honorary Members were elected until 1981. In that year the requirements were changed so that only non-IEEE members were eligible, and the Institute also began to issue citations describing the accomplishments which resulted in the Honorary Membership. The complete list of all Honorary Members, including citations where appropriate, follows the award winners and is, in turn, followed by a list of all Presidents of the AIEE, IRE, and IEEE.

Parts II and III of A Century of Honors are devoted to Fellows of the Institute. The grade of Fellow first appeared in the AIEE constitution of 1912. In that year the AIEE revised its membership structure and established the grade of Fellow for those engineers who had demonstrated outstanding proficiency and had achieved distinction in their profession. Potential Fellows had to be at least thirty-two years of age, with a minimum of ten years experience. When the IRE established its Fellow grade in 1914 the requirements were clearly modeled after those of the AIEE. Much of the wording in the relevant sections of the IRE constitution is identical to the corresponding wording in the AIEE constitution.

For the first several years after the establishment of the Fellow grade, both the AIEE and the IRE allowed Members to make direct application for transfer to Fellow. In both cases applications had to be accom-
panied by references from five existing Fellows and required the approval of the Board of Directors. In 1939 the IRE modified its procedure to make admission or transfer to Fellow grade possible only by direct invitation of the Board of Directors, a policy it maintained until the merger in 1963. In 1938 the AIEE modified its constitution to provide that "Applications to the grade of Fellow shall result only from a proposal of five Members or Fellows." In 1951 the AIEE prohibited applications for Fellow grade altogether and adopted a policy of direct invitation similar to that of the IRE.

As noted above, numerous electrical engineers were members of both the AIEE and IRE, and many of these became Fellows of both organizations. When the two institutes merged in 1963 all AIEE and IRE Fellows automatically became Fellows of the IEEE. In 1942 the IRE had begun to issue citations to new Fellows, briefly describing their accomplishments. The AIEE followed suit in 1952, and the IEEE continued the practice after the merger.

Parts II and III of this book are a listing of all members who are now or have even been Fellows of the AIEE, IRE, or IEEE. Part II lists Fellows who are no longer members of the IEEE or are deceased. Part III consists of Fellows currently active in the IEEE. In Parts II and III the entry for each individual includes the year the member became a Fellow, the organization that originally bestowed the fellowship, and the citation, where appropriate. Also, in Part III, a brief biographical sketch is given.

A Century of Honors is the first comprehensive listing of Fellows ever compiled by the IEEE or its predecessors. While every effort has been made to make this directory as accurate as possible, it, like all historical works, is subject to the limitations imposed by the sources from which it is drawn.

The IEEE has maintained complete records of all Fellows elected since 1963 but, unfortunately, similar records are not available for the IRE before 1942 or the AIEE before 1952. The names of Fellows elected prior to those years are scattered among several sources. Fellows were sometimes listed in publications such as the AIEE Journal and IRE Proceedings, or in the minutes of the Board of Directors of the IRE. Such listings were not consistently maintained, however; the most reliable source turned out to be membership directories. Since most directories do not contain separate listings of Fellows, it was necessary to search through the entire membership listing of each book, extracting the names of those listed as Fellows. Needless to say, this was a laborious task that was subject to error. A further problem arose from the fact that membership directories were not issued for every year. The IRE, for instance, did not publish books in 1915, 1917–1925, 1933–1936, and 1938–1942; the AIEE did not publish in 1932, 1933, 1935, 1945–1947, and 1952. Thus it is possible (indeed probable) that some members were designated as Fellows but died before their names could appear in a directory.

The IEEE Centennial Task Force encourages those who note errors or omissions to notify the Center for the History of Electrical Engineering. In this way A Century of Honors can serve not only as a permanent registry of the honors bestowed by the electrical engineering profession upon its most eminent members, but can also help to close some of the gaps in the historical record.

*In addition to the Fellows listed in Part II, a special honor of Life Fellow Emeritus was given to Emily L. Sirjane in 1979. This distinguished title was created solely for Ms. Sirjane as she had "provided the Institute of Electrical and Electronics Engineers with the benefit of her leadership, wisdom, and dedication and constant support as a member of the staff of the Institute of Radio Engineers and the Institute of Electrical and Electronics Engineers for 31 years."
Part I

Award Winners, Honorary Members, and Institute Presidents
Section I-A
IEEE Medal of Honor

Medal of Honor

Five years after the formation of the Institute of Radio Engineers, the Medal of Honor was established as its first award, to recognize distinguished service in the then fledgling art of radio communication. The first Medal of Honor was bestowed on Major Edwin H. Armstrong in 1917.

In the years that followed, the Medal of Honor became the highest award in the radio engineering profession, given only to those who had attained preeminence in the field through outstanding technical contributions.

Following the merger of the Institute of Radio Engineers and the American Institute of Electrical Engineers in 1963, the Medal of Honor became the highest award of the Institute of Electrical and Electronics Engineers, and its scope was correspondingly broadened. The award consists of a gold medal, a bronze replica, a certificate, and ten thousand dollars, and receives support from the Frank A. Cowan Fund. The recipient need not be a member of the IEEE, and the medal is not necessarily awarded on an annual basis. It is presented only when a candidate is identified as having made a particular contribution which forms a clearly exceptional addition to the science and technology of concern to the Institute.

Medal of Honor Recipients

1917  E. H. Armstrong  "In recognition of his work and publications dealing with the action of the oscillating and non-oscillating audion."

1919  E. F. W. Alexanderson  "In recognition of his pioneer accomplishments in the field of long distance radio communication, including his development of the radio frequency alternator which bears his name, a magnetic amplifier permitting effective modulation of the output of such an alternator, and a cascade radio frequency vacuum tube amplifier yielding exceptional total amplification."

1920  Guglielmo Marconi  "In recognition of his pioneer work in radio telegraphy."

1921  R. A. Fessenden  (No citation)

1922  Lee de Forest  "For his major contributions to the communications arts and sciences, as particularly exemplified by his invention of that outstandingly significant device: the three-electrode vacuum tube, and his work in the fields of radio telephonic transmission and reception."

1923  John Stone-Stone  "For his valuable pioneer contributions to the radio art."

1924  M. I. Pupin  "In recognition of his fundamental contributions in the field of electrical tuning and the rectification of alternating currents used for signalling purposes."

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1926  G. W. Pickard  "For his contributions as to crystal detectors, coil antennas, wave propagation and atmospheric disturbances."

1927  L. W. Austin  "For his pioneer work in quantitative measurement and correlation of factors involved in radio wave transmission."

1928  Jonathan Zenneck  "For his contribution to original researches in radio circuit performance and to the scientific and educational contributions to the literature of the pioneer radio art."

1929  G. W. Pierce  "For his major contributions in the theory and operation of crystal detectors, piezoelectric-crystals and magnetostriction frequency controls and magnetostriction devices for the production of sound; and for his instructional leadership as a teacher and as a writer of important texts in the electric wave fields."

1930  P. O. Pedersen  (No citation)

1931  G. A. Ferrié  "For his pioneer work in the up building of radio communication in France and in the world, his long continued leadership in the communication field, and his outstanding contributions to the organization of international cooperation in radio."

1932  A. E. Kennelly  "For his studies of radio propagation phenomena and his contributions to the theory and measurement methods in the alternating current circuit field which now have extensive radio application."

1933  J. A. Fleming  "For the conspicuous part he played in introducing physical and engineering principles into the radio art."

1934  S. C. Hooper  "For the orderly planning and systematic organization of radio communication in the Government Service with which he is associated, and the concomitant and resulting advances in the development of radio equipment and procedure."

1935  Balth. van der Pol  "For his fundamental studies and contributions in the field of circuit theory and electromagnetic wave propagation phenomena."

1936  G. A. Campbell  "For his contributions to the theory of electrical network."

1937  Melville Eastham  "For his pioneer work in the field of radio measurements, his constructive influence on laboratory practice in communication engineering, and his unfailing support of the aims and ideals of the Institute."

1938  J. H. Dellinger  "For his contributions to the development of radio measurements and standards, his researches and discoveries of the relation between radio wave propagation and other natural phenomena, and his leadership in international conferences contributing to the world wide cooperation in telecommunications."

1939  A. G. Lee  "For his accomplishments in promoting international radio services and in fostering advances in the art and science of radio communication."
1940  Lloyd Espenschied  "For his accomplishments as an engineer, as an inventor, as a pioneer in the development of radio telephony, and for his effective contributions to the progress of international radio coordination."

1941  A. N. Goldsmith  "For his contributions to radio research, engineering, and commercial development, his leadership in standardization, and his unceasing devotion to the establishment and upbuilding of the Institute and its PROCEEDINGS."

1942  A. H. Taylor  "For his contributions to radio communication as an engineer and organizer, including pioneering work in the practical application of piezoelectric control to radio transmitters, early recognition and investigation of skip distances and other high-frequency wave-propagation problems, and many years of service to the government of the United States as an engineering executive of outstanding ability in directing the Radio Division of the Naval Research Laboratory."

1943  William Wilson  "For his achievements in the development of modern electronics, including its application to radio-telephony, and for his contributions to the welfare and work of the Institute."

1944  Haraden Pratt  "In recognition of his engineering contributions to the development of radio, of his work in the extension of communication facilities to distant lands, and of his constructive leadership in Institute affairs."

1945  H. H. Beverage  "In recognition of his achievements in radio research and invention, of his practical applications of engineering developments that greatly extended and increased the efficiency of domestic and world-wide radio communications and of his devotion to the affairs of the Institute of Radio Engineers."

1946  R. V. L. Hartley  "For his early work on oscillating circuits employing triode tubes and likewise for his early recognition and clear exposition of the fundamental relationship between the total amount of information which may be transmitted over a transmission system of limited bandwidth and the time required."

1948  L. C. F. Horle  "For his contributions to the radio industry in standardization work, both in peace and war, particularly in the field of electron tubes, and for his guidance of a multiplicity of technical committees into effective action."

1949  Ralph Bown  "For his extensive contributions to the field of radio and for his leadership in Institute affairs."

1950  F. E. Terman  "For his many contributions to the radio and electronic industry as teacher, author, scientist and administrator."

1951  V. K. Zworykin  "For his outstanding contributions to the concept and development of electronic apparatus basic to modern television, and his scientific achievements that led to fundamental advances in the application of electronics to communications, to industry and to national security."
1952  W. R. G. Baker  "In recognition of his outstanding direction of scientific and engineering projects; for his statesmanship in reconciling conflicting viewpoints and obtaining cooperative effort; and for his service to the Institute."

1953  J. M. Miller  "In recognition of his pioneering contributions to the fundamentals of electron tube theory and measurements, to crystal controlled oscillators and to receiver development."

1954  W. L. Everitt  "For his distinguished career as author, educator and scientist; for his contributions in establishing electronics and communications as a major branch of electrical engineering; for his unselfish service to his country; for his leadership in the affairs of The Institute of Radio Engineers."

1955  H. T. Friis  "For his outstanding technical contributions in the expansion of the useful spectrum of radio frequencies, and for the inspiration and leadership he has given to young engineers."

1956  J. V. L. Hogan  "For his contributions to the electronic field as a founder and builder of The Institute of Radio Engineers, for the long sequence of his inventions, and for his continuing activity in the development of devices and systems useful in the communications art."

1957  J. A. Stratton  "For his inspiring leadership and outstanding contributions to the development of radio engineering, as teacher, physicist, engineer, author and administrator."

1958  A. W. Hull  "For outstanding scientific achievement and pioneering inventions and development in the field of electron tubes."

1959  E. L. Chaffee  "For his outstanding research contributions and his dedication to training for leadership in radio engineering."

1960  Harry Nyquist  "For fundamental contributions to a quantitative understanding of thermal noise, data transmission and negative feedback."

1961  Ernst A. Guillemin  "For outstanding scientific and engineering achievements."

1962  Edward V. Appleton  "For his distinguished pioneer work in investigating the ionosphere by means of radio waves."

1963  John H. Hammond, Jr.  "For pioneering contributions to circuit theory and practice, to the radio control of missiles and to basic communication methods."

1963  George C. Southworth  "For pioneering contributions to microwave radio physics, to radio astronomy, and to waveguide transmission."

1964  Harold A. Wheeler  "For his analyses of the fundamental limitations on the resolution in television systems and on wideband amplifiers, and for his basic contributions to the theory and development of antennas, microwave elements, circuits, and receivers."
1966 Claude E. Shannon "For his development of a mathematical theory of communication which unified and significantly advanced the state of the art."

1967 Charles H. Townes "For his significant contributions in the field of quantum electronics which have led to the maser and the laser."

1968 Gordon K. Teal "For his contributions to single crystal germanium and silicon technology and the single crystal grown junction transistor."

1969 Edward L. Ginzton "For his outstanding contributions in advancing the technology of high power klystrons and their application, especially to linear particle accelerators."

1970 Dennis Gabor "For his ingenious and exciting discovery and verification of the principles of holography."

1971 John Bardeen "For his profound contributions to the understanding of the conductivity of solids, to the invention of the transistor, and to the microscopic theory of superconductivity."

1972 Jay W. Forrester "For exceptional advances in the digital computer through his invention and application of the magnetic-core random-access memory, employing coincident current addressing."

1973 Rudolf Kompfner "For a major contribution to world-wide communication through the conception of the traveling wave tube embodying a new principle of amplification."

1974 Rudolf Emil Kalman "For pioneering modern methods in system theory, including concepts of controllability, observability, filtering, and algebraic structures."

1975 John R. Pierce "For his pioneering proposals and the leadership of communication satellite experiments, and for contributions in theory and design of electron beam devices essential to their success."

1977 H. Earle Vaughan "For his vision, technical contributions and leadership in the development of the first high-capacity pulse-code-modulation time-division telephone switching system."

1978 Robert N. Noyce "For his contributions to the silicon integrated circuit, a cornerstone of modern electronics."

1979 Richard Bellman "For contributions to decision processes and control system theory, particularly the creation and application of dynamic programming."

1980 William Shockley "For the invention of the junction transistor, the analog and the junction field-effect transistor, and the theory underlying their operation."

1981 Sidney Darlington "For fundamental contributions to filtering and signal processing leading to chirp radar."

A CENTURY OF HONORS
1982  **John Wilder Tukey**  “For his contributions to the spectral analysis of random processes and the fast Fourier transform algorithm.”

1983  **Nicolaas Bloembergen**  “For pioneering contributions to Quantum Electronics including the invention of the three-level solid state maser.”

1984  **Norman F. Ramsey**  “For fundamental contributions to very high accuracy time and frequency standards exemplified by the cesium atomic clock and hydrogen maser oscillator.”
Section I-B
Major Annual Medals

Alexander Graham Bell Medal

The telecommunications industry, spawned by Alexander Graham Bell’s invention of the telephone in 1876, has played a major role in developing America’s economic, social, and political strength during the last 100 years. Bell himself exemplified the contributions scientists and engineers have made to the betterment of mankind. Therefore, to commemorate the centennial of the telephone’s invention, the Alexander Graham Bell Medal was established in 1976 through agreement between the American Telephone and Telegraph Company and the IEEE Foundation, Incorporated. The award consists of a gold medal, a bronze replica, a certificate, and ten thousand dollars. The award may be made each year to an individual or group of individuals, up to three in number, “for exceptional contributions to the advancement of telecommunications.”

Alexander Graham Bell Medal Recipients

1976  Amos E. Joel, Jr., William Keister, and Raymond W. Ketchledge  “For conception and development of Electronic Switching Systems and their effective introduction into a nationwide telephone system.”

1977  Eberhardt Rechtin  “For pioneering and lasting contributions to deep-space-vehicle communications technology and for leadership in defense telecommunications.”

1978  M. Robert Aaron, John S. Mayo, and Eric E. Sumner  “For personal contributions to, and leadership in, the practical realization of high-speed digital communications.”

1979  Christian Jacobaeus  “For pioneering work in the theory of switching systems and technical leadership in the development of telecommunication systems.”

1980  Richard R. Hough  “For his contributions to the nationwide and international telephone network and, particularly, the introduction of electronic switching therein.”

1981  David Slepian  “For fundamental contributions to communication theory.”

1982  Harold A. Rosen  “For pioneering contributions to, and leadership in, geostationary communication satellites.”

1983  Stephen O. Rice  “For his contributions to the fundamental understanding of communications systems and to the underlying mathematics, and for inspiring younger scientists and engineers.”

1984  Andrew James Viterbi  “For fundamental contributions to telecommunication theory and practice and for leadership in teaching.”

A CENTURY OF HONORS
Edison Medal

In 1904, twenty-five years after Thomas Edison produced the first practical incandescent electric light, a group of Mr. Edison's friends and associates created a medal in his honor, to commemorate the achievements of a quarter of a century in the art of electric lighting. In their words "The Edison Medal should, during the centuries to come, serve as an honorable incentive to scientists, engineers, and artisans to maintain by their works the high standard of accomplishment set by the illustrious man whose name and feats shall live while human intelligence continues to inhabit the world."

The American Institute of Electrical Engineers, some four years later, entered into an agreement with the founders to award the medal, with the responsibilities of the Institute carried out through the Edison Medal Committee. The Committee currently functions under the auspices of the IEEE.

The gold Edison Medal, together with a small gold replica, a certificate, and ten thousand dollars, may be awarded annually to some one person for "a career of meritorious achievements in electrical science or electrical engineering or electrical arts."

Edison Medal Recipients

1909  Elihu Thomson  "For meritorious achievement in electrical science, engineering and arts as exemplified in his contributions thereto during the past thirty years."

1910  Frank J. Sprague  "For meritorious achievement in electrical science, engineering and arts as exemplified in his contributions thereto."

1911  George Westinghouse  "For meritorious achievement in connection with the development of the alternating current system for light and power."

1912  William Stanley  "For meritorious achievement in invention and development of alternating current systems and apparatus."

1913  Charles F. Brush  "For meritorious achievement in the invention and development of the series arc lighting systems."

1914  Alexander Graham Bell  "For meritorious achievement in the invention of the telephone."

1916  Nikola Tesla  "For meritorious achievement in his early original work in polyphase and high-frequency electrical currents."

1917  John J. Carty  "For his work in the science and art of telephone engineering."

1918  Benjamin G. Lamme  "For invention and development of electrical machinery."

1919  W. L. R. Emmet  "For inventions and developments of electrical apparatus and primo movers."
1920  Michael I. Pupin  "For his work in mathematical physics and its application to the electric transmission of intelligence."

1921  Cummings C. Chesney  "For early developments in alternating current transmission."

1922  Robert A. Millikan  "For his experimental work in electrical science."

1923  John W. Lieb  "For the development and operation of electric central stations for illumination and power."

1924  John W. Howell  "For his contributions toward the development of the incandescent lamp."

1925  Harris J. Ryan  "For his contributions to the science and the art of high-tension transmission of power."

1927  William D. Coolidge  "For his contributions to the incandescent electric lighting and the X-ray arts."

1928  Frank B. Jewett  "For his contributions to the art of electric communication."

1929  Charles F. Scott  "For his contributions to the science and art of polyphase transmission of electrical energy."

1930  Frank Conrad  "For his contributions to radio broadcasting and short wave radio transmission."

1931  E. W. Rice, Jr.  "For his contributions to the development of electrical systems and apparatus and his encouragement of scientific research in industry."

1932  Bancroft Gherardi  "For his contributions to the art of telephone engineering and the development of electrical communication."

1933  Arthur E. Kennelly  "For meritorious achievements in electrical science, electrical engineering and the electrical arts as exemplified by his contributions to the theory of electrical transmission and to the development of international electrical standards."

1934  Willis R. Whitney  "For his contributions to electrical science, his pioneer inventions, and his inspiring leadership in research."

1935  Lewis B. Stillwell  "For his distinguished engineering achievements and his pioneer work in the generation, distribution, and utilization of electric energy."

1936  Alex Dow  "For outstanding leadership in the development of the central station industry and its service to the public."
1937  **Gano Dunn**  "For distinguished contributions in extending the science and art of electrical engineering, in the administration of great engineering works, and for inspiring leadership in the profession."

1938  **Dugald C. Jackson**  "For outstanding and inspiring leadership in engineering education and in the field of generation and distribution of electric power."

1939  **Philip Torchio**  "For distinguished contributions to the art of central station engineering and for achievement in the production distribution, and utilization of electrical energy."

1940  **George Ashley Campbell**  "In recognition of his distinction as scientist and inventor and for his outstanding original contributions to the theory and application of electric circuits and apparatus."

1941  **John B. Whitehead**  "For his contributions to the field of electrical engineering, his pioneering and development in the field of dielectric research, and his achievements in the advancement of engineering education."

1942  **Edwin H. Armstrong**  "For distinguished contributions to the art of electric communication, notably the regenerative circuit, the superheterodyne, and frequency modulation."

1943  **Vannevar Bush**  "For his contribution to the advancement of electrical engineering, particularly through the development of new applications of mathematics to engineering problems, and for his eminent service to the nation in guiding the war research program."

1944  **E. F. W. Alexanderson**  "For his outstanding inventions and developments in the radio, transportation, marine and power fields."

1945  **Philip Sporn**  "For his contributions to the art of economical and dependable power generation and transmission."

1946  **Lee de Forest**  "For pioneering achievements in radio and for the invention of the grid-controlled vacuum tube with its profound technical and social consequences."

1947  **Joseph Slepian**  "For his theoretical and practical contributions to power systems through circuit analysis, arc control, and current interruption."

1948  **Morris E. Leeds**  "For his contributions to industry through development and production of electrical precision measuring devices and controls."

1949  **Karl B. McEachron**  "For his contributions to the advancement of electrical science in the field of lightning and other high voltage phenomena and for the application of this knowledge to the design and protection of electric apparatus systems."

1950  **Otto B. Blackwell**  "For his pioneer contributions to the art of telephone transmission."
1951 Charles F. Wagner "For his distinguished contributions in the field of power system engineering."

1952 Vladimir K. Zworykin "For outstanding contributions to concept and design of electronic components and systems."

1953 John F. Peters "For his contributions to the fundamentals of transformer design, his invention of the Klydonograph, his contributions to Military Computers and for his sympathetic understanding in the training of young engineers."

1954 Oliver E. Buckley "For his personal contributions to the science and art which have made possible a transatlantic telephone cable; for wise leadership of a great industrial laboratory; for outstanding services to the government of his country."

1955 Leonid A. Umansky "For his outstanding contribution to the electrification of industry through the application of electrical machines, devices and systems to automatic process machinery; and for his inspiration, leadership, and teaching of men in this work."

1956 Comfort A. Adams "For pioneering achievements in the development of alternating current electric machinery and in electric welding; for vision and initiative in the formation of an engineering standards organization and for eminence as an educator and consulting engineer."

1957 John K. Hodnette "For his significant contributions to the electrical industry through creative design and development of transformer apparatus which marked new advances in protection, performance and service. For his vision, judgment and management skill which fostered and achieved the practical application of his ideas with resulting advancements in the electrical industry."

1958 Charles F. Kettering "For invention, research and development in the broad fields of industry, engineering, transportation, medicine, education, energy and power resulting in service to all mankind."

1959 James F. Fairman "For outstanding performance in improving the design of large electric power systems; for far-sighted leadership in atomic power development; and for unremitting efforts to improve the engineering profession."

1960 Harold S. Osborne "For his contributions to the art of telecommunication and his leadership and vision in extending its application; for his achievements in the coordination of international communication and in national and international standardization; and for his advancement of the engineering profession."

1961 William B. Kouwenhoven "For his inspiring leadership in education, for his contributions in the fields of electrical insulation, electrical measurements, and electrical science applied to medicine, and especially for his investigations of the effects of electricity on the human body with the successful development of countershock for the cure of fibrillation of the heart."

A CENTURY OF HONORS
1962  Alexander C. Monteith  "For meritorious achievement in engineering, education, management, and development of young engineers."

1963  John R. Pierce  "For his pioneer work and leadership in satellite communications and for his stimulus and contributions to electron optics, travelling wave tube theory and the control of noise in electron streams."

1964  Schedule Revised*

1965  Walker Lee Cisler  "For his achievements in the power industry, including the development of nuclear power; for his services to his country and to international understanding, including the application of electric power to economic growth among all nations; and for his broad contributions to the profession of engineering."

1966  Wilmer L. Barrow  "For a career of meritorious achievement—innovating, teaching a developing means for transmission of electromagnetic energy at microwave frequencies."

1967  George H. Brown  "For a meritorious career distinguished by significant engineering contributions to antenna development, electromagnetic propagation, the broadcast industry, the art of radio frequency heating, and color television."

1968  Charles F. Avila  "For his early contribution to underground transmission, for his continuing guidance in the field of electrical research and for his positive leadership in the development of the electrical utility industry."

1969  Hendrik W. Bode  "For fundamental contributions to the arts of communication, computation, and control; for leadership in bringing mathematical science to bear on engineering problems; and for guidance and creative counsel in systems engineering."

1970  Howard H. Aiken  "For a meritorious career of pioneering contributions to the development and application of large-scale digital computers and important contributions to education in the digital computer field."

1971  John W. Simpson  "For sustained contributions to society through the development and engineering design of nuclear power systems."

1972  William H. Pickering  "For contributions to telecommunications, rocket guidance and spacecraft control, and for inspiring leadership in unmanned exploration of the solar system."

1973  B. D. H. Tellegen  "For a creative career of significant achievement in electrical circuit theory, including the gyrator."

1974  Jan A. Rajchman  "For a creative career in the development of electronic devices and for pioneering work in computer memory systems."

*Date of selection changed to date of presentation.
1975  Sidney Darlington  "For basic contributions to network theory and for important inventions in radar systems and electronic circuits."

1976  Murray Joslin  "For his leadership in overcoming technical and financial obstacles to nuclear power generation and for managerial guidance and foresight in the planning, building and operating the early Dresden Nuclear Power Station."

1977  Henri Busignies  "For technical contributions and leadership in the field of radar, radio communication and radio navigation."

1978  Daniel E. Noble  "For leadership and innovation in meeting important public needs, especially in developing mobile communications and solid-state electronics."

1979  Albert Rose  "For basic inventions in television camera tubes and fundamental contributions to the understanding of photoconductivity, insulators, and human and electronic vision."

1980  Robert Adler  "For many inventions in the fields of electronic beam tubes and ultrasonic devices, and for leadership in innovative research and development."

1981  C. Chapin Cutler  "For his creative contributions to microwave electronics, space communications, and technology of communication systems."

1982  Nathan Cohn  "For a career of creative contributions and leadership in the instrument, control and process computer industry, in the control and economic dispatch of power in large interconnected electrical systems."

1983  Herman P. Schwan  "For a career of creative endeavor by which engineering, physics, biology, and medicine have been amalgamated into a coherent field of electromagnetic bioengineering."

1984  Eugene I. Gordon  "For a singular career of invention, development, and leadership in electron devices."
Founders Medal

The Founders Medal was established by the Institute of Radio Engineers in 1952 and is now supported by the IEEE Life Member Fund. It derives its character and purpose from the inspirational example of leadership and service set by the three founders of the IRE: the late Alfred N. Goldsmith, who was Director Emeritus and Editor Emeritus of the IEEE, and the late Messrs. John V. L. Hogan and Robert Marriott. The medal is given for major contributions in the "leadership, planning, or administration of affairs of great value to the electrical and electronics engineering profession," and consists of a gold medal, a bronze replica, and a certificate.

Founders Medal Recipients

1953    David Sarnoff  "For outstanding contributions to the radio engineering profession through wise and courageous leadership in the planning and administration of technical developments which greatly increased the impact of electronics on the public welfare."

1954    Alfred N. Goldsmith  "For outstanding contributions to the radio engineering profession through wise and courageous leadership in the planning and administration of technical developments which have greatly increased the impact of electronics on the public welfare."

1957    Raymond A. Heising  "For his leadership in Institute affairs, for his contributions to the establishment of the permanent IRE Headquarters and for originating the Professional Group system."

1958    W. R. G. Baker  "For outstanding contributions to the radio engineering profession through wise and courageous leadership in the planning and administration of technical developments which have greatly increased the impact of electronics on the public welfare."

1960    Haraden Pratt  "For outstanding contributions to the radio engineering profession and to The Institute of Radio Engineers through wise and courageous leadership in the planning and administration of technical developments which have greatly increased the impact of Electronics on the public welfare."

1961    Ralph Bown  "For outstanding service to the IRE and for outstanding contributions to the radio engineering profession through wise and courageous leadership in the planning and administration of technical developments which have greatly increased the impact of electronics on the public welfare."

1963    Frederick E. Terman  "For distinguished leadership in the organization and administration of, and contributions to, scientific research and education."

1964    Andrew G. L. McNaughton  "For his inspiring leadership and his personal contributions in the field of electrical engineering and radio communications."

1966    Elmer W. Engstrom  "For his leadership in management and integration of research and development programs and for his foresighted application of the systems engineering concept in bringing television to the public."
1967 Harvey Fletcher "For his creative contributions to the science of physical acoustics, electrical engineering, and for his management skills in the operation of a leading research laboratory."

1968 Patrick E. Haggerty "For outstanding contributions to the leadership of the electrical and electronics engineering profession, with special reference to the development of the worldwide semiconductor industry and service to the profession through his contributions leading to the creation of the IEEE."

1969 E. Finley Carter "For outstanding contributions to the electrical engineering profession and to the Institute of Electrical and Electronics Engineers through wise and imaginative leadership in the planning and administration of technical developments in electronics and telecommunications."

1970 Morris D. Hooven "In recognition of many years of creative leadership in the advancement of electric power systems engineering, and for contributions to the community in engineering education and in the effective uses of water resources."

1971 Ernst Weber "For leadership in the advancement of the electrical and electronics engineering profession in the fields of education, engineering societies, industry and government."

1972 Masaru Ibuka "For outstanding administrative leadership in applying solid-state devices in consumer electronics, thereby enhancing industry growth and bringing distinction to the profession."

1973 William R. Hewlett and David Packard "For leadership in the development of electronic instruments, for creative management of an industrial activity, and for their unselfish public service."

1974 Lawrence A. Hyland "For leadership and management in the field of electronics."

1975 John G. Brainerd "For his leadership in electronics in fields encompassing computer technology, high frequency techniques, engineering education, and national and international electrical standardization."

1976 Edward W. Herold "For his outstanding contributions to the electrical engineering profession at large, and in particular his insight and leadership in the development of color television."

1977 Jerome B. Weisner "For leadership and service to the national and the engineering and scientific professions in matters of technical developments, public policy and education."

1978 Donald G. Fink "For contributions and leadership in television, radar and technical journalism and service to the electrical and electronics engineering profession."

1979 Hanzo Omi "For pioneering leadership on computer technology, the promotion of international cooperation in research and development in electronics and communications, and for devoted service to the electrical profession."
1980  **Simon Ramo**  "For contributions and leadership in the development, application, and management of systems engineering in the field of electronics."

1981  **James Hillier**  "For original contributions in electron microscopy and leadership in fostering a creative laboratory environment."

1982  **Shigeru Yonezawa**  "For technical contributions in the development of VHF multichannel telephone systems, and for leadership in promoting international cooperation between developing and industrialized nations in telecommunications technologies."

1983  **Joseph M. Pettit**  "For contributions in electronic and engineering education; for leadership in engineering organizations; and for service to the world as an advisor to government and industry."

1984  **Kojo Kobayashi**  "For leadership in the development of computer and communications technologies, their integration into modern networks, and the worldwide expansion of electronics."
Lamme Medal

The Lamme Medal was established in 1928 through a bequest made by the late Benjamin Garver Lamme, Chief Engineer of the Westinghouse Electric and Manufacturing Company to recognize members of the American Institute of Electrical Engineers who had shown "meritorious achievement in the development of electrical apparatus or machinery." The award now carries the designation of the IEEE and is supported by the Westinghouse Foundation. Its scope has been broadened and it is presently awarded for "meritorious achievement in the development of electrical or electronic apparatus or systems." The award consists of a gold medal, a bronze replica, and a certificate.

Lamme Medal Recipients

1928 Allan B. Field "For the mathematical and experimental investigation of eddy current losses in large slot-wound conductors in electrical machinery."

1929 Rudolf B. Hellmund "For his contributions to the design and development of rotating electrical machinery."

1930 William J. Foster "For his contributions to the design of rotating alternating current machinery."

1931 Guiseppe Faccioli "For his contributions to the development and standardization of high-voltage, oil-filled bushings, capacitors, lightning arresters, and numerous features in high voltage transformers and power transmission."

1932 Edward Weston "For his achievements in the development of electrical apparatus, especially in connection with precision measuring instruments."

1933 Lewis B. Stillwell "For his distinguished career in connection with the design, installation, and operation of electrical machinery and equipment."

1934 Henry E. Warren "For outstanding contributions to the development of electric clocks and means for controlling central station frequencies."

1935 Vannevar Bush "For his development of methods and devices for application of mathematical analysis to problems of electrical engineering."

1936 Frank Conrad "For his pioneering and basic developments in the fields of electric metering and protective systems."

1937 Robert E. Doherty "For his extension of the theory of alternating current machinery, his skill in introducing that theory into practice and his encouragement of young men to aspire to excellence in this field."

1938 Marion A. Savage "For able and original work in the development and improvement of mechanical construction and the efficiency of large high speed turbine alternators."
1939  Norman W. Storer  "For pioneering development and application of equipment of electrical traction."

1940  Comfort A. Adams  "For his contributions to the theory and design of alternating current machinery and his work in the field of electric welding."

1941  Forrest E. Ricketts  "For his contributions to the high reliability of power-supply systems, especially in the design of apparatus for selective relaying and circuit reclosure."

1942  Joseph Slepian  "For his contribution to the development of circuit interrupting and current rectifying apparatus."

1943  Arthur H. Kohoe  "For his pioneer work in the development of alternating current networks and associated apparatus for power distribution."

1944  S. H. Mortensen  "For his pioneer work in the development of self-starting synchronous motors and for his contributions to the development of large hydraulic and steam turbine driven generators."

1945  David C. Prince  "For his distinguished work in the development of high voltage switching equipment and electronic converters."

1946  J. B. MacNeill  "For his foresight, leadership and creative contribution in the development of switching equipment."

1947  A. M. MacCutcheon  "For his distinguished accomplishments in the development of motors for industrial needs, notably in the steel industry."

1948  V. K. Zworykin  "For his outstanding contribution to the concept and design of electronic apparatus basic to modern television."

1949  C. M. Laffoon  "For outstanding contributions to the design of electrical machines, particularly large turbine generators and high frequency generators."

1950  Donald I. Bohn  "For his pioneering development and application of electrical equipment for controlling rectifying systems in the production of aluminum."

1951  Arthur E. Silver  "For his pioneering electrification by designing the simplified farm-type transformer combined with high-voltage, lone span, and common neutral line construction."

1952  I. F. Kinnard  "For his outstanding contributions in design and developments in instrumentation and measurements."

1953  F. A. Cowan  "For his outstanding contributions to long distance communication and the development of modulating and transmission measuring apparatus of original design and wide application."
1954  A. M. deBellis  "For his contributions to the design and development of power station equipment, especially air-insulated phase-isolated metal-clad high-voltage bus structures and disconnecting switches."

1955  C. R. Hanna  "For his fundamental calculations and developments in the field of electrodynamics, and particularly for his achievements in the design of generator voltage regulators, automatic rolling mill controls, and tank gun stabilizers."

1956  H. H. Beverage  "For his pioneering and outstanding engineering achievements in the conception and application of principles basic to progress in national and world-wide radio communications."

1957  H. S. Black  "For his many outstanding contributions to telecommunication and allied electronic arts, especially the invention of the negative feedback amplifier and the successful development and application of the negative feedback amplification principle."

1958  P. L. Alger and Sterling Beckwith  "In recognition of his contributions to the art and science of design and application of rotating electric machines."

1959  Lee A. Kilgore  "For meritorious achievements in the design of electrical machinery; more specifically, for analyses of synchronous machine reactances; for inventions of special armature windings; and for inventions and designs related to large adjustable speed alternating current motors."

1960  John G. Trump  "For meritorious achievements in the design of particle accelerators and x-ray generators; more specifically for invention and design related both to multi-electrode acceleration tubes and to Van de Graaff generators; and also for exceptional contributions which led to applications in treatment of malignant disease."

1961  Charles Concordia  "For meritorious achievements in the design of electrical machinery; more specifically, for analyses of synchronous machine characteristics leading to improved designs and for exceptional contributions to the application and control of machines used in electric power systems."

1962  Edwin L. Harder  "For meritorious achievements in the design, understanding and application of electric apparatus; more specifically for analyses of complex problems involved in rotating machinery, relays, regulators, ground detectors, saturable reactors, industrial control, magnetic amplifiers and computers; and solving these problems by the invention of new and novel forms of such apparatus as well as conceiving new combinations thereof."

1963  Loyal V. Bewley  "For meritorious achievement in the theoretical analysis of high voltage surges resulting in an advancement of insulation design and improvement of protection for machines, transformers, station apparatus and transmission lines."

1964  Scheduled Revised*  

*Date of selection changed to date of presentation.
1965  A. Uno Lamm  "For outstanding achievement in developing the high-power high-voltage mercury arc valve and a unique system of control and protection for its application as a rectifier and inverter in high-voltage d-c power transmission."

1966  René Andre Baudry  "For his significant contributions to the design of large electric generators."

1967  Warren P. Mason  "For outstanding contributions in the fields of sonics and ultrasonics and for his original work in designs of and applications for electro-mechanical transducers."

1968  Nathan Cohn  "For meritorious achievement in the field of automatic control of power generation and frequency for interconnected electric power systems."

1969  James D. Cobine  "For his contribution to the knowledge and development of gaseous discharge devices and their adaptation to the development of high-power vacuum interrupters."

1970  Harry F. Olson  "For his pioneering and continuing leadership in the field of electroacoustics, notably the invention and development of the velocity microphone."

1971  Winthrop M. Leeds  "For contributions to the development of high voltage, high power circuit breakers, specifically using SF6 gas, and for his effective exposition of the theory of arc interruption."

1972  Yu H. Ku and Robert H. Park  "In recognition of his outstanding contributions to analysis of the transient behavior of a-c machines and systems."

1973  Charles Stark Draper  "For outstanding contributions to vehicle guidance, control, and instrumentation through his pioneering development of inertial navigation systems."

1974  Seymour B. Cohn  "For outstanding contributions to the theory and practice of microwave component design."

1975  Harold B. Law  "For outstanding contribution in developing color picture tubes, including the fabrication technique which made color television practical."

1976  C. Kumar N. Patel  "For the invention and development of the carbon dioxide and spin-flip Raman lasers and for contributions to infrared spectroscopy of gases and solids."

1977  Bernard M. Oliver  "For his contributions to the theory and practice of electronic instrumentation and measurements."

1978  Harry Winston Mergler  "For pioneering research and creative industrial application of digital technology to machine tool and industrial control systems."

1979  James M. Lafferty  "For contributions to thermionic emitters and to high-vacuum technology as applied to high-power vacuum switches."
1980  Eugene C. Starr  "For outstanding contributions in the field of long-distance high-voltage electric power transmission systems."

1981  George B. Litchford  "For outstanding contributions in the development of electronic systems for air navigation and air traffic control."

1982  Marvin Chodorow  "For contributions to the theory and design of high power klystrons and traveling wave tubes."

1983  Marion E. Hines  "For sustained, innovative contributions to microwave device applications of semiconductor diodes."

1984  William McMurray  "For meritorious achievement in the development of forced-commutation thyristor circuitry and its application to alternating-current adjustable-speed drive systems."
Education Medal

The medal in engineering education was established by the American Institute of Electrical Engineers in 1956. The Education Medal is supported by the IEEE Life Member Fund which is sustained principally by continuing voluntary payments of dues by Life Members after they qualify for exemption from dues.

The award consists of a gold medal, a bronze replica, a certificate, and five thousand dollars. It is awarded annually to recognize "outstanding contributions to education for excellence in teaching and ability to inspire students; leadership in electrical engineering education through publication of textbooks and writings on engineering education; innovations in curricula and teaching methodology; and contributions to the teaching and engineering profession through research, engineering achievements, technical papers, and participation in the education activities of professional societies."

Education Medal Recipients

1956    F. E. Terman  (No citation)
1957    W. L. Everitt  (No citation)
1958    J. F. Calvert  (No citation)
1959    Gordon S. Brown  (No citation)
1960    Ernst Weber   "For excellence as a teacher in science and electrical engineering, for creative contributions in research and development, for broad professional and administrative leadership and in all for a considerate approach to human relations."
1961    George F. Corcoran  "For his contributions to electrical engineering education both in classroom teaching and in the creating of a series of undergraduate text books which have had far reaching influence on the education of electrical engineers."
1962    Ernst A. Guillemin  "For inspirational and intellectual leadership in the revolutionary changes in engineering education."
1963    William G. Dow   "For his outstanding contributions to teaching, to educational theory and to research, and his inspiring leadership in faculty development."
1964    B. Richard Teare, Jr.  "In recognition of his dedication to excellence in the field of teaching, his singular devotion to improvement of this art, his outstanding contributions to the technology of his profession, and his ability to combine a keen sense of practical values with a thorough grounding in science to solve general problems of staff and curricula development in engineering."
1965    Hugh Hildreth Skillings  "For leadership in undergraduate education and, in particular, for innovation and lucid exposition of complex ideas in his textbooks."
1966    William H. Huggins  "For his creative approach to and extraordinary effectiveness in teaching; and for his abiding interest in and rapport with students."
1967    John R. Whinnery  "For his outstanding teaching, his inspired leadership in educational administration, and his excellent pioneering textbooks."
1968  Edward C. Jordan  "For leadership in bringing new technological developments into electrical engineering education, and in creating an integration of research with education in a major department."

1969  Donald O. Pederson  "For inspiring teaching and for educational leadership in electronics, notably integrated circuits."

1970  Jacob Millman  "For his impact in the areas of electronic devices and circuits through his outstanding textbooks and his stimulating teaching."

1971  Franz Ollendorff  "For contributions to the teaching of electrical engineering, especially the preparation of classic texts on electromagnetic fields, and for leadership in building distinguished program in a new institute."

1972  Mac Elwyn Van Valkenburg  "For outstanding textbooks in circuit theory, innovations in undergraduate teaching, inspired guidance of students, and professional leadership in electrical engineering."

1973  Lotfi A. Zadeh  "For inspired and dedicated teaching, and distinguished leadership in system theory."

1974  John G. Truxal  "For pioneering the introduction of engineering concepts into the high schools and for his outstanding textbooks and leadership in engineering education."

1975  Charles A. Desoer  "For innovative teaching through publication of standards-setting textbooks and through dedicated and inspired supervision of a generation of highly successful students."

1976  John G. Linvill  "For leadership as a teacher, author and administrator, and for contributions in solid-state electronics and technology."

1977  Robert M. Fano  "For leadership in engineering education through teaching and outstanding research in computer science, information theory, and electromagnetic theory."

1978  Harold A. Peterson  "In recognition of contributions to engineering education through teaching and research in power systems."

1979  John R. Ragazzini  "For leadership in engineering education and pioneering research in sampled-data control systems."

1980  Aldert van der Ziel  "For leadership in engineering education, and for contributions to noise theory in electronic devices."

1981  Ernest S. Kuh  "For leadership in engineering education and contributions to research in circuits and systems."
1982  King-Sun Fu  "For contributions to engineering education through inspired teaching and research in computer engineering, system theory and pattern recognition."

1983  Mischa Schwartz  "For leadership in engineering education through devoted teaching and publication of outstanding textbooks."

1984  Athanasios Papoulis  "For inspirational leadership in teaching through thought-provoking lectures, research, and creative textbooks in signal analysis, stochastic processes, and systems."
Simon Ramo Medal

The Simon Ramo Medal, sponsored by TRW, Inc., was established in 1980 in recognition of the distinguished engineering contributions of Dr. Simon Ramo, Vice Chairman of the Board and Chairman of the Executive Committee of TRW, Inc. It is awarded for "significant achievement in systems engineering and systems science as evidenced by some major engineering contribution or for technical leadership in a major innovative engineering project within the scope of the IEEE."

If the candidate has not previously published an IEEE paper on the subject of the award, the recipient may be requested to present a Simon Ramo lecture on an appropriate subject at a designated IEEE meeting. The award consists of a gold medal, a certificate, five thousand dollars, and a travel allowance not to exceed one half of the honorarium.

Simon Ramo Medal Recipients

1984 Samuel C. Phillips "For technical leadership in system engineering leading to the success of the Apollo lunar program and of various space and missile programs enhancing national security and expanding technical frontiers."

A CENTURY OF HONORS
Section I-C
Field Awards

Cledo Brunetti Award

The Cledo Brunetti Award was established in 1975 through a bequest made by the late Cledo Brunetti, an executive of the FMC Corporation. The award is made for “outstanding contributions in the field of miniaturization in the electronic arts,” and consists of a certificate and one thousand dollars.

Cledo Brunetti Award Recipients

1978  Jack S. Kilby and Robert N. Noyce  “For contributions to miniaturization through invention and the development of integrated circuits.”

1979  Geoffrey W. A. Dummer and Philip J. Franklin  “For contributions to materials development and fabrication techniques for miniature passive electronic components and assemblies.”

1980  Marcian E. Hoff, Jr.  “For the conception and development of the microprocessor.”

1981  Donald R. Herriott  “For key contributions to the development of a practical electron beam system for fabrication of integrated circuit masks and to other aspects of microlithography.”

1982  Robert H. Dennard  “For the invention of the one-transistor dynamic random access memory cell and for contributions to scaling of MOS devices.”

1983  Abe Offner  “For the invention and design of the optics which made possible the projection lithography systems that were key to advancing integrated circuit manufacture.”

1984  Harry W. Rubinstein  “For early key contributions to the development of printed components and conductors on a common insulating substrate.”
Control Systems Science and Engineering Award

The award was established in 1980 and is sponsored by Systems Control, Inc. It is awarded to an individual for "meritorious achievement in contributions to theory, design, or techniques, as evidenced by publications or patents in the area of control systems science and engineering." The award consists of a certificate and one thousand dollars.

Control Systems Science and Engineering Award Recipients

1982 Howard H. Rosenbrock "For contributions to multivariable control theory and design methods."

1984 Arthur E. Bryson, Jr. "For pioneering contributions to optimal control and estimation and their applications."
Harry Diamond Memorial Award

The award was established in 1949 by friends of the late Harry Diamond, Chief of the Electronics Division of the National Bureau of Standards. Mr. Diamond’s associates felt that his professional life exemplified the highest degree of scientific effort in government service. The award was originally sponsored by the Institute of Radio Engineers and consists of a certificate and two thousand dollars. In honor of "outstanding technical contributions in the field of government service in any country, as evidence by publication in professional society journals."

Harry Diamond Memorial Award Recipients

1950 Andrew V. Haeff "For his contribution to the study of the interaction of electrons and radiation, and for his contribution to the storage tube art."

1951 Marcel J. E. Golay "For his many contributions in the overall Signal Corps research and development program and particularly for his accomplishments leading toward a reduction in the infrared-radio gap."

1952 Newbern Smith "For his fundamental work during a period of many years on radio wave propagation, this work being the basis for the practical use of ionospheric observations in the operation of worldwide communication systems."

1953 Robert M. Page "For outstanding contributions to the development of radar through pioneering work and through sustained efforts over the years."

1954 Harold A. Zahl "For his technical contributions, his long service, and his leadership in the U.S. Army Signal Corps research program."

1955 Bernard Salzberg "For his contributions in the fields of electron tubes, circuits and military electronics."

1956 Wilbur S. Hinman, Jr. "For his contributions to the electronic art in the fields of meteorology and proximity fuzes."

1957 Georg Gouba "For his many contributions in ionospheric research and circuit theory, and for his discovery of the surface wave transmission principle."

1958 Edward W. Allen, Jr. "For his technical and administrative contributions in the field of radio spectrum utilization."

1959 Jack W. Herbstreit "For original research and leadership in radio-wave propagation."

1960 K. A. Norton "For contributions to the understanding of radio wave propagation."
1961  Helmut L. Brueckmann  "For outstanding contributions to the theory and technology of antennas."

1962  William Culshaw  "For outstanding accomplishments in the field of microwave optics and interferometry."

1963  Allen H. Schooley  "For contributions in government service to radar and electronic research."

1964  James R. Wait  "For outstanding contributions in the field of electromagnetic wave theory."

1965  George J. Thaler  "For his outstanding contributions to the published literature in the area of linear and non-linear feedback control theory."

1966  John J. Egli  "For outstanding contribution in government service in the fields of wave propagation, electromagnetic compatibility and advanced radio communications."

1967  Rudolf A. Stampfl  "For is outstanding technical contribution and his able direction of a highly complex engineering organization that has contributed greatly to the exploration of space."

1968  Harry I. Davis  "For his outstanding contributions in the conception and development of innovations in military electronics."

1969  Maurice Apstein  "For contributions to ordnance electronics and inspiring leadership in the work of government laboratories."

1970  Allen V. Astin  "For outstanding contributions and for inspiring technical leadership in instrument and measurement technology."

1971  Arthur H. Guenther  "For his contributions to high power pulse techniques to simulate the environmental effects of nuclear weapons explosions, a vital part of the safeguards to the nuclear test ban treaty."

1972  William B. McLean  "For outstanding leadership of developments in guided missiles and undersea exploration and transport."

1973  Harold Jacobs  "For identification of new bulk semiconductor effects at millimeter waves, with application to the fields of imaging and surveillance."

1974  Chester H. Page  "For outstanding technical leadership and contributions to ordnance electronics, metrology and standards, and especially in domestic and international standardization of electrical quantities and symbols."

1975  Louis Costrell  "For outstanding achievements in nuclear radiation measurement techniques and related instrumentation standardization."
1976 Maxime A. Faget "For contributions to the design and development of Gemini, Apollo and Space Shuttle manned space-craft."

1977 Jacob Rabinow "For important inventions in ordnance, computers, and post office automation."

1978 David M. Kerns "For contributions to microwave theory basic to power, impedance and antenna standards and measurements."

1979 Henry P. Kalmus "For contributions to electronic ordnance systems."

1980 Martin Greenspan "For contributions to the fields of acoustics and elasticity."

1981 George Abraham "For development of multistable semiconductor devices and integrated circuits and their application to military systems."

1982 Jules Aarons "For contributions to the understanding of trans-ionospheric wave propagation and its application to satellite communications and navigation."

1983 Merrill I. Skolnik "For fundamental contributions to radar system engineering including antennas, propagation, clutter, accuracy and bistatic techniques."

1984 Sydney R. Parker "For research contributions in sensitivity analysis, digital filters, and discrete time modeling."
William M. Habirshaw Award

The William M. Habirshaw Award was established in 1958 through agreement between Phelps Dodge Foundation and the American Institute of Electrical Engineers. Mr. Habirshaw was a distinguished chemist who pioneered in the first ac high voltage underground cables used in America. The award consists of a bronze medal, a certificate, and one thousand dollars. It may be awarded each year to an individual or group of individuals who have made "outstanding contributions to the field of electrical transmission and distribution."

William M. Habirshaw Award Recipients

1959  William A. Del Mar

1960  Selden B. Cray  "For contributions to the stability, reliability, and economy, of bulk power transmission systems, and international leadership in the field."

1961  Samuel B. Griscom  "For outstanding contributions to the development and application of improved lightning and short-circuit protection of electric power systems, and high voltages for commercial and residential area distribution."

1962  Herman Halperin  "For his contributions in the field of high-voltage cable insulation design, development of sheath materials, and allowable economic loading of cables and electrical equipment under varying environments."

1963  Lawrence M. Robertson  "For his vigorous leadership and unique contributions in the field of high voltage transmission, particularly including lightning, corona and radio influence studies at high altitudes, and extra-high transmission voltages."

1964  Clement S. Schifreen  "In recognition of his important and continuing contributions in the field of cable technology and practice for the transmission and distribution of electric power."

1965  Wilfred F. Skeats  "For his outstanding contributions to the understanding of the transient behavior of electric power systems under switching conditions and to the development and testing of high voltage switchgear."

1966  I. Birger Johnson  "For his contribution to the reliability and economy of electric power transmission particularly as affected by insulation requirements, and to the understanding of surge voltage phenomena."

1967  Robert J. Wiseman  "For his many contributions to power cable technology, with particular emphasis on the development of high-voltage pipe-type cable."

1968  Eugene C. Starr  "For outstanding contributions to the development of more economical and reliable ac and dc transmission."
1969  James A. Rawls  "For outstanding leadership in extending the application of EHV transmission."

1970  Fred J. Vogel  "For outstanding contributions to electrical equipment development, electrical insulation technology, and industry standards resulting in increased reliability and major economies in ac transmission and distribution systems."

1971  Gunnar Jancke  "For leadership in the creation of the world's first 400 kV extra high voltage transmission system, including the application of series capacitors at that voltage."

1972  Jean-Jacques Archambault and Lionel Cahill  "For the pioneering and achievements in the successful planning, engineering and design of the Hydro-Quebec 735 kV bulk power supply transmission system."

1973  Eugene W. Boehne  "For his studies and evaluation of the performance of EHV transmission facilities under varying conditions and for his contributions to studies and analysis of system behavior."

1974  Herbert R. Stewart  "For significant contributions to transmission system analysis and design, particularly protection, stability, and control."

1975  Everett J. Harrington  "For contributions in the application of high-voltage power circuit breakers, high-voltage series and shunt capacitors, and high-voltage direct-current transmission technology."

1976  Francis John Lane  "For his international leadership in development and application of high-voltage ac and dc transmission."

1977  Schedule Revised*  

1978  Martin H. McGrath  "For contributions to the theory, design, manufacture, testing and application of underground power cables."

1979  Howard C. Barnes and Theodore H. Nagel  "For planning, design, and advancement of 765 kV transmission systems."

1980  Edward W. Kimbark  "For advancement of electric power transmission through innovative research, classic textbooks, and inspirational teaching."

1981  William R. Johnson  "For contributions to electric power technology by combining high-voltage ac and dc transmission power."

1982  Peter L. Bellaschi  "For contributions in the field of transmission and distribution of electric power and to the development of extra-high voltage apparatus and systems."

*Date of selection changed to date of presentation.
1983  Andrew. F. Corry  "For outstanding technical accomplishments in designing and operating underground cable systems and in leadership in organizing and directing high-voltage underground electric power transmission research and development."

1984  Ralph S. Gens  "For contributions to the advancement of electric power transmission technology in extra high-voltage ac and dc system research and development."
IEEE Award in International Communication in Honor of Hernand and Sosthènes Behn

The award was established in 1966 through agreement with the International Telephone and Telegraph Corporation, which was founded by Hernand and Sosthènes Behn. It consists of a plaque, a certificate, and two thousand dollars and may be awarded each year to an individual or team of not more than three individuals for "outstanding achievement in the field of international communication."

IEEE Award in International Communication Recipients

1966  E. Maurice Deloraine "In consideration of his outstanding technical and scientific contributions in the field of international communication extending over a period of more than 45 years and particularly for his active leadership in many fields of communication in Europe and in the U.S.A."

1967  Leonard Jaffe "For his outstanding foresight, initiative and competence in developing and executing an experimental program in communications satellites, and in organizing and guiding international participation therein."

1968  Edward W. Allen "For work in the development of international communication systems, particularly satellite communications."

1969  Henri G. Busignies "For his outstanding leadership and technical contributions in the fields of electronics technology and communication techniques."

1970  Herre Rinia "For outstanding contributions as a distinguished research organizer and leader in the technology of international communications."

1971  Eugene F. O’Neill "For outstanding technical innovations and management in the development of many key technologies underlying the present day international communications art, especially TELSTAR, the first operational telecommunications satellite, as well as his earlier contributions to trans-oceanic cable telephony."

1972  Frank de Jager and Johannes A. Greefkes "For their contributions to communication systems research, in particular for their inventions in the delta-modulation area."

1973  Vladimir A. Kotelnikov "For fundamental contributions to communication theory and practice, and for pioneering research and leadership in radar astronomy."

1974  Leslie H. Bedford "For his outstanding pioneering and development work in the fields of telecommunications and radar."

1975  John G. Puente "For leadership in and contributions to the development of digital techniques and multiple access methods for satellite communications."
1976  Sidney Metzger  "For his contribution to the successful development and placing in service of the Intelsat System."

1977  Schedule Revised*

1978  F. Louis H. M. Stumpers  "For contribution to the theory and application of frequency modulation and for the promotion of radio sciences on an international level."

1979  A. Nejat Ince  "For contributions to satellite communications systems and the planning and design of automatically switched international communications."

1980  Armig B. Kandoian  "For pioneering contributions to international communications, television broadcasting and air navigation."

1981  Richard Cyril Kirby  "For sustained leadership in the development and management of international radio communications."

1982  Hiroshi Inose  "For pioneering work in digital switching and modulation and for leadership in international professional activities."

1983  Lynn W. Ellis  "For improving international communications through advanced planning, cost-effective designs and technology transfer."

*Date of selection changed to date of presentation.
Mervin J. Kelly Award

The Mervin J. Kelly Award was established in 1959 through agreement between the Bell Telephone Laboratories and the American Institute of Electrical Engineers. Dr. Kelly was the President of Bell Laboratories from 1951–1959. The award consisted of a bronze medal, a certificate, and one thousand dollars. It was made each year to an individual or group of individuals for "outstanding contributions to the advancement of the art of telecommunication." It was discontinued in 1976.

Mervin J. Kelly Award Recipients

1960  Mervin J. Kelly  "For outstanding contributions in the technology of telecommunication; as a distinguished organizer and eminent leader."

1961  Harry Nyquist  "For his fundamental role in the evolution of modern communication and control theories."

1962  Claude E. Shannon  "For his fundamental role in the evolution of modern communication, information and switching circuit theories."

1963  William L. Everitt  "For his outstanding leadership and many contributions in the field of telecommunication."

1964  Harald Trap Friis  "For his many contributions to the development of radio systems from high frequency to microwaves, particularly in the fields of radio measurements and antennas."

1965  Stephen O. Rice  "For his outstanding and fundamental contributions in the field of communications, particularly in the understanding of the effects of noise."

1966  Murray Grinshaw Crosby  "For his pioneering work in the circuit technology, propagation characteristics, and noise suppression theory of frequency and phase modulation."

1967  Harry F. Olson  "For his important and continuing contributions in the fields of electroacoustics, speech processing, and wideband signal recording."

1968  William R. Bennett  "For contributions to telecommunication theory in the fields of modulation, noise, and pulse transmission."

1969  Hendrik C. A. Van Duuren  "For fundamental contributions to data communications."

1970  David A. McLean  "For his pioneering contributions to telecommunication components and particularly for originating and perfecting tantalum thin film technology."

1971  Harold A. Rosen  "For his outstanding contributions to telecommunications through his pioneering inventions, developments and leadership in stationary communication satellites."
1972    Roger A. Sykes    "For outstanding contributions to the understanding and application of frequency control and filtering."

1973    Leon S. Nergaard    "For outstanding contributions and leadership in the introduction of very high and ultra high frequencies for telecommunications."

1974    Harold M. Barlow    "For outstanding work in the measurement and properties of radio frequency waves, and their application to telecommunications."

1975    Alton C. Dickieson    "For contributions in the field of telecommunications encompassing voice frequency, cable and radio systems for domestic and international services."
Morris E. Leeds Award

The Morris E. Leeds Award was established in 1958 through agreement between the Leeds & Northrup Foundation and the American Institute of Electrical Engineers. Mr. Leeds was the founder of Leeds & Northrup Company, manufacturers of electric instruments and automatic control systems. The award consists of a certificate and one thousand dollars and may be awarded once each year to an individual or group of individuals "making an outstanding contribution to the field of electrical measurement." Special consideration is given to the value of contributions made before the candidate has reached his thirty-sixth birthday.

Morris E. Leeds Award Recipients

1959  Herbert B. Brooks  (No citation)

1960  Perry A. Borden  "For outstanding contributions to electrical measurements in the field of recording, control and telemetering; and helpful encouragement to younger colleagues."

1961  Theodore A. Rich  "For outstandingly creative contributions to the field of measurement through exceptional awareness of new measurement needs and timely invention to accomplish the measurement."

1962  Bernard E. Lenehan  "For his keen understanding of electrical measurement phenomena and his outstanding ability to apply fundamental analysis and conceive basically new and sound ideas for solving difficult instrumentation problems."

1963  Francis B. Silsbee  "For his contributions to the international standardization of basis electrical units and their measurement."

1964  John Gilbert Ferguson  "For his contributions in expanding the knowledge of the measurement of fundamental electrical units."

1965  Harold E. Edgerton  "For his contributions to the field of measurements particularly through the development and application of high speed, high intensity, precisely timed light sources."

1966  William W. Mumford  "For his outstanding contribution to the theory and technique of microwave measurements, including his invention and application of standard noise sources and directional couplers."

1967  Henry R. Chope  "For accomplishment in the field of industrial process measurement through the use of nucleonic and radio-frequency technique."

1968  Albert J. Williams, Jr.  "For outstanding contributions to electrical instrumentation and measurement."
1969  Harry William Houck  "For outstanding contributions to the field of RF instrumentation."

1970  Harold I. Ewen  "For contributions to the design of sensitive radiometric systems, and
for the co-discovery of the 21 cm spectral line of interstellar hydrogen."

1971  Martin E. Packard  "For his pioneering research leading to the practical use of nuclear
magnetic resonance for the accurate measurement of magnetic fields, and for his contributions to
the spectrometry of complex molecules."

1972  Forest K. Harris  "For a lifetime of making outstanding advances in the science of
high-accuracy electrical measurements, and of stimulating further advances through his teaching,
authorship, and committee activity."

1973  Charles Howard Vollum  "For outstanding contributions in the field of electrical
measurements through many developments of the oscilloscope."

1974  Norbert L. Kusters  "For inspiring leadership in the field of electrical measurements,
in particular for the development of the current comparator and its associated applications."

1976  Francis Lewis Hermach  "For research and development of extremely accurate ac–dc
transfer standards and for outstanding service on standards committees."

1977  Arthur Melville Thompson  "For outstanding advances in absolute electrical
measurements, particularly capacitance and resistance."

1978  Thomas M. Dauphinee  "For the application of physical principles to electrical in-
strumentation and measurements."

1979  Robert D. Cutkosky  "For internationally significant contributions to the field of
precision impedance measurements and standards."

1980  Wallace H. Coulter  "For his invention and development of basic electrical measure-
ment methods for the counting, sizing and identification of biological cells and inorganic
particles."

1981  Frank C. Creed  "For contributions to the theory and practice of high-voltage impulse
measurements."

1982  Lothar Rohde  "For contributions to the field of precise electronic measurement
equipment for very high frequencies."

1983  Erich P. Ippen and Charles V. Shank  "For their pioneering contributions to extend-
ing the techniques of time-domain measurement into the subpicosecond range."

1984  Leonard Samuel Cutler  "For outstanding contributions to the development of ad-
vanced time standards, in particular to the cesium beam standard."
Morris N. Liebmann Memorial Award

The Morris N. Liebmann Award was established in 1919 by the Institute of Radio Engineers using funds donated by Emil J. Simon, a charter member of the IRE. The award perpetuates the memory of Colonel Morris N. Liebmann, and associate of Mr. Simon's who was killed during World War I. It is made for the "most important contribution to emerging technologies recognized within recent years," and consists of a certificate and two thousand dollars.

Morris N. Liebmann Award Recipients

1919  L. F. Fuller  "For his contributions to long distance radio communication."

1920  R. A. Weagant  "For his experimental researchers and results in the field of the reduction of atmospheric disturbances in radio reception."

1921  R. A. Heising  "In recognition of the publication of his basic work in the field of the signal modulation of an oscillator output, and in particular of his invention and development of constant current modulations as first applied to radiotelephony."

1922  C. S. Franklin  "For his investigations of short wave directional transmission and reception."

1923  H. H. Beverage  "For his work on directional antennas."

1924  J. R. Carson  "In recognition of his valuable contributions to alternating current circuit theory and, in particular, to his investigation of filter systems and of single side band telephony."

1925  Frank Conrad  "For his research work in the short wave transmitting and receiving field."

1926  Ralph Bown  "For researches and investigations into the more difficult element of wave transmission phenomena which have resulted in extensive and useful additions to existing knowledge."

1927  A. H. Taylor  "For his work in connection with the investigation of radio transmission phenomena."

1928  W. G. Cady  "For his fundamental investigation in piezo-electric phenomena and their application to radio technique."

1929  E. V. Appleton  "For his investigations in the field of wave propagation."

1930  A. W. Hull  "In recognition of the many advances in vacuum tube development which were due to his fundamental researches in the field of electronics."
1931  Stuart Ballantine  “For his outstanding theoretical and experimental investigations of numerous radio and acoustic devices.”

1932  Edmond Bruce  “For his theoretical investigations and field developments in the domain of directional antennas.”

1933  Heinrich Barkhausen  “For his work on oscillation circuits and particularly on that type of oscillator which now bears his name.”

1934  V. K. Zworykin  “For his contributions to the development of television.”

1935  Frederick B. Llewellyn  “For his analysis and disclosures of the effects and reactions within vacuum tubes at ultra high frequencies.”

1936  B. J. Thompson  “For his contribution to the vacuum tube art in the field of very high frequencies.”

1937  W. H. Doherty  “For his improvement in the efficiency of radio frequency power amplifiers.”

1938  G. C. Southworth  “For his theoretical and experimental investigations of the propagation of ultra high frequency waves through confined dielectric channels and the development of a technique for the generation and measurement of such waves.”

1939  Harald T. Friis  “For his investigations in radio transmission including the development of method of measuring signals and noise and the creation of a receiving system for mitigating selective fading and noise interference.”

1940  Harold A. Wheeler  “For his contributions to the analysis of wide band high frequency circuits particularly suitable for television.”

1941  P. T. Farnsworth  “For his contributions in the field of applied electronics.”

1942  S. A. Schelkunoff  “For his contributions to the theory of electromagnetic fields in wave transmission and radiation.”

1943  Wilmer L. Barrow  “For his theoretical and experimental investigations of ultra high frequency propagation in wave guides and radiation from horns, and the application of these principles to engineering practice.”

1944  W. W. Hanssen  “For his application of electromagnetic theory in radiation antennas, resonators, and electron bunching, and for the development of practical equipment and measurement techniques in the microwave field.”

1945  P. C. Goldmark  “For his contributions to the development of television systems, particularly in the field of color.”

A CENTURY OF HONORS
1946  Albert Rose  "For his contributions to the art of converting optical images to electrical signals, particularly the image orthicon."

1947  John R. Pierce  "For his development of a traveling wave tube having both high gain and very great bandwidth."

1948  S. W. Seeley  "For his development of ingenious circuits related to frequency modulation."

1949  Claude E. Shannon  "For his original and important contributions to the theory of the transmission of information in the presence of noise."

1950  O. H. Schade  "For outstanding contributions to analysis, measurement technique, and system development in the field of television and related optics."

1951  R. B. Dome  "For many technical contributions to the profession, but notably his contributions to the inter carrier sound system of television reception, wide band phase shift networks and various simplifying innovations in FM receiver circuits."

1952  William Shockley  "In recognition of his contributions to the creation and development of the transistor."

1953  J. A. Pierce  "For his pioneering and sustained outstanding contributions to radio navigation, and his related fundamental studies of radio wave propagation."

1954  R. R. Varnecke  "For his many valuable contributions and scientific advancements in the field of electron tubes, and in particular, the magnetron class of traveling wave tubes."

1955  A. V. Loughren  "For his leadership and technical contributions in the formulation of the signal specification for compatible color television."

1956  Kenneth Bullington  "For his contributions to the knowledge of tropospheric transmission beyond the horizon, and to the application of the principles of such transmission to practical communications systems."

1957  O. G. Villard, Jr.  "For his contributions in the field of meteor astronomy and ionosphere physics which led to the solution of outstanding problems in radio propagation."

1958  E. L. Ginzton  "For his creative contribution to the generation and useful application of high energy at microwave frequencies."

1959  Nicolaas Bloembergen and C. H. Townes  "For fundamental and original contributions to the maser."

1960  J. A. Rajchman  "For contributions to the development of magnetic devices for information processing."
1961 Leo Esaki  "For important contributions to the theory and technology of solid state devices, particularly as embodied in the tunnel diode."

1962 Victor H. Rumsey  "For basic contributions to the development of frequent independent antennas."

1963 Ian Munro Ross  "For contributions to the development of the epitaxial transistor and other semiconductor devices."

1964 Arthur L. Schawlow  "For his pioneering and continuing contributions in the field of optical masers."

1965 William R. Bennett, Jr.  "For basic contributions to the field of radio in the theoretical understanding and physical realization of continuously operated oscillators at optical frequencies."

1966 Paul K. Weimer  "For invention, development and applications of the thin film transistor."

1968 Emmett N. Leith  "For establishing the pace of coherent optics in radar and communications system for major advances in modern holography."

1969 John B. Gunn  "For contributions to solid state microwave power generation."

1970 John A. Copeland  "For the discovery of the limited space-charge-accumulation mode of oscillation."

1971 Martin Ryle  "For his contributions in applying aperture synthesis to extend the capabilities of radio telescopes, thereby increasing man's knowledge of the Universe."

1972 Stewart E. Miller  "For pioneering research in guided millimeter wave and optical transmission systems."

1973 Nick Holonyak, Jr.  "For outstanding contributions to the field of visible light emitting diodes and diode lasers."

1974 Willard S. Boyle and George E. Smith  "For the invention of the charge-coupled device and leadership in the field of MOS device physics."

1975 A. H. Bobeck, P. C. Michaelis, and H. E. D. Scovil  "For the concept and development of single-walled magnetic domains (magnetic bubbles), and for recognition of their importance to memory technology."

1976 Herbert John Shaw  "For contributions to the development of acoustics surface wave devices."

A CENTURY OF HONORS
1977 Horst H. Berger and Siegfried K. Wiedmann  “For the invention and exploration of the Merged Transistor Logic, MTL.”

1978 Kuen C. Kao, John B. MacChesney, and Robert D. Maurer  “For making communication at optical frequencies practical by discovering, inventing and developing the materials, techniques and configurations for glass fiber waveguides.”

1979 Ping King Tien  “For contributions to integrated optics technology.”

1980 A. J. DeMaria  “For contributions to the initiation and demonstration of the first picosecond optical pulse generator.”

1981 Calvin F. Quate  “For development of an acoustic microscope capable of submicron resolution.”

1982 John R. Arthur, Jr., and Alfred Y. Cho  “For the development and application of molecular beam epitaxy technology.”

1983 Robert W. Brodersen, Paul R. Gray, and David A. Hodges  “For pioneering contributions and leadership in research on switched-capacitor circuits for analog-digital conversion and filtering.”

1984 David E. Carlson and Christopher R. Wronski  “For crucial contributions to the use of amorphous silicon in low-cost, high-performance photovoltaic solar cells.”
Jack A. Morton Award

The award was established in 1974 in memory of Dr. Jack A. Morton, Past Vice President of Electronics Technology at Bell Telephone Laboratories, who was known for his outstanding contributions to the development of solid-state electron devices. It is sponsored by twenty semiconductor organizations in the United States, Europe, and Japan.

The award is made to an individual or group of individuals for 'outstanding contributions in the field of solid-state devices.' It consists of a bronze medal, a certificate, and two thousand dollars.

Jack A. Morton Award Recipients

1976  Robert N. Hall  "For outstanding achievement in solid-state physics and chemistry and the invention and development of semiconductor devices."

1977  Morgan Sparks  "For contributions to solid state device technology and the management of research and development."

1978  Juri Matisoo  "For pioneering the Josephson computer technology."

1979  Martin P. Lepselter  "For invention of the beam-lead structure and metallurgy used in silicon integrated circuits."

1980  James F. Gibbons  "For pioneering contributions to the use of ion implantation in the fabrication of semiconductor devices."

1981  Nick Holonyak, Jr.  "For pioneering work in quantum well lasers and contributions to visible semiconductor lasers and light-emitting diodes."

1982  Dove Frohman-Bentchkowsky  "For contributions to non-volatile semiconductor memories."

1983  Jun-Ichi Nishizawa  "For invention and development of the class of static induction transistors (SIT) and for advances in optoelectronic devices."

1984  Hans S. Ruprecht and Jerry M. Woodall  "For pioneering work in gallium aluminum arsenide heterojunctions and high efficiency light emitting diodes and injection lasers prepared by liquid phase epitaxy."
Frederik Philips Award

The Frederik Philips Award was established in 1971 through agreement with the N. V. Philips' Gloeilampenfabrieken. In that year Mr. Philips retired as President of the Dutch electrical and electronics firm. The award is made each year to an individual or group of individuals up to three in number for "outstanding accomplishments in the management of research and development resulting in effective innovation in the electrical and electronics industry." It consists of a gold medal, a certificate, and two thousand dollars.

Frederik Philips Award Recipients

1971  **Frederik J. Philips**  "For fostering management of research and development that has been effective in the creation of numerous new products."

1972  **William O. Baker**  "For leadership of an industrial laboratory where pioneering research was used to create a wide spectrum of new technology throughout the telecommunication industry."

1973  **John H. Dessauer**  "For his pioneering research and development efforts and outstanding accomplishments in the field of xerography."

1974  **Chauncey Guy Suits**  "For his leadership in guiding the research efforts of a major technologically diversified industrial company."

1975  **C. Lester Hogan**  "For outstanding accomplishments in the management of research and development resulting in important innovation in the semiconductor device industry."

1976  **Koji Kobayashi**  "For leadership in the management of research, development, and the production of telecommunication and electronic systems."

1977  **Schedule Revised**

1978  **William E. Shoup**  "For organizational ability in managing electronics and nuclear energy research and development, particularly in development of the first submarine atomic power plant."

1979  **Gordon E. Moore**  "For effective direction of research and development in silicon integrated circuit technology."

1980  **William M. Webster**  "For sustained leadership in the management of research and development."

1981  **Dean A. Watkins**  "For managerial leadership in the research and development of traveling-wave tubes."

*Date of selection changed to date of presentation.
1982  Werner J. Kleen  "For technical and managerial roles in the development and manufacture of microwave tubes in Europe."

1983  Allen E. Puckett  "For foresight and judgment in the management of research and development leading to significant advances in communication satellite systems."

1984  John K. Galt  "For managerial leadership that resulted in the understanding of the Physics and Chemistry of III–V compounds associated with the concepts of luminescence and of heterostructure devices and of the molecular beam epitaxial process."
Emanuel R. Piore Award

The award was established in 1976 through agreement with the International Business Machines Corporation, and honors Emanuel R. Piore, longtime IBM executive and former chief scientist. It consists of a gold plated bronze medal, a certificate, two thousand dollars, and a twenty five-hundred dollar international travel grant. The award may be made each year to an individual or team of individuals for "outstanding achievement in the field of information processing, in relation to computer science, deemed to have contributed significantly to the advancement of science and to the betterment of society."

Emanuel R. Piore Award Recipients

1977  George R. Stibitz "For pioneering contributions to the development of computers, utilizing binary and floating-point arithmetic, memory indexing, operation from a remote console, and program-controlled computations."

1978  J. Presper Eckert, Jr., and John W. Mauchly "For the design and construction of electronic digital computers which stimulated the development of the computer industry."

1979  Richard W. Hamming "For introduction of error correcting codes, pioneering work in operating systems and programming languages, and the advancement of numerical computation."

1980  Lawrence R. Rabiner and Ronald W. Schafer "For their contributions to digital speech processing and digital filter design."

1982  Kenneth L. Thompson and Dennis M. Ritchie "For the creation and development of an operating system of high utility, availability, and instructive value, as embodied in UNIX and its related facilities."

1983  Niklaus Wirth "For creative contribution to programming language and design methodology as exemplified by his development of the Pascal language."

1984  Harvey G. Cragon "For creative contributions and leadership in uniting computer architecture with the inherent capabilities of the integrated circuit."
David Sarnoff Award

The David Sarnoff Award was established in 1959 through agreement between the RCA Corporation and the American Institute of Electrical Engineers. At that time Mr. Sarnoff was Chairman of the Board and Chief Executive Officer of RCA. The award consists of a gold medal, a bronze replica, a certificate, and one thousand dollars. The award may be made each year to an individual or group of individuals up to three in number for an "outstanding contribution to the field of electronics."

David Sarnoff Award Recipients

1959  David Sarnoff  (No citation)

1960  Rudolf Kompfinger  "For creative achievements in research and development in the field of electronics and for his leadership in this field."

1961  Charles H. Townes  "For research in resonance physics leading to major advances in communication technology."

1962  Harry B. Smith  "For his contributions to the field of Doppler radar and other areas of applied electronics."

1963  Robert N. Hall  "For his outstanding contributions to the scientific understanding of semiconductors and for their applications to electronics."

1964  Henri Busignies  "For outstanding contributions to electronic systems especially in the fields of direction finding and air navigation."

1965  Jack A. Morton  "For his outstanding leadership and contributions to the development and understanding of solid-state electron devices."

1966  Jack S. Kilby  "For his outstanding creative contribution in the field of monolithic integrated circuits, for his key inventions and for his team leadership in the application of integrated circuits to large scale systems."

1967  James Hillier  "For his pioneering research on the electron microscope, including both electron optics and biological microscopy, and for his accomplishments as a research director and his inspiration to scientists—young and old."

1968  Walter P. Dyke  "For pioneering contributions to the development of field emission in X-ray technology."

1969  Robert H. Rediker  "For contributions to semiconductor device research and injection lasers."

1970  John B. Johnson  "For fundamental contributions of major importance to electronics and communications."
1971  Alan L. McWhorter  "For outstanding contributions leading to a better understanding of semiconductor devices."

1972  Edward G. Ramberg  "For outstanding contributions to electron physics, electron optics and television."

1973  Max Vernon Mathews  "For leadership in applying electronics to art and for his contribution to the production of musical sounds by computer."

1974  Frederik J. L. Sangster  "For the invention of the integrated bucket-brigade delay line and ingenuity in finding new realizations and applications of this principle."

1975  Bernard C. De Loach, Jr.  "For contributions to and leadership in the development of the impact avalanche and transit time (IMPATT) device."

1976  George Harry Heilmeier  "For combining science with engineering to create the dynamic scattering liquid crystal display."

1977  Jack M. Manley and Harrison E. Rowe  "For their work on the properties of nonlinear devices resulting in the well-known Manley–Rowe Relations."

1978  Stephen E. Harris  "For scientific discoveries and device inventions in the fields of lasers, quantum electronics and non-linear optics."

1979  A. Gardner Fox and Tingye Li  "For the discovery of modes in open structures and their applications to laser resonators."

1980  Marshall I. Nathan  "For his role in the discovery of the injection laser, and other contributions to the physics of semiconductor devices."

1981  Cyril Hilsum  "For contributions in the fields of III–V compound semiconductors, solid state microwave components and display devices."

1982  Nobutoshi Kihara  "For major contributions to magnetic video tape recording."

1983  Hermann K. Gummel  "For contributions and leadership in device analysis and development of computer-aided design tools for semiconductor devices and circuits."

1984  Alan D. White and Jameson D. Rigden  "For invention of the visible light helium neon laser."
Charles Proteus Steinmetz Award

Dr. Steinmetz, whose researches into the mathematical bases of electrical phenomena form the foundation of much of modern electrical engineering, was also an active participant in American Institute of Electrical Engineers standardization efforts. The Charles Proteus Steinmetz Award, established in 1979, is presented annually to an individual for "major contributions to the development of standards in the field of electrical and electronics engineering." The award is sponsored by the IEEE Standards Board and consists of a certificate and one thousand dollars.

Charles Proteus Steinmetz Award Recipients

1980  Leon Podolsky  "For distinguished leadership in assuring that standards will facilitate international trade."

1982  Ralph M. Showers  "For distinguished achievement as engineer, entrepreneur, enlightened manager of people, industrialist, and statesman in the application of advanced technology."

1983  William A. McAdams  "For outstanding leadership in national and international electrical and electronic standardization activities."

1984  H. Baron Whitaker  "For technical and administrative contributions to the development of safety standards for electrical equipment and systems."
Nikola Tesla Award

The award was established in 1975 and is sponsored by the IEEE Power Engineering Society. Nikola Tesla was the inventor of the induction motor and developed the elements of the system that made possible large scale production and distribution of polyphase ac power. The Nikola Tesla Award consists of a plaque and one thousand dollars. It may be awarded each year to an individual or group of individuals who have made "outstanding contributions to the field of generation and utilization of electric power."

Nikola Tesla Award Recipients

1976  **Leon T. Rosenberg**  "For his half-century of development and design of large steam turbine driven generators and his important contributions to literature."

1977  **Cyril G. Veinott**  "For his leadership in development and application of small induction motors."

1978  **Charles H. Holley**  "For contributions to the evolution of turbine generator designs with achievement in performance and reliability."

1979  **John W. Batchelor**  "For contributions to the design of large turbine driven generators and the development of related international standards."

1980  **Philip H. Trickey**  "For advancement in the development and application of Tesla's theories through precise designs of small induction machines."

1981  **Dean B. Harrington**  "For contributions to the design, development and performance analysis of large steam turbine-generators."

1982  **Sakae Yamamura**  "For contributions to the theory of linear induction motors and the development of magnetic levitation of track vehicles."

1984  **Herbert H. Woodson**  "For contributions to power generation technology particularly in superconducting generators and magnetohydrodynamic generators."
Vladimir K. Zworykin Award

The award was established in 1950 under the auspices of the Institute of Radio Engineers, by Dr. Zworykin, one of the seminal figures in the development of electronic television. It is supported by the RCA Corporation and consists of a certificate and one thousand dollars. It is awarded annually when the Institute determines that there is a qualifying candidate for the "most important technical contribution to electronic television."

Vladimir K. Zworykin Award Recipients

1952  B. D. Loughlin  "For his outstanding contributions to the theory, the understanding and the practice of color television."

1953  Frank Gray  "For recognition of the fundamental importance to color television of his early studies of the television signal spectrum."

1954  A. V. Bedford  "For his contributions to the principle of mixed highs and its application to color television."

1955  H. B. Law  "For development of techniques and processes resulting in a practical form of shadow-mask tri-color kinescope."

1956  F. J. Bingley  "For contributions to colorimetric science as applied to television."

1957  Donald Richman  "For contributions to the theory of synchronization, particularly that of color subcarrier reference oscillator synchronization in color television."

1958  C. P. Ginsburg  "For pioneering contributions to the development of video magnetic recording."

1959  Paul K. Weimer  "For contributions to photoconductive-type pickup tubes."

1961  P. C. Goldmark  "For important contributions to the development and utilization of electronic television in military reconnaissance and in medical education."

1962  G. A. Morton  "For his contribution to electronic television through the development of camera and imaging tubes."

1963  P. G. Rice, Jr., and W. E. Evans, Jr.  "For the development of techniques and equipment for fixing televised images on paper."

1965  Norman F. Fyler  "For key contributions to the basic design of color television tubes."

1966  Ray D. Kell  "For his extensive and significant contributions, papers, and inventions which have been fundamental in the development of both black-and-white and color TV."
1967 Keiji Suzuki “For his outstanding technical contribution in the field of television and engineering leadership in the application of the relaying of television signals via satellites.”

1968 Kurt Schlesinger “For sustained and pioneering contributions to television circuitry and electron optical devices.”

1969 Otto H. Schade, Sr. “For broad technical contributions to the electronics and optics of television.”

1970 Charles H. Coleman “For highly significant contributions to the technology of recording monochrome and color television signals.”

1971 Alfred C. Schroeder “For his outstanding technical contributions to television and particularly his leadership in the development of color television.”

1972 Robin E. Davies “For his development of the field-store standards converter which permits U.S. colour television (NTSC) signals and those from the European (PAL) system to be exchanged directly.”

1973 Albert Macovski “For contribution to single tube encoded color cameras and color television receiving circuits.”

1974 Senri Miyaoka “For his contributions to the development of new concepts in color TV display tubes.”

1975 Eugene I. Gordon and Ralph E. Simon “For the invention and leadership in the development of the silicon target camera tube, and in the extension of electronic television into new applications.”

1977 Dalton H. Pritchard “For significant contributions to color television technology.”

1978 Sam H. Kaplan “For contributions to the theory and development of shadow mask tubes.”

1979 Albert M. Morrell “For contributions to shadow mask color picture tube development and design.”

1980 Walter Bruch “For the development of the Phase Alternating Line (PAL) color television system.”

1981 Naohiro Goto “For the development of the photosensitive structure of the SATICON TV camera tube.”

1983 Jon Clemens and Eugene O. Keizer “For outstanding contributions to the development of an electronic disc system for recorded television programs.”

1984 Takehiro Kakizaki and Yasuharu Kubota “For the invention and development of a unique single-tube color TV camera using a single carrier and electronic indexing.”
Section I-D
IEEE Service Award

Haraden Pratt Award

The Haraden Pratt Award was established in 1971 in honor of Haraden Pratt, who served as an IEEE Officer, Director, and Director Emeritus and who gave dedicated and distinguished service to the Institute. The purpose of the award is to recognize annually individuals who have conferred "outstanding service to the Institute." It consists of an illuminated certificate.

Haraden Pratt Award Recipients

1972 Alfred N. Goldsmith  "In recognition of Dr. Goldsmith's dedicated service to the Institute of Electrical and Electronics Engineers and the Institute of Radio Engineers over a span of sixty years, and of his leadership in establishing the high standards for which the Institute is respected throughout the World, the Board of Directors confers this first Award, established through the bequest of his friend, and close associate, Haraden Pratt. On the honored list of those who have rendered outstanding service to the Institute, no one has performed so well, for so long a time, with such unswerving dedication to truth and excellence."

1973 Elgin B. Robertson, Sr.  "In recognition of Elgin B. Robertson's half century of dedicated service to the Institute of Electrical and Electronics Engineers and the American Institute of Electrical Engineers, which has included his firm leadership as President of AIEE and his wise counsel as Director of AIEE and Director Emeritus of IEEE, and for his part in founding the IEEE through the union of AIEE and IRE, the Board of Directors confers this Award, established through the bequest of his friend and associate, Haraden Pratt. Attestign to the esteem with which he is held by the Institute and its members is the fact that he is one of four living members on whom the grade of Honorary Member has been conferred. Long devoted to the cause of unity among engineers, he has truly enriched the profession he has served."

1974 James H. Mulligan, Jr.  "In recognition of James H. Mulligan's dedicated service to the engineering profession through his wise counsel and action in the IEEE both as Director and President, particularly to the younger members, and of his excellent service in promoting coordination of IEEE with other technical and professional organizations, thereby elevating the professional status of all engineers, the Board of Directors confers this Award established by Haraden Pratt with the expectation that his accomplishments will act as a catalyst to future leaders."

1975 Walter J. Barrett  "In recognition of Walter J. Barrett's long and dedicated service to the engineering profession and the Institute of Electrical and Electronics Engineers and the American Institute of Electrical Engineers as Director and President of both AIEE and the United Engineering Trustees, and particularly for his dynamic leadership in planning and in organizing financial support for the new United Engineering Center and in locating its distinguished site, the Board of Directors confers this award which appropriately recognizes a man who served so well and ardently at all levels in his professional society."
1976  Clarence H. Linder  "In recognition of Clarence H. Linder’s dedicated service to the engineering profession, to the American Institute of Electrical and Electronics Engineers as Director and President of both AIEE and IEEE, as President of the United Engineering Trustees, for his service to the profession as President of the National Academy of Engineering, for his strong support in the establishment of the United Engineering Center and particularly for his leadership in planning and perfecting the merger of AIEE and IRE, the Board of Directors confers this Award in deep appreciation of his many contributions to the Institute."

1977  Schedule Revised*

1978  Ivan S. Coggeshall  "In recognition of Ivan S. Coggeshall’s dedicated contribution over a span of fifty years to the engineering profession through his service to the Institute of Radio Engineers and the Institute of Electrical and Electronics Engineers and his leadership in integration of wire and radio media through his wise counsel and action as Officer and Staff member of technical and professional organizations, the Board of Directors confers this Award."

1979  John D. Ryder  "In recognition of John D. Ryder’s dedicated contribution over a span of fifty years to electrical engineering education as teacher, author of textbooks and engineering dean and through his service and wise counsel to the Institute of Radio Engineers and the Institute of Electrical and Electronics Engineers as Editor of the PROCEEDINGS of the IRE and the PROCEEDINGS of the IEEE, Director and President of the IRE, Chairman of the History Committee and Chairman of the IEEE Centennial Committee, the Board of Directors confers this Award."

1980  Raymond W. Sears  "For long-standing, resourceful, and unselfish contributions to the welfare of the Institute, particularly as Institute Secretary, Treasurer, and IEEE representative in various intersociety affairs."

1981  Robert H. Tanner  "For contributions toward professionalism and dedicated service to the Canadian Region, to the IEEE, and to the profession over many years."

1983  Thomas H. Lee  "For meritorious service to the Institute, for the development of the IEEE Energy Committee, and for promoting public understanding of energy issues."

1984  William W. Middleton  "For meritorious service to the Institute and dedicated service to the Communications Society and to Region 2."

*Date of selection changed to date of presentation.
Section I-E
Prize Paper Awards

W. R. G. Baker Award

W. R. G. Baker, Vice-President of General Electric, and later Vice-President for Research at Syracuse University, New York, established this award under the auspices of the Institute of Radio Engineers in 1956. It consists of a certificate and one thousand dollars and is awarded for the "most outstanding paper reporting original work in the Transactions, Journals, and Magazines of IEEE Societies or in the Proceedings of the IEEE" issued between January 1 and December 31 of the preceding year.

W. R. G. Baker Award Recipients


Donald G. Fink Prize Award

The award was established in 1979, in honor of Donald G. Fink, eminent electrical engineer, editor of numerous technical publications, and first General Manager of the IEEE. Supported by the IEEE Life Member Fund Committee, it honors the "outstanding survey, review, or tutorial paper in any of the Transactions, Journals, Magazines, or Proceedings of the IEEE" issued between January 1 and December 31 of the preceding year. The award consists of a certificate and one thousand dollars.

Donald G. Fink Prize Award Recipients


Browder J. Thompson Memorial Prize Award

The award was established by the Institute of Radio Engineers in 1945 in memory of Browder J. Thompson, who gave his life in the service of his country while prosecuting technical work with the United States Armed Forces in Italy. The award is made for the "most outstanding paper in any IEEE publication" by an author or authors who have not reached the age of thirty years at the date of submission of the original manuscript. The award consists of a certificate and one thousand dollars.

Browder J. Thompson Memorial Prize Award Recipients


Section I-F
Honorary Members

Armstrong, Edwin Howard 1953 AIEE
Arnold, Bion Joseph 1937 AIEE
Bardeen, John 1981 IEEE
"For significant contributions to solid state physics leading to the invention of the TRANSISTOR and to the theoretical understanding of superconductivity."

Blondel, Andre E. 1912 AIEE
Brattain, Walter H. 1981 IEEE
"For significant contributions to fundamental semiconductor physics leading to the invention of the TRANSISTOR."

Brown, Charles Eugene Lancelot 1912 AIEE
Brush, Charles F. 1929 AIEE
Budde, Emil A. 1912 AIEE
Bush, Vannevar 1949 AIEE
Carty, John J. 1928 AIEE
Chesney, Cummings C. 1938 AIEE
Danzig, George B. 1983 IEEE
"For the development of linear programming and its numerous extensions, which have led to the widespread use of optimization techniques in many branches of electrical engineering design."

Dow, Alex 1937 AIEE
DuMont, Allen B. 1961 AIEE

Dunn, Gano 1945 AIEE
Edison, Thomas A. 1928 AIEE
Emanuelli, Luigi 1958 AIEE
Emmet, William LeRoy 1933 AIEE
Fairman, James F. 1955 AIEE
Farmer, Prof. Moses G. 1890 AIEE
de Ferranti, Sebastian Ziani 1912 AIEE
Field, Cyrus W. 1892 AIEE
Foch, Ferdinand 1921 AIEE
Green, Cecil H. 1983 IEEE
"For creative philanthropy fostering collaboration of educational institutions and industry in the advancement of electrical science."

Green, Dr. Norvin 1889 AIEE
Hamilton, George A. 1933 AIEE
Heaviside, Oliver 1918 AIEE
Helmholtz, Herman Ludwig Ferdinand von 1894 AIEE
Hoover, Herbert 1929 AIEE
Jackson, Dugald C. 1944 AIEE
Jewett, Frank Baldwin 1945 AIEE

A CENTURY OF HONORS
Josephson, Brian D. 1982 IEEE
"For his prediction (discovery) of pair tunneling between superconductors which constitutes the basis of a Josephson junction technology for high speed and low power computing elements and memories."

Kelvin, Lord 1892 AIEE

Kennelly, Arthur E. 1933 AIEE

Knuth, Donald E. 1982 IEEE
"For his contributions to the field of computer science, through research and education."

Land, Edwin H. 1981 IEEE
"For his pioneering work in science and technology of photography and light."

Marconi, Guglielmo 1917 AIEE

McNaughton, Andrew George Latta 1942 IEEE

Menon, M. G. K. 1984 IEEE
"For contributions to the planning and growth of science and technology, particularly electronics, and its application to development; promotion of international scientific cooperation; experimental research in particle physics and cosmic rays."

Millikan, Robert Andrews 1933 AIEE

Pacinotti, Antonio 1912 AIEE

Panofsky, Wolfgang K. H. 1982 IEEE
"For extensive pioneering contributions to the development of linear particle accelerators, advancement of high power microwave technology, and high energy particle physics."

Preece, Sir William H. 1884 AIEE

Pupin, Michael I. 1928 AIEE

Quarles, Donald Aubrey 1956 AIEE

Ramsey, Norman 1983 IEEE
"For the invention of the hydrogen maser, the development of high precision atomic clocks and contributions to the standardization of the second in terms of the cesium resonance."

Rice, Edwin Wilbur, Jr. 1933 AIEE

Robertson, Elgin Barnett 1959 AIEE

Scott, Charles F. 1929 AIEE

Shibusawa, Motoji 1929 AIEE

Siemens, Dr. Werner von 1892 AIEE

Simon, Herbert A. 1984 IEEE
"For his contributions in the field of complex information processing."

Skinner, Charles Edward 1945 AIEE

Sorensen, Royal Wasson 1954 AIEE

Sprague, Frank J. 1932 AIEE

Sporn, Philip 1961 AIEE

Swasey, Ambrose 1928 AIEE

Thompson, Silvanus P. 1914 AIEE

Thomson, Elihu 1928 AIEE

Weston, Edward 1933 AIEE

Yamashita, Hideo 1984 IEEE
"For his contributions to research in computers, international cooperation in the science and technology of information processing, and for his leadership in electrical engineering education."
### Past Presidents of AIEE, IRE, and IEEE

The American Institute of Electrical Engineers (AIEE)

<table>
<thead>
<tr>
<th>President</th>
<th>Term</th>
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<tbody>
<tr>
<td>Norvin Green</td>
<td>1884–85–86</td>
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<td>Franklin L. Pope</td>
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<td>T. Commerford Martin</td>
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<td>Edward Weston</td>
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<td>Elihu Thomson</td>
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<td>William A. Anthony</td>
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<td>Alexander Graham Bell</td>
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<td>Frank Julian Sprague</td>
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<td>Edwin J. Houston</td>
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<td>Louis Duncan</td>
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<td>Francis B. Crocker</td>
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<td>Arthur E. Kennelly</td>
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<td>Carl Hering</td>
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<td>Charles P. Steinmetz</td>
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<td>Charles F. Scott</td>
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<td>Henry G. Stott</td>
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<td>Dugald C. Jackson</td>
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<td>Gano Dunn</td>
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<td>Ralph D. Mershon</td>
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<td>C. O. Mailloux</td>
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<td>Paul M. Lincoln</td>
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<td>John J. Carty</td>
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<td>Harold W. Buck</td>
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<td>Edwin W. Rice, Jr.</td>
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<td>Comfort A. Adams</td>
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<td>Calvert Townley</td>
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<td>Arthur W. Berresford</td>
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<td>Harold B. Smith</td>
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<td>William S. Lee</td>
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<td>Charles E. Skinner</td>
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<td>Harry P. Charlesworth</td>
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<td>J. Allen Johnson</td>
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<td>Edward B. Meyer</td>
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<td>Alexander M. MacCutcheon</td>
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<td>John Castlereagh Parker</td>
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<td>F. Malcolm Farmer</td>
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<td>Royal W. Sorensen</td>
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<td>David C. Prince</td>
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<td>Nevin E. Funk</td>
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<td>Charles A. Powel</td>
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<td>William E. Wickenden</td>
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<td>J. Elmer Housley</td>
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<td>Blake D. Hull</td>
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<td>Everett S. Lee</td>
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<td>James F. Fairman</td>
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<td>Titus G. LeClair</td>
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<td>Fred O. McMillan</td>
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<td>Donald A. Quarles</td>
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<td>Elgin B. Robertson</td>
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<td>Alexander C. Monteith</td>
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<td>Morris D. Hooven</td>
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<td>Mervin S. Coover</td>
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<td>Walter J. Barrett</td>
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<td>L. F. Hickernell</td>
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<td>James H. Foote</td>
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<td>Warren J. Chase</td>
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<td>B. Richard Teare, Jr.</td>
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<td>Clarence H. Linder</td>
<td>1960–61</td>
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The Institute of Radio Engineers (IRE)

Robert H. Marriott 1912 Haraden Pratt 1938
Greenleaf W. Pickard 1913 Raymond A. Heising 1939
Louis W. Austin 1914 Laurence C. F. Horle 1940
John Stone-Stone 1915 Frederick E. Terman 1941
Arthur E. Kennelly 1916 Arthur F. Van Dyck 1942
Michael I. Pupin 1917 Lynde P. Wheeler 1943
George W. Pierce 1918–19 Hubert M. Turner 1944
John V. L. Hogan 1920 William L. Everitt 1945
E. F. W. Alexanderson 1921 Frederick B. Llewellyn 1946
Fulton Cutting 1922 Walter R. G. Baker 1947
Irving Langmuir 1923 Benjamin E. Shackelford 1948
John Harold Morecroft 1924 Stuart L. Bailey 1949
John H. Dellinger 1925 Raymond F. Guy 1950
Donald M. Nicol 1926 Ivan S. Coggeshall 1951
Ralph Bown 1927 Donald B. Sinclair 1952
Alfred N. Goldsmith 1928 James W. McRae 1953
Albert Hoyt Taylor 1929 William R. Hewlett 1954
Lee de Forest 1930 John D. Ryder 1955
Ray H. Manson 1931 Arthur V. Loughren 1956
Walter G. Cady 1932 John T. Henderson 1957
Lewis M. Hull 1933 Donald G. Fink 1958
C. M. Jansky, Jr. 1934 Ernst Weber 1959
Chas. S. Ballantine 1935 Ronald L. McFarlan 1960
Alan Hazeltine 1936 Lloyd V. Berkner 1961
Harold H. Beverage 1937 Partick E. Haggerty 1962

The Institute of Electrical and Electronics Engineers, Inc. (IEEE)

Ernst Weber 1963 John J. Guerrera 1974
Clarence H. Linder 1964 Arthur P. Stern 1975
Bernard M. Oliver 1965 Joseph K. Dillard 1976
Walter K. MacAdam 1967 Ivan A. Getting 1978
Seymour W. Herwald 1968 Jerome J. Suran 1979
F. Karl Willenbrock 1969 Leo Young 1980
Robert H. Tanner 1972 James B. Owens 1983
Harold Chestnut 1973

A CENTURY OF HONORS
Part II
Past Fellows
ABBOTT, ARTHUR LAURIE, AIEE Fellow 1944.
ABBOTT, W.L., AIEE Fellow 1913.
ABRAHAM, LEONARD GLADSTONE, IRE Fellow 1957 "For contributions to the engineering of broad-band coaxial transmission systems." AIEE Fellow 1959 "For contributions to the engineering and development of long distance telephone and transmission systems."
ACHESON, MARCUS A., IRE Fellow 1941.
ACKER, ALBERT, AIEE Fellow 1921.
ADAMS, COMFORT A., AIEE Fellow 1913.
ADAMS, FRANCIS JOSEPH, AIEE Fellow 1951.
ADAMS, LEE FRANCIS, AIEE Fellow 1942.
ADAMS, P.R., IRE Fellow 1961 "For contribution in the development of radio aids to navigation."
ADAMS, PATRICK HENRY, AIEE Fellow 1930.
ADAMS, ROBERT T., IRE Fellow 1962 "For contributions to over-the-horizon communications."
ADAMS, ROBERT WINTHROP, AIEE Fellow 1944.
ADAMSON, COLIN, IEEE Fellow 1974 "For contributions to engineering education and to protection of high-voltage direct-current transmission systems."
ADDEY, FREDERICK, IRE Fellow 1920.
ADDICKS, LAURENCE, AIEE Fellow 1919.
ADLER, HANS ANTON, AIEE Fellow 1962 "For contributions to insulation research and the application of probability mathematics to power system problems."
ADOLPH, JOHANNES, AIEE Fellow 1929.
ADORIAN, PAUL, IRE Fellow 1961 "For development of electronic distribution networks used in broadcasting and television."
ADSIT, CHARLES G., AIEE Fellow 1913.
AFFEL, HERMAN ANDREW, AIEE Fellow 1941. IRE Fellow 1949 "For his contributions to the communications art, and his guidance of important developments in carrier systems for multiplex telephone and television transmission."
AHMED, WAQUER, IRE Fellow 1962 "For contributions to engineering education in Pakistan."
AIKEN, HOWARD H., IRE Fellow 1960 "For contributions to development of computer science and technology."
AISBERG, EUGENE, IEEE Fellow 1968 "For his outstanding work, for more than forty years, as editor of technical magazines and author of educational books successfully known on a world-wide basis."
ALBERSHEIM, W.J., IRE Fellow 1957 "For contributions in the fields of sound reproduction and military electronics."
ALBRIGHT, ARTHUR S., AIEE Fellow 1943.
ALBRIGHT, H. FLEETWOOD, AIEE Fellow 1912.
ALDRIDGE, THOMAS H.U., AIEE Fellow 1918.
ALEXANDER, BEN, IEEE Fellow 1966 "For inventive and analytical contributions in the fields of electronic and inertial navigation."
ALEXANDER, EVERETT H., AIEE Fellow 1949.
ALEXANDER, HARRY, AIEE Fellow 1920.
ALEXANDER, S.N., IRE Fellow 1956 "For contributions to the development and application of digital computers."
ALEXANDERSON, E.F.W., IRE Fellow 1915. AIEE Fellow 1920.
ALGER, PHILIP L., AIEE Fellow 1930.
ALLEN, ALBERT J., AIEE Fellow 1950.
ALLEN, ASA EDWARD, AIEE Fellow 1942.
ALLEN, C.E., AIEE Fellow 1914.
ALLEN, EDWARD W., JR., IRE Fellow 1953 "For his technical and administrative contributions in the fields of radio wave propagation and radio noise."
ALLEN, EDWIN W., AIEE Fellow 1922.
ALLEN, ELSBERT G., AIEE Fellow 1922.
ALLEN, JOHN E., AIEE Fellow 1947.
ALLEN, OLIVER F., AIEE Fellow 1924.
ALLEN, THOMAS HAMPTON, AIEE Fellow 1944.
ALLIBONE, THOMAS EDWARD, AIEE Fellow 1949.
ALLISON, FRED, AIEE Fellow 1917.
ALMQVIST, CARL T., AIEE Fellow 1951.
ALMQVIST, MILTON LEROY, AIEE Fellow 1951. IRE Fellow 1958 "For his contributions to the planning of telephone and radio systems."
AMES, NORMAN B., AIEE Fellow 1948.
AMSTUZ, J. OSCAR, AIEE Fellow 1948.
ANDEREGG, GUSTAVUS A., AIEE Fellow 1930.

PAST FELLOWS
ANDERSON, A. EUGENE, IRE Fellow 1959 "For contributions to transistor switching circuits."

ANDERSON, ALBERT S., AIEE Fellow 1951.

ANDERSON, BURTON E., AIEE Fellow 1945.

ANDERSON, STEWART WISE, AIEE Fellow 1931.

ANDERTON, JOHN H., AIEE Fellow 1918.

ANDREW, V.J., IRE Fellow 1955 "For his contributions to radio antennas and transmission lines."

ANDREWS, FRANCIS E., AIEE Fellow 1950.

ANDREWS, W.S., AIEE Fellow 1912.

ANDRUS, LUCIUS B., AIEE Fellow 1919.

ANGOT, ANDRE M., IEEE Fellow 1966 "For achievement leadership in military telecommunications and engineering education."

ANGUS, DONALD JAMES, AIEE Fellow 1945.

ANKENBRANDT, F.L., IRE Fellow 1957 "For leadership in areas of military air navigation and communications."

ANSON, EDWARD H., AIEE Fellow 1957 "For contributions to railway electrification, power supply systems and engineering management."

APPLEGARTH, ALEXANDER R., JR., IEEE Fellow 1967 "For contributions to the development of airborne electronic equipment."

APPLETON, EDWARD V., IRE Fellow 1931.

ARENBERG, DAVID L., IEEE Fellow 1968 "For basic inventions and other contributions to the design and the manufacture of ultrasonic delay lines."

ARENDT, MORTON, AIEE Fellow 1913.

ARGERSINGER, ROY EDWIN, AIEE Fellow 1936.

ARMAN, ADRIAN NEVILLE, AIEE Fellow 1949.

ARMBRUST, GEORGE MAURICE, AIEE Fellow 1933.

ARMOR, JAMES COE, AIEE Fellow 1942.

ARMSTRONG, EDWIN H., IRE Fellow 1927.

ARMSTRONG, HARRISON R., AIEE Fellow 1961 "For contributions to insulation coordination and transient over-voltage protection."

ARMSTRONG, J.R.C., AIEE Fellow 1913.

ARMSTRONG, RALPH W., AIEE Fellow 1913.

ARNOLD, BION JOSEPH, AIEE Fellow 1912.

ARNOLD, HAROLD DEFOREST, AIEE Fellow 1929.

ARNOLD, J. LORING, AIEE Fellow 1922.

ASHBRIDGE, NOEL, IRE Fellow 1938.

ATKINSON, RALPH W., AIEE Fellow 1928.

ATTWOOD, S.S., IRE Fellow 1961 "For contributions to understanding of electromagnetic field theory."

ATTWOOD, STEPHEN S., AIEE Fellow 1943.

AUBERT, ROGER A., IEEE Fellow 1969 "For contributions to the development of radiocommunication systems, and for management of research laboratories and production facilities."

AUSTIN, ARTHUR O., AIEE Fellow 1925. IRE Fellow 1930.

AUSTIN, BASCUM OTTO, AIEE Fellow 1951.

AUSTIN, LOUIS W., IRE Fellow 1915.

AYDELOTT, JOHN CHARLES, AIEE Fellow 1948.

BABCOCK, ALLEN H., AIEE Fellow 1912.

BABITS, VICTOR A., IRE Fellow 1959 "For contributions to engineering education and pioneering in television."

BACK, G.I., IRE Fellow 1955 "For his leadership in the field of military communications and communication systems."

BAGNALL, VERNON BARNARD, AIEE Fellow 1948.

BAGNO, SAMUEL, IRE Fellow 1961 "For creative contributions in the fields of instrumentation, medical electronics, and electronic aids to law enforcement."

BAILEY, ARNOLD B., IEEE Fellow 1965 "For contributions in the field of radio navigation and communications."

BAILEY, AUSTIN, IRE Fellow 1936. AIEE Fellow 1950.

BAILEY, BENJAMIN F., AIEE Fellow 1921.

BAILEY, EDGAR L., AIEE Fellow 1943.

BAILEY, G.W., IRE Fellow 1956 "For sustaining service to amateur radio, and administrative leadership."

BAILEY, WILLIAM M., IRE Fellow 1960 "For contributions to capacitor technology."

BAKER, BENJAMIN PIFER, AIEE Fellow 1948.

BAKER, ERNEST WELLINGTON, AIEE Fellow 1951.

BAKER, MARVIN A., AIEE Fellow 1960 "For contributions to large rotating amplifying generators, DC Motors and generators."

BAKER, ROBERT A., IEEE Fellow 1968 "For outstanding contributions in the design, construction, and management of a major electric-power system."

BAKER, ROBERT M., IEEE Fellow 1966 "For contributions to the theory and practice of high frequency heating, and for his successful calorimetry of laser power."


BALCH, ELWYN C., AIEE Fellow 1943.

BALCH, JOHN A., IRE Fellow 1940.

BALDWIN, M.W., IRE Fellow 1948 "For his fundamental investigations of the quality of television pictures."

BALDWIN, ROBERT LEE, AIEE Fellow 1937.

BAll, JOHN DUDLEY, AIEE Fellow 1920.

A CENTURY OF HONORS
BALL, REGINALD DONAHOE, AIEE Fellow 1947.
BALL, THOMAS FAUNITEROY, AIEE Fellow 1938.
BALLARD, B. GUY, AIEE Fellow 1955 “For his contribution in applying electrical engineering technology to problems of national defense.” IRE Fellow 1955 “For his direction of radar and electronic research in Canada.”
BALLARD, WILLIAM CYRUS, JR., AIEE Fellow 1951.
BALLENTINE, STUART, IRE Fellow 1928.
BALLMAN, EDWIN CHARLES, AIEE Fellow 1959 “For contributions to design and fabrication of small electric motors.”
BALSBAUGH, JAYSON CLAIR, AIEE Fellow 1951.
BALTZLY, CLIFFORD C., AIEE Fellow 1943.
BANCROFT, CHARLES F., AIEE Fellow 1912.
BANKUS, JOHN, AIEE Fellow 1949.
BARCLAY, ROBERT HAMILTON, AIEE Fellow 1928.
BARCO, A.A., IRE Fellow 1957 “For contributions to radio and television receiver circuits.”
BARCUS, E. DALE, AIEE Fellow 1961 “For contributions in the field of noise, crosstalk, and electrical protection and in the design of special communication transmission facilities.”
BARFIELD, JOE W., AIEE Fellow 1956 “For contributions to the development of an electrical utility system.”
BARING, J.W., AIEE Fellow 1953 “In recognition of contributions to fundamental data in the field of power equipment design and operation.”
BARKER, HARRY, AIEE Fellow 1955 “For over a half century of active service to the Electrical Engineering Profession as editor, educator and consultant.”
BARKER, JOSEPH WARREN, AIEE Fellow 1930.
BARKHAUSEN, HEINRICH, IRE Fellow 1930.
BARKLEY, W.J., IRE Fellow 1956 “For pioneering and management in the field of electronic communication.”
BARLOW, STUART L.M., IEEE Fellow 1972 “For contributions to the development of international goodwill and collaboration in the electrical engineering industry.”
BARNES, CHARLES C., IEEE Fellow 1967 “For contributions to power transmission cable systems.”
BARNES, GEORGE CARROLL, JR., AIEE Fellow 1962 “For contributions to electrical engineering education.”
BARNES, HOWELL H., AIEE Fellow 1913.
BARNES, JAMES P., AIEE Fellow 1927.
BARNES, JOHN L., IRE Fellow 1952 “For contributions to mathematical theory and exposition in the field of transients in linear electrical and mechanical systems.”
BARNHOLDT, HAROLD L., AIEE Fellow 1919.
BARNUM, THOMAS EDISON, AIEE Fellow 1912.
BARRETO, MARIO DE BARROS, IRE Fellow 1924.
BARRETT, WALTER J., AIEE Fellow 1950.
BARRON, JACOB T., AIEE Fellow 1927.
BARROW, WILMER L., IRE Fellow 1942.
BARSTOW, WILLIAM S., AIEE Fellow 1912.
BARTHOLOMEW, FRANCIS JOHN, AIEE Fellow 1952.
BARTLETT, LAWRENCE, AIEE Fellow 1938.
BARTON, FREDERICK S., IRE Fellow 1935.
BARTON, PHILLIP PRIZE, AIEE Fellow 1912.
BARY, CONSTANTINE W., AIEE Fellow 1956 “For his work in engineering research and development of methods for dealing with present and future economics of electric utility service.”
BASCOM, HENRY MELVIN, AIEE Fellow 1930.
BATCHER,RALPH R., IRE Fellow 1950 “For his pioneering work with cathode ray tube instruments and for his development of variable frequency standards and instruments.”
BATEMAN, IVAN LESTER, AIEE Fellow 1959 “For contributions to the development and operation of a major metropolitan utility.”
BATES, LOUIS W., AIEE Fellow 1947.
BATSSEL, MAX C., IRE Fellow 1927.
BATTEY, WALTER RAYMON, AIEE Fellow 1943.
BAUER, BENJAMIN B., IRE Fellow 1953 “For his important contributions to the development of microphone and other audio devices.”
BAUGH, CLIVE EVERETT, AIEE Fellow 1948.
BAUGHN, EARL, AIEE Fellow 1950.
BAUHAN, OSCAR, AIEE Fellow 1951.
BAUMANN, ERNST, IEEE Fellow 1971 “For contributions to semiconductor technology and manufacturing processes.”
BAUMANN, FREDERICK W., IEEE Fellow 1976 “For improvements to alternating current motors and generators.”
BEACH, ROBIN, AIEE Fellow 1935.
BEAMES, CLARE F., AIEE Fellow 1913.
BEAN, GEORGE W., AIEE Fellow 1957 “For engineering achievements and administrative ability in the design and building of a rapidly expanding far flung power system.”
BEAR, FREDERICK THOMAS, AIEE Fellow 1958 “For contributions to increased capability of electric power systems.”
BEARD, JAMES ROBERT, AIEE Fellow 1941.
BEARDSLEY, CLIFFORD RAY, AIEE Fellow 1930.
BEATTY, ROBERT W., IEEE Fellow 1967 “For contributions to microwave measurements and techniques.”
BEAVER, J. LYNFORD, AIEE Fellow 1926.
BEAVERS, MARTIN F., AIEE Fellow 1955 "For his contributions to the understanding and better design of inductive apparatus, particularly in the field of dielectrics and heat transfer."

BECHMANN, RUDOLF, IRE Fellow 1960 "For contributions in the field of piezoelectric crystals."

BECHTEL, ERNEST J., AIEE Fellow 1913.

BECK, E.F.W., AIEE Fellow 1953 "For outstanding contributions in the development of lightning arrestors and in the science of protecting electric apparatus from damage by lightning voltage."

BECK, ROBERT WILLIAM, AIEE Fellow 1960 "For contributions to organization and operation of multiplicity of power systems."

BECKER, JOSEPH ADAM, AIEE Fellow 1943.

BEDELL, FREDERICK, AIEE Fellow 1926.

BEDFORD, L.H., IRE Fellow 1948 "For his development of special circuits, in particular those used for scanning purposes, in television."

BEEBE, MURRAY C., AIEE Fellow 1913.

BEEKMAN, ROYCE ALLEN, AIEE Fellow 1949.

BEEUWES, REINIER, AIEE Fellow 1920.

BEEZER, JOSEPH E., IRE Fellow 1928.

BEGGS, GEORGE E., JR., IEEE Fellow 1965 "For leadership in the development and manufacture of electronic instruments for measurement, control and display."

BEGGS, J.E., IRE Fellow 1956 "For contributions to the development of new designs of radio tubes."

BEHR, FRANCIS J., IRE Fellow 1920.

BEHREND, BERNARD A., AIEE Fellow 1912.

BELKNAP, J. HARRISON, AIEE Fellow 1949.

BELTZ, W.H., IRE Fellow 1956 "For leadership in improving the reliability of military electronic systems."

BENECKE, O.O., AIEE Fellow 1913.

BENKESSER, GRANT E., AIEE Fellow 1948.

BENNETT, CHARLES E., AIEE Fellow 1925.

BENNETT, CLAUDIUS EDMUND, AIEE Fellow 1937.

BENNETT, EDWARD, IRE Fellow 1918. AIEE Fellow 1918.

BENNETT, JOHN WILLIAM, AIEE Fellow 1955 "For contributions to the design and construction of electric distribution and generating systems."

BENNETT, RAWSON, II, IRE Fellow 1950 "For his contributions to the development of sonar systems and for effective administration of military electronics laboratories." AIEE Fellow 1959 "For contributions to accelerated and coordinated naval research, particularly in electronics."

BENNETT, REGINALD SAMUEL, AIEE Fellow 1946.

BENNETT, W. R., IRE Fellow 1956 "For contributions in the fields of circuit and transmission theory."

BENNION, HOWARD SHARP, AIEE Fellow 1944.

BENOIT, R.C., JR., IEEE Fellow 1964 "For contributions in the field of military electronics."

BENSON, ERICK ALFRED, AIEE Fellow 1959 "For contributions of engineering innovations to construction and operation of a large hydro-project."

BENSON, FRANCIS SCHAAR, AIEE Fellow 1950.

BERG, ERNST J., AIEE Fellow 1913.

BERGER, F.B., IRE Fellow 1961 "For fundamental contributions to the theory and development of doppler navigation."

BERGVALL, ROYAL C., AIEE Fellow 1950.

BERKNER, LLOYD VIEL, AIEE Fellow 1947. IRE Fellow 1947 "For his investigations of ionospheric phenomena and his contributions to airborne radar development."

BERRESFORD, ARTHUR W., AIEE Fellow 1914.

BERRY, EDWARD ROBIE, AIEE Fellow 1929.

BERRY, JOEL HALBERT, AIEE Fellow 1946.

BETTANNIER, EUGENE L., AIEE Fellow 1946.

BETTIS, ALEXANDER E., AIEE Fellow 1926.

BETTS, PHILANDER, AIEE Fellow 1913.

BETZ, PAUL L., AIEE Fellow 1962 "For achievements in research in a large electric and gas utility."

BETZER, CECIL EVERETT, AIEE Fellow 1962 "For contributions to the design and operating characteristics of underground power cables."

BIBBONS, JAMES R., AIEE Fellow 1920.

BICKELHAUPT, CARROLL OWEN, AIEE Fellow 1928.

BIEGLER, PHILIP SHERIDAN, AIEE Fellow 1929.

BIGELOW, WALTER B., AIEE Fellow 1947.

BIJUR, JOSEPH, AIEE Fellow 1913.

BILLAU, LEWIS SCOVILLE, AIEE Fellow 1950.

BILLINGS, ASA WHITE KENNY, AIEE Fellow 1913.

BINGLEY, FRANK J., IRE Fellow 1950 "In recognition of his contributions in the field of television broadcast engineering."

BINYON, BASIL, IEEE Fellow 1967 "For his outstanding work as a pioneer in international electronic communications."

BIRCKHEAD, LENNOX, AIEE Fellow 1949.

BIRD, WILLIAM L., AIEE Fellow 1920.

BISHOP, HAROLD, IRE Fellow 1938.

BJORQUIST, CARL HENRY, AIEE Fellow 1958 "For his contributions to standards for and tests of high voltage power system equipment."

BLACK, K.C., IRE Fellow 1949 "For his outstanding wartime work on radio countermeasures and his many
contributions to the design of coaxial cable transmission systems.”

BLACK, LEONARD J., IRE Fellow 1953 “For research in the field of electro-magnetic radiation, and a distinguished record in teaching radio engineering.”

BLACKMON, HENDLEY, AIEE Fellow 1949.

BLACKWELL, OTTO B., AIEE Fellow 1917. IRE Fellow 1928.

BLAISDELL, LEONARD T., AIEE Fellow 1939.

BLAKE, S.H., AIEE Fellow 1917.

BLANKENBUEHER, JOHN H., AIEE Fellow 1948.

BLATHY, OTTO T., AIEE Fellow 1913.

BLISS, LOUIS D., AIEE Fellow 1920.

BLISS, WILLIAM LARD, AIEE Fellow 1917.

BLOMBERG, K.H., IRE Fellow 1950 “In recognition of his many contributions to development and engineering in the field of communications in Sweden.”

BLONDEL, ANDRE, IRE Fellow 1917.

BLOOD, JOHN BALCH, AIEE Fellow 1912.

BLOOD, W.H., JR., AIEE Fellow 1913.

BLUME, LOUIS FREDERICK, AIEE Fellow 1939.

BLYE, PAUL W., AIEE Fellow 1951.

BOARD, V.L., AIEE Fellow 1938.

BOCK, CHARLES D., IEEE Fellow 1971 “For contributions to analog computer components and application, and to inertial navigation.”

BODE, HENDRICK W., AIEE Fellow 1951, IRE Fellow 1952 “In recognition of his many contributions in the field of circuit and wave-filter theory.”

BODICKY, ANDREW, AIEE Fellow 1953 “For long and outstanding work on important submarine power cable installations and authoritative contributions to the literature of cable engineering.”

BODLER, OSCAR W., AIEE Fellow 1919.

BOGEN, LOUIS E., AIEE Fellow 1912.

BOHN, DONALD IVAN, AIEE Fellow 1949.

BOHNERT, JOHN L., IRE Fellow 1960 “For contribution to the field of microwave antennas.”

BOLLINGER, HOWARD MOORE, AIEE Fellow 1942.

BOLLJAHN, JOHN T., IRE Fellow 1959 “For contributions to the fundamental theory and design of antennas.”

BOLSER, M.O., AIEE Fellow 1926.

BOLT, R.H., IEEE Fellow 1964 “For contributions to the field of acoustics through research and teaching.”

BOLTON, FRANK CLEVELAND, AIEE Fellow 1942.

BONNEY, ROBERT BRIDGE, AIEE Fellow 1937.

BOORZHINSKY, NICHOLAS P., AIEE Fellow 1950.

BOOTH, JESSE J., AIEE Fellow 1939.

BOOTH, RALPH D., AIEE Fellow 1953 “For contributions as to the successful solution of problems arising in the development of electric power systems, and in the application of electric power to industry.”

BOOTHROYD, W.P., IRE Fellow 1956 “For contributions to the development of microwave relays, multiplex equipment, and television receivers.”

BORCH, FREDERICK, AIEE Fellow 1939.

BORDEN, PERRY A., AIEE Fellow 1944.

BORGNIIS, FRITZ E., IRE Fellow 1962 “For leadership in engineering education and research and contribution in the fields of electronics and acoustics.”

BORN, ARTHUR S., IEEE Fellow 1965 “For contributions in the field of air navigational aids.”

BOSCH, LESTER LOUIS, AIEE Fellow 1945.

BOSE, SURENDRA NATH, AIEE Fellow 1948.

BOSOMWORTH, G.P., IRE Fellow 1957 “For contributions to the use of electronics in the rubber industry.”

BOSSARD, GISBERT L., AIEE Fellow 1937.

BOSSON, FREDERICK N., AIEE Fellow 1916.

BOSWELL, CLAY CARLTON, AIEE Fellow 1962 “For contributions to the engineering, construction and administration of an electric power system.”

BOURLAND, LANGFORD TODD, AIEE Fellow 1947.

BOUTHILLON, LEON, IRE Fellow 1917.

BOUTRY, GEORGES A., XXXX Fellow 1962 “For contributions to electro-optical science, color television, and European television standards.”

BOVERI, THEODORE, AIEE Fellow 1947.

BOWDEN, B. VIVIANEEE Fellow 1970 “For contributions in the fields of radar and digital computers.”

BOWMAN, KENNETH KARL, AIEE Fellow 1951.

BOWN, RALPH, IRE Fellow 1925. AIEE Fellow 1941.

BOYAJIAN, ARAM, AIEE Fellow 1926.

BOYCE, BENJAMIN KNOWLTON, AIEE Fellow 1941.

BOYCE, FRANK GEORGE, AIEE Fellow 1945.

BOYER, ELMER E., AIEE Fellow 1912.

BOYER, WILLIAM CHARLES, AIEE Fellow 1924.

BOYSE, CYRIL OLIVER, AIEE Fellow 1950.

BOZELL, HAROLD V., AIEE Fellow 1923.

BRACKETT, BYRON BRIGGS, AIEE Fellow 1935.

BRACKETT, HAROLD H., AIEE Fellow 1944.

BRADFIELD, WILLIAM W., IRE Fellow 1915.

BRADSTRUM, ROY E., AIEE Fellow 1961 “For contributions to operation, refinement and expansion of a major telephone utility.”

BRADT, A.W., AIEE Fellow 1945.

BRAILLARD, RAYMOND, IRE Fellow 1935.

BRAINARD, FRANK K., AIEE Fellow 1938.

BRAMHALL, FAY BEAUMONT, AIEE Fellow 1944.

IRE Fellow 1961 “For contributions to the theory and
practice of electrical communications.”
BRAND, FREDERICK FERMOR, AIEE Fellow 1939.
BRANDON, EDGAR T.J., AIEE Fellow 1920.
BRANIN, FRANKLIN H., IEEE Fellow 1974 “For contributions to circuit theory and the use of computers in circuit analysis.”
BRAUN, FERDINAND, IRE Fellow 1915.
BRAUNIG, VICTOR H., AIEE Fellow 1957 “For his leadership in design and operation of thermo-electric generating stations and in the management of a large electric utility.”
BRAZIER, LESLIE GIDDENS, AIEE Fellow 1949.
BRECHT, WINSTON ALLEN, AIEE Fellow 1948.
BREIT, GREGORY, IRE Fellow 1945 “For pioneering in the experimental probing of the ionosphere and giving to the world the first publication of the experimental proof of the existence of the ionosphere; and for having initiated at an early date the pulse method of probing by reflection which is the basis of modern radar.”
BRENECKE, CORNELIUS GODFREY, AIEE Fellow 1951. IRE Fellow 1951 “Teacher, engineer and physicist, in recognition of his excellent work in basic research.”
BRENTON, WALTER, AIEE Fellow 1940.
BRETCH, EDWARD, AIEE Fellow 1948.
BRICE, NEIL M., IEEE Fellow 1974 “For contributions to the understanding of the interactions between the magnetosphere and the ionosphere, especially in the polar regions.”
BRIDGWATER, MALCOLM MACFARLAN, AIEE Fellow 1960 “For contributions to electric power system development and interconnected operation.”
BRIGGS, ALBERT F., AIEE Fellow 1954 “For his contributions to the application of electric power and automatic controls in the oil industry, including pump line pumping, gathering systems and loading installations.”
BRIGHT, GRAHAM, AIEE Fellow 1922.
BRIGHT, R. LOUIS, IRE Fellow 1962 “For contributions to transistor and computer circuits.”
BRILLOUIN, LEON N., IRE Fellow 1952 “For his many teaching accomplishments and his contributions to the literature of physics and radio.”
BROOKES, A. SIDNEY, IEEE Fellow 1965 “For contributions in the fields of lightning protection and power cable design.”
BROOKS, ALLERTON FRANK, AIEE Fellow 1950.
BROOKS, FORREST EDMUND, AIEE Fellow 1948.
BROOKS, HERBERT BARTON, AIEE Fellow 1931.
BROOKS, MORGAN, AIEE Fellow 1913.
BROSAN, THOMAS JOSEPH, AIEE Fellow 1950 “For contributions and leadership in the field of electronic components.”
BROWN, A.S., IRE Fellow 1956 “For contributions to, and leadership in, military electronics.”
BROWN, BURTON P., IEEE Fellow 1967 “For contributions to radar antennas and electronic defensive systems.”
BROWN, CHARLES D., AIEE Fellow 1939.
BROWN, ELBERT C., AIEE Fellow 1962 “For contributions to the economic planning and operation of interconnected power systems.”
BROWN, FREDERIC STREETER, AIEE Fellow 1945.
BROWN, FREDERICK W., IRE Fellow 1962 “For direction and administration of research in the field of radio wave propagation.”
BROWN, HAROLD HASLEY, AIEE Fellow 1951.
BROWN, HARRY FARNSWORTH, AIEE Fellow 1947.
BROWN, J. STANLEY, AIEE Fellow 1950.
BROWN, KENNETH R., AIEE Fellow 1955 “For contributions to the development and technical integration of electric utilities and to protection of transformers on rural systems.”
BROWN, MELVIN KEELER, AIEE Fellow 1950.
BROWN, ROY L., IEEE Fellow 1955 “For contributions to the theory, design and technical advancement of transformers in the power field.”
BROWN, THERON ADELBERT, AIEE Fellow 1961 “For contributions to the design of distribution systems, substations and power plants.”
BROWN, WALTER J., AIEE Fellow 1950.
BROWN, WILLIAM W., IEEE Fellow 1969 “For contributions to the development and design of low-frequency antenna systems and stations.”
BROWNE, RALPH COWAN, AIEE Fellow 1928.
BROWNING, G.H., IRE Fellow 1955 “For his early contributions and his inspirational leadership in the electronics field.”
BR UECKMANN, HELMUT L., IRE Fellow 1958 “For his research on antennas.”
BRUNETTI, CLEDO, AIEE Fellow 1948. IRE Fellow 1949 “In recognition of his pioneering work on printed circuits.”
BRUSTMAN, JOSEPH A., IRE Fellow 1959 “For contributions in the development of digital computing systems.”
BRUUN, GEORG THEODOR, AIEE Fellow 1942.
BRYANT, JOHN M., AIEE Fellow 1943.
BUCHANAN, OMAR BAILEY, AIEE Fellow 1930.
BUCHER, E.E., IRE Fellow 1929.
BUCHHOLD, THEODORE A., IEEE Fellow 1965 “For basic contributions to guidance systems and superconductivity equipment.”
BUCK, A. MORRIS, AIEE Fellow 1923.
BUCK, H.W., AIEE Fellow 1912.
BUCKLEY, OLIVER E., AIEE Fellow 1929.
BUDENBOM, H.T., IRE Fellow 1956 “For contributions to electronic navigation and to precision military radar systems.”
BUEHNER, ROBERT OTJEN, AIEE Fellow 1943.
BUELL, ROY C., AIEE Fellow 1951.
BUILDER, GEOFFREY, IRE Fellow 1942.
BULLARD, WILLIAM RALPH, AIEE Fellow 1951.
BULLEN, CHARLES VICTOR, AIEE Fellow 1962 “For contributions to engineering education.”
BULLER, FRANCIS H., AIEE Fellow 1953 “For contributions to the knowledge of electrical, thermal and mechanical characteristics of electric power cable.”
BUNDY, EDWIN S., AIEE Fellow 1933.
Burch, Edward P., AIEE Fellow 1913.
BURGER, EDWARD J., AIEE Fellow 1950.
BURGER, RUDOLPH E., AIEE Fellow 1930.
BURGESS, CHARLES F., AIEE Fellow 1913.
BURKE, JAMES, AIEE Fellow 1913.
BURKEHOLDER, CHARLES IrvINE, AIEE Fellow 1931.
BURKETT, CHARLES W., AIEE Fellow 1921.
BURLEIGH, CHARLES B., AIEE Fellow 1912.
BURNAP, ROBERT SAMUEL, AIEE Fellow 1951.
BURNHAM, WALTER W., IRE Fellow 1923.
URNS, HARRY ROBERT, AIEE Fellow 1950.
BURROWS, CHARLES RUSSELL, IRE Fellow 1943 “For his contributions in the field of radio wave propagation, particularly for his investigations of propagation along the ground at ultra-high frequency modulation.” AIEE Fellow 1945.
BURROWS, CHARLES W., AIEE Fellow 1918.
BURT, AUSTIN, AIEE Fellow 1912.
BURT, BYRON T., AIEE Fellow 1913.
BUlt, ROBERT C., AIEE Fellow 1943.
BURTON, PAUL GIBSON, AIEE Fellow 1916.
BUSCH, ALOYSIUS JOHN, AIEE Fellow 1951.
BUSH, VANNEVAR, AIEE Fellow 1924.
BUSHMAN, ANDREW KIDD, AIEE Fellow 1947.
BUSIGNIES, HENRI G., IRE Fellow 1945 “For his accomplishments in the field of radio direction finders, particularly pioneering work on instruments having automatic indication features.” AIEE Fellow 1959 “For contributions in the fields of electronic direction finding, air navigation, radar and radio communications.”
BUSSEY, HENSON ESTES, AIEE Fellow 1918.
BUTCHER, CHARLES ALBERT, AIEE Fellow 1943.
BUTLER, JOHN WENDELL, AIEE Fellow 1946.
BUTTNER, H.H., IRE Fellow 1944 “In recognition of his direction of radio communication activities in the international field.”
BUTTOLPH, LEROY JAMES, AIEE Fellow 1942.
BUTTON, CHARLES T., AIEE Fellow 1956 “For his contributions to the theory and design of small meters and aircraft inverors.”
BYLLESBY, HENRY M., AIEE Fellow 1920.
BYNG, E.S., AIEE Fellow 1929.
BYRNE, JOHN F., IRE Fellow 1950 “For his development of a system of polyphase broadcasting and for effective wartime engineering administration.”
BYRNES, I.F., IRE Fellow 1954 “For his contributions to development and design of equipment in the field of marine communication and navigation.”

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CADWALLADER, JAMES ALBERT, AIEE Fellow 1939.
Cady, Walter G., IRE Fellow 1927.
Cahan, Francois Michel, AIEE Fellow 1958 “For contributions to stable, secured operations of an extra high voltage continental interconnected system.”
CAHOON, R.D., IRE Fellow 1956 “For contributions to international shortwave services and to Canadian broadcasting.”
CALABRESE, GIUSEPPE, AIEE Fellow 1951.
CALDERWOOD, EVERETT M., AIEE Fellow 1951.
Caldwell, Bascom H., Jr., AIEE Fellow 1949.
Caldwell, Eugene, AIEE Fellow 1947.
Caldwell, F.C., AIEE Fellow 1913.
Caldwell, Harry L., AIEE Fellow 1920.
Caldwell, ORESTES H., IRE Fellow 1944 “For his contribution in broadening the horizon of the engineer by his long continued effort to increase the use of electronic principles in industrial operations.” AIEE Fellow 1954 “For his services to electronic engineering in the fields of publication and public service.”
CALLAHAN, John L., AIEE Fellow 1948. IRE Fellow 1953 “For his contributions to international radio communications and especially to radiophoto and multiplex techniques.”
CALLANDER, DELMER W., AIEE Fellow 1955 “For contributions to the development of transformers, particularly large power units.”
CALVERT, JOHN F., IRE Fellow 1960 “For contributions to electrical engineering and education.”
CALVERT, JOHN FYRER, AIEE Fellow 1945.
CAMPBELL, GEORGE A., AIEE Fellow 1913.
CAMILLI, GUGLIELMO, AIEE Fellow 1943.
CAMPAIGNE, HOWARD H., IEEE Fellow 1969 “For pioneering contributions in computer design, and leadership in the advancement of computer technology for scientific and military applications.”

CAMPBELL, ALLAN B., AIEE Fellow 1938.

CAMPBELL, ARTHUR BALLARD, AIEE Fellow 1935.

CAMPBELL, RICHARD D., IRE Fellow 1951 “For his work in the internationally important field of radio-frequency allocation.”

CAMPBELL, W. LEE, AIEE Fellow 1913.

CANN, JOHN O.G., IRE Fellow 1921.

CANNADY, NATHANIEL ELLIS, AIEE Fellow 1947.

CANNON, WILLIAM D., AIEE Fellow 1954 “For developments in instrumentation in the communications field.”

CAPARO, JOSE ANGEL, AIEE Fellow 1932.

CARHART, FRANK MILTON, AIEE Fellow 1932.

CARLE, N.A., AIEE Fellow 1913.

CARLTON, WILLARD G., AIEE Fellow 1912.

CARNANAHAN, CHALON W., IRE Fellow 1952 “For original contributions in the fields of frequency modulation, television and electronic systems engineering.”

CARPENTER, CHARLES BENJAMIN, AIEE Fellow 1944.

CARPENTER, HENRY C., AIEE Fellow 1922.

CARPENTER, HUBERT VINTON, AIEE Fellow 1918.

CARPENTER, JOHN WILLIAM, AIEE Fellow 1946.

CARPENTER, WILLIAM PHILIP, AIEE Fellow 1958 “For contributions to techniques of controlling electric illumination.”

CARROLL, DOUGLAS V., IEEE Fellow 1971 “For contributions to naval and industrial electronics.”

CARROLL, JOSEPH SNYDER, AIEE Fellow 1947.

CARSON, JOHN RENSHAW, AIEE Fellow 1933.

CARTER, EMMETT F., IRE Fellow 1936.

CARTER, HERBERT G., AIEE Fellow 1930.

CARTER, LEONARD LEROY, AIEE Fellow 1938.

CARTER, P.S., IRE Fellow 1949 “For his many contributions in the fields of radio transmission and communication systems.”

CARTER, THOMAS, AIEE Fellow 1920.

CARTY, JOHN J., AIEE Fellow 1913.

CARUTHERS, ROBERT S., IRE Fellow 1962 “For contributions in the fields of multiplexing and long-distance telephony.”

CASE, HERBERT MONROE, AIEE Fellow 1938.

CASKEY, ARTHUR DAVID, AIEE Fellow 1960 “For contributions to planning and design of a large power system.”

CASSELL, WALLACE LEWIS, AIEE Fellow 1958 “For contributions to electrical curricula and inspirational teaching.”

CASTLE, SCAUEL N., AIEE Fellow 1918.

CHACE, WILLIAM G., AIEE Fellow 1913.

CHAFFEE, E. LEON, IRE Fellow 1921.

CHAIT, HERMAN N., IEEE Fellow 1970 “For development and invention in microwave ferrites and antennas.”

CHAMBERLAIN, ADOLPH B., IRE Fellow 1942.

CHANDLER, RALPH BORTHWICK, AIEE Fellow 1944.

CHANG, HSU, IEEE Fellow 1973 “For contributions to magnetic memory research.”

CHAPMAN, J.H., IEEE Fellow 1964 “For leadership in space research and scientific achievement in upper atmospheric radio physics.”

CHARLESWORTH, HARRY PRESCOTT, AIEE Fellow 1928.

CHASE, DELMAR DUDLEY, AIEE Fellow 1959 “For contributions to the planning and performance of a large power system and to the design of large two-winding turbine generators.”

CHASE, PHILIP HARTLEY, AIEE Fellow 1943.

CHASE, WARREN H., AIEE Fellow 1951.

CHASE, WILLIAM GREGORY, AIEE Fellow 1924.

CHATELAIN, MICHAEL A., AIEE Fellow 1926.

CHENEY, H.W., AIEE Fellow 1913.

CHERNYSOFF, ALEXANDER, AIEE Fellow 1926.

CHERRY, LLOYD BENJAMIN, AIEE Fellow 1962 “For contributions to electrical engineering education.”

CHESNEY, C.C., AIEE Fellow 1913.

CHESTERMAN, FRANCIS J., AIEE Fellow 1922.

CHEYNEY, ALGERNON R., AIEE Fellow 1913.

CHI, ANDREW R., IEEE Fellow 1973 “For contributions in worldwide precise time and frequency synchronization, and of frequency control.”

CHIEN, ROBERT T., IEEE Fellow 1972 “For contributions to coding theory, graph theory, and engineering education.”

CHILDERHOSE, ERWIN ALFRED, AIEE Fellow 1937.

CHIPP, R.D., IRE Fellow 1955 “For his contributions to the development of radar and television apparatus for the Navy.”

CHRISTENSEN, J.W., IRE Fellow 1961 “For contributions to photo transmission and color television systems.”

CHRISTIE, CLARENCE VICTOR, AIEE Fellow 1932.

CHU, LAN J., IRE Fellow 1952 “In recognition of his contributions to the theory and practice of wave guides and microwave antennas.”
CHUBB, LEWIS W., AIEE Fellow 1921. IRE Fellow 1940.
CHUBBUCK, H. EUGENE, AIEE Fellow 1913.
CHUBBUCK, LEONARD BURROWS, AIEE Fellow 1943.
CHUTE, GEORGE M., AIEE Fellow 1946.
CIMORELLI, JOSEPH T., IRE Fellow 1962 “For contributions to the development of electron tubes.”
CISSMA, VOLNEY J., AIEE Fellow 1957 “For his contributions to the engineering of a large power transmission system.”
CLAPP, JAMES K., IRE Fellow 1933.
CLARK, ALVA BENDON, AIEE Fellow 1930. IRE Fellow 1956 “For early development and leadership in the field of telephone transmission systems.”
CLARK, FARLEY G., AIEE Fellow 1913.
CLARK, FRANK MARSHALL, AIEE Fellow 1960 “For contributions to development of electrical insulation through the application of chemical principles.”
CLARK, GEORGE H., IRE Fellow 1915.
CLARK, HENRY WOODMAN, AIEE Fellow 1948.
CLARK, J.W., IRE Fellow 1961 “For contributions to research on the effects of radiation.”
CLARK, JAMES C., AIEE Fellow 1957 “For his contributions in the field of electrical engineering education.”
CLARK, WALTER G., AIEE Fellow 1924.
CLARK, WILLIAM RUSSELL, AIEE Fellow 1961 “For contributions by invention, development and design to recording, measuring and control instruments and systems.”
CLARKE, CHARLES L., AIEE Fellow 1912.
CLARKE, EDITH, AIEE Fellow 1948.
CLARKE, HENRY ANABLE, AIEE Fellow 1959 “For contributions to carrier current relaying and ultra high power circuit reclosing techniques.”
CLARKE, HIRAM OPIE, JR., AIEE Fellow 1941.
CLARKSON, ALBERT J., AIEE Fellow 1934.
CLAVIER, ANDRE GABRIEL, AIEE Fellow 1953 “For pioneer work in research, development and engineering in communication in the microwave field.”
CLAYTOR, WILLIAM GRAHAM, AIEE Fellow 1946.
CLEARY, LEO H., AIEE Fellow 1942.
CLEM, JOSEPH EARL, AIEE Fellow 1938.
CLEM, EDWARD E., AIEE Fellow 1913.
CLEM, LOUIS M., IRE Fellow 1926.
CLIFORD, H.E., AIEE Fellow 1913.
CLOKE, PAUL, AIEE Fellow 1938.
CLOKEY, ALLISON A., AIEE Fellow 1928.
COATES, WILLIAM A., AIEE Fellow 1926.
COBINE, JAMES DILLON, IRE Fellow 1957 “For contributions to engineering education and gaseous electronics research.” AIEE Fellow 1962 “For contributions to the understanding of Gaseous Conduction and Arc Discharges.”
COCHRANE, HARRY HAMILTON, AIEE Fellow 1961 “For contributions to economical power generation and transmission for an extended system.”
CODDING, HENRY W., AIEE Fellow 1944.
COE, REGINALD THORNTON, AIEE Fellow 1948.
COFFIN, JOHN RUSKIN, AIEE Fellow 1959 “For his contributions to engineering management and economic evaluation and design of large power projects.”
COHEN, LOUIS, IRE Fellow 1915. AIEE Fellow 1919.
COHN, SEYMOUR B., IRE Fellow 1959 “For contributions to the theory and design of microwave components.”
COIT, NORMAN H., AIEE Fellow 1940.
COLDWELL, ORIN B., AIEE Fellow 1912.
COLE, FRED H., AIEE Fellow 1948.
COLEMAN, HARRY CHARLES, AIEE Fellow 1948.
COLEMAN, JAMES O'REILLY, AIEE Fellow 1950.
COLEMAN, JOHN B., IRE Fellow 1948 “For his contributions through development, design and technical direction of work in the field of radio transmitters.” AIEE Fellow 1956 “For contributions to the development of radio transmitters and standards in the radio engineering field.”
COLEMAN, O.K., AIEE Fellow 1944.
COLES, EDMUND P., AIEE Fellow 1935.
COLLOBHOM, MAX H., AIEE Fellow 1913.
COLLIER, WILLIAM R., AIEE Fellow 1920.
COLLINS, HAROLD WILSON, AIEE Fellow 1948.
COLLINSON, PERCE B., IRE Fellow 1962 “For unusually helpful activities as a Charter Member of the Institute, and many early efforts toward the production of its PROCEEDINGS.”
COLPITS, EDWIN HENRY, AIEE Fellow 1912. IRE Fellow 1926.
COLTON, ROGER BALDWIN, AIEE Fellow 1946. IRE Fellow 1954 “For his pioneering contributions to the development and application of radar in the U.S. Army.”
COMPTON, KARL T., AIEE Fellow 1931.
COMSTOCK, G.C., IRE Fellow 1957 “For contributions to the development and application of navigational radar.”
COMSTOCK, L.K., AIEE Fellow 1912.
CONBLIN, L.H., AIEE Fellow 1912.
CONDIT, B.C., AIEE Fellow 1913.
CONDON, EARL STILSON, AIEE Fellow 1961 “For contributions to power insulator improvement and protective and distribution equipment for aircraft.”
CONDON, EDWARD U., IRE Fellow 1953 “In recognition of his outstanding contributions and distinguished leadership in the development of microwave radar and in the atomic energy program.”

PAST FELLOWS
CONN, CHARLES F., AIEE Fellow 1914.
CONNELL, DOUGLAS J., IRE Fellow 1966 “For outstanding engineering proficiency, leadership and administrative attainments in the utility industry.”
CONNAD, ALBERT G., AIEE Fellow 1949.
CONRAD, EDWARD E., IEEF Fellow 1981 “For technical leadership in the understanding and characterization of transient nuclear radiation effects on insulators.”
CONRAD, FRANK, IRE Fellow 1927. AIEE Fellow 1937.
CONRAD, NICHOLAS J., AIEE Fellow 1921.
CONWELL, ROLLIN N., AIEE Fellow 1931.
COOK, ARTHUR L., AIEE Fellow 1951.
COOK, EARLE F., IRE Fellow 1962 “For leadership in military communications and electronics.”
COOK, ELLSWORTH D., IRE Fellow 1942.
COOK, JAMES A., AIEE Fellow 1930.
COOK, LEE E., AIEE Fellow 1945.
COOLIDGE, WILLIAM D., AIEE Fellow 1955 “For notable research and scientific achievement in electrical engineering particularly the drawing of tungsten and in the development of the X-Ray.”
COONEY, WILLIAM HENRY, AIEE Fellow 1949.
COOPER, ARCHIBALD JOHN, AIEE Fellow 1961 “For contributions toward the practical application of electrical machinery.”
COOPER, ASHTON BURTON, AIEE Fellow 1933.
COOVER, MERVIN S., AIEE Fellow 1942.
COPLAND, CLEM A., AIEE Fellow 1940.
COOLEY, ALMON W., AIEE Fellow 1926.
CORCORAN, GEORGE F., AIEE Fellow 1950. IRE Fellow 1956 “For contributions to electrical engineering education and to the associated literature.”
CORDRAY, RICHARD E., AIEE Fellow 1949.
COREY, FRED B., AIEE Fellow 1912.
CORNEY, CHESTER ALBERT, AIEE Fellow 1944.
CORWITH, HOWARD P., IRE Fellow 1952 “For his leadership in the development of radio-telegraph, landline and submarine cable communications.”
CORWITH, HOWARD POST, AIEE Fellow 1951.
CORY, CLARENCE L., AIEE Fellow 1913.
CORY, MERTON M., AIEE Fellow 1940.
COSENTINE, LOUIS GEORGE, AIEE Fellow 1962 “For contributions to electrified production in industrial plants.”
COSTA, HELIO, IRE Fellow 1958 “For his contributions to aeronautical radio.”
COSTER, MAURICE, AIEE Fellow 1912.
COTTER, WILLIAM F., AIEE Fellow 1947.

COULBOURN, EDWARD R., AIEE Fellow 1956 “For his achievements in the design of an extensive electric production, transmission and distribution system.”
COWAN, FRANK A., AIEE Fellow 1945. IRE Fellow 1955 “For his contributions to long-distance communication, particularly in the development of television network facilities.”
COWLES, ALFRED H., AIEE Fellow 1912.
COX, FRANK P., AIEE Fellow 1913.
COX, H.H., AIEE Fellow 1953 “In recognition of pioneering work in the field of large high-voltage systems.”
COX, JEROME R., JR., IEEF Fellow 1977 “For contributions to the application of computers to clinical medicine.”
COX, JOSEPH H., AIEE Fellow 1957 “For contributions to lightning protection through study of lightning phenomena, and to the development of mercury arc rectifiers.”
COX, VERNON L., AIEE Fellow 1950.
CRAFT, EDWARD B., IRE Fellow 1920. AIEE Fellow 1926.
CRAFT, FRANCIS M., AIEE Fellow 1933.
CRAFT, L. MORGAN, IRE Fellow 1962 “For leadership in the electronics industry.”
CRAIG, CLEO FRANK, AIEE Fellow 1950.
CRAIG, PALMER H., AIEE Fellow 1938. IRE Fellow 1962 “For contributions to engineering education.”
CRAIGHEAD, JAMES R., AIEE Fellow 1917.
CRAMER, C.H., AIEE Fellow 1953 “For outstanding contributions to the ocean cable transmission arts and specifically for directing the development and design of electronic underwater repeaters.”
CRARY, SELDEN B., AIEE Fellow 1945.
CRAVATH, JAMES R., AIEE Fellow 1920.
CRAVEN, T.A.M., IRE Fellow 1929.
CRAWFORD, DAVID F., AIEE Fellow 1912.
CRAWFORD, MAGNUS T., AIEE Fellow 1922.
CRAWFORD, WILLIAM EILON, AIEE Fellow 1936.
CREAMER, EDGAR M., JR., IEEE Fellow 1969 “For contributions to time division multiplexing, color television, and solid-state circuit development.”
CREAMER, WALTER JOSEPH, AIEE Fellow 1960 “For contributions to electrical communication and to electrical education and literature.”
CREEDON, JOHN E., IEEE Fellow 1980 “For leadership in and contributions to high-energy pulse power engineering.”
CREIGHTON, ELMER E.F., AIEE Fellow 1925.
CREIM, BENJAMIN W., AIEE Fellow 1931.
CREVER, FREDERICK EMANUEL, AIEE Fellow 1951.
CRILEY, WALTER, AIEE Fellow 1960 “For contributions to personal professional development of engineering students.”

CRITTENDEN, EUGENE C., AIEE Fellow 1944.

CROMWELL, LEWIS W., AIEE Fellow 1916.

CROMWELL, PAUL C., IRE Fellow 1965 “For contributions to electrical engineering and education and research.”

CRONIN, LATHAN DENNIS, AIEE Fellow 1961 “For contributions to distribution and high voltage power cable systems.”

CROSBY, MURRAY GRIMSHAW, IRE Fellow 1943 “For his contributions to the development of high-frequency radio aids in air navigation and meteorology.” AIEE Fellow 1951.

CROTHERS, HAROLD M., AIEE Fellow 1950.

CROWELL, GEORGE F., AIEE Fellow 1942.

CROWLEY, HENRY J., AIEE Fellow 1919.

CRUICKSHANK, JOHN POWNALL, AIEE Fellow 1962 “For contributions to the design, operation and construction of a large transmission system.”

CRUMLEY, HOWARD LEE, AIEE Fellow 1948.

CRUMP, LINDELL L., AIEE Fellow 1942.

CRUMPTON, WILLIAM JAIRUS, AIEE Fellow 1945.

CULSHAW, WILLIAM, IEEE Fellow 1965 “For contributions related to microwave optics, interferometers, and gas lasers.”

CULVER, CHARLES AARON, AIEE Fellow 1922. IRE Fellow 1954 “For his contributions to the art and literature of electronic and allied fields.”

CULVER, LAURENCE ROSECRANS, AIEE Fellow 1935.

CUMMING, LAURENCE G., IEEE Fellow 1966 “For contributions to the engineering profession through leadership in organizing and stimulating the growth of Groups and Technical Committees of the IEEE.”

CURRIE, HARRY ALLEN, AIEE Fellow 1929.

CURRIN, HUGH PERKINS, AIEE Fellow 1945.

CURRY, WALTER ANDREW, AIEE Fellow 1937.

CURTIS, HARVEY L., AIEE Fellow 1926.

CURTIS, LESLIE FORREST, AIEE Fellow 1929.

CURTIS, THOMAS EUGENE, AIEE Fellow 1962 “For contributions to the development and standardization of power fuses, distribution cutouts, and power switching equipment.”

CUSHING, HARRY C., JR., AIEE Fellow 1912.

CUSHING, HARVEY MORSE, AIEE Fellow 1935.

CUTTING, FULTON, IRE Fellow 1921. AIEE Fellow 1955 “For services to electronic engineering in the fields of research, management and education.”

DAHL, OTTO GUSTAV C., AIEE Fellow 1933.

DALY, CHARLES J., AIEE Fellow 1946.

DAMBY, HAROLD ALTHOUSE, AIEE Fellow 1942.

DAMON, JOHN CHURCHILL, AIEE Fellow 1950.

DANA, ALAN STANDISH, AIEE Fellow 1948.

DANA, HOMER J., AIEE Fellow 1962 “For contributions to the field of engineering research and experimentation.”

DANIELS, RAYMOND S., AIEE Fellow 1953 “For engineering leadership and technical competence in analyzing long range requirements of large electric power systems and in the design and execution of plant expansion projects.”

DANN, WALTER M., AIEE Fellow 1926.

DARLAND, ALVIN F., AIEE Fellow 1948.

DARLING, ALAN G., AIEE Fellow 1955 “For his contributions toward improved efficiency and operation of large industrial power generating systems.”

DARLINGTON, FREDRICK, AIEE Fellow 1913.

DARNELL, P.S., IRE Fellow 1961 “For contributions to the field of component engineering.”

DARROW, LEO HARVEY, AIEE Fellow 1950.

DART, HARRY F., AIEE Fellow 1958 “For contributions in the research and development of electron tubes.” IRE Fellow 1959 “For contributions to the electronic profession.”

DASHER, BENJAMIN J., IRE Fellow 1959 “For pioneering contributions in the field of network synthesis and engineering education.”

DATES, HENRY B., AIEE Fellow 1932.

DAVENPORT, JOHN ADRIAN, AIEE Fellow 1951.

DAVID, BRUCE WILLIAM, AIEE Fellow 1940.

DAVIDSON, WARD F., AIEE Fellow 1926.

DAVIES, CHARLES E., AIEE Fellow 1921.

DAVIS, ALBERT G., AIEE Fellow 1912.

DAVIS, ERNEST W., AIEE Fellow 1934.

DAVIS, GEORGE S., IRE Fellow 1916.

DAVIS, MINOR M., AIEE Fellow 1912.

DAVIS, ROWLAND FENNER, AIEE Fellow 1961 “For contributions in guiding the development of a wide range of telephone products for use on customers’ premises.”

DAVIS, T.M., IRE Fellow 1956 “For contributions in the field of military radio communication.”

DAWES, CHESTER LAURENS, AIEE Fellow 1935.

DAWSON, J.W., IRE Fellow 1955 “For his contributions to the advancement of scientific and engineering knowledge.”

DAWSON, WILLIAM FRANCIS, AIEE Fellow 1929.
DEAKIN, GERALD, AIEE Fellow 1944.
DEAN, HAROLD C., AIEE Fellow 1930.
DEAN, SAMUEL MILLS, AIEE Fellow 1946.
DEAN, WILLIAM J., AIEE Fellow 1912.
DEANS, WILLIAM, AIEE Fellow 1930.
DEARBORN, RICHARD HAROLD, AIEE Fellow 1930.
DEARDORFF, R.W., IRE Fellow 1951 “For his technical contributions to communications and his work on behalf of the radio engineering profession.”
DE ARTIGAS, JOSE ANTONIO, AIEE Fellow 1922.
DE BEECH, ALBERT V., AIEE Fellow 1939.
DEBELLIS, ALDO MICHAEL, AIEE Fellow 1948.
DEBLIEUX, EARL VERNE, AIEE Fellow 1949.
DECOLA, RINALDO, IRE Fellow 1957 “For contributions to the fields of military electronics and to television receivers.”
DEE, THOMAS CHRISTOPHER, AIEE Fellow 1945.
DEFANDORF, FRANCIS MARION, AIEE Fellow 1942.
DE FOREST, CORNELIUS W., AIEE Fellow 1936.
DE FOREST, LEE, AIEE Fellow 1918. IRE Fellow 1918.
DE GROOT, CORNELIUS-JOHANNE, IRE Fellow 1916.
DE KIEP, JAMES, AIEE Fellow 1954 “For his contributions to the development of electric generators and motors.”
DE KLERK, JOHN, IEEE Fellow 1974 “For contributions to the development of ultrasonic technology.”
DE LANTY, BENJAMIN F., AIEE Fellow 1944.
DEL BUSTO, ALFONSO FERNANDEZ, AIEE Fellow 1962 “For contributions to the engineering, construction and operation of electric utility systems in Mexico.”
DEL CAMP, SCIPIO M., IRE Fellow 1959 “For contributions in the development and standardization of electronic components.”
DEL'HOMME, LAURENCE K., AIEE Fellow 1956 “For contributions to the development of an electric power system in an area having a rapid growth.”
DELLINGER, J.H., IRE Fellow 1923.
DEL MAR, WILLIAM A., AIEE Fellow 1920.
DEMAREST, WILLIAM A., AIEE Fellow 1933.
DEMERIT, MERRILL, AIEE Fellow 1950.
DEMUTH, ORIN ANTON, AIEE Fellow 1946.
DENNIS, ROBERT E., AIEE Fellow 1930.
DENTON, ALPHEUS P., AIEE Fellow 1927.
DENTON, FRANCIS M., AIEE Fellow 1928.
DEROSA, LOUIS A., IRE Fellow 1952 “For his contributions in the fields of electronic direction-finding techniques, acoustics and aids to air navigation.”
DERR, WILLARD ALLAN, AIEE Fellow 1962 “For contributions to remote control and supervisory systems.”
DERRICK, CHARLES L., AIEE Fellow 1962 “For contributions to the economic planning, engineering and operation of a utility system.”
DESEVERSKY, ALEXANDER P., IEEE Fellow 1970 “For pioneering efforts in the development of aircraft electrical controls and flight instruments, and for the application of electron physics to ionic propulsion and air pollution reduction.”
DEVORE, LLOYD T., IRE Fellow 1952 “For his contributions in the field of electronic systems engineering, and in the direction of research and development.”
DEWARS, ALLEN GUTHRIE, AIEE Fellow 1944.
DEWEESE, FRED C., AIEE Fellow 1950.
DEWEY, CLYDE GILMAN, AIEE Fellow 1962 “For improvement in protective relay equipment and mechanical rectifier switching.”
DEWITT, DAVID, IEEE Fellow 1968 “For his contributions to the development and manufacture of semiconductor devices.”
DEXTER, JOHN F., IEEE Fellow 1965 “For contributions to the development and evaluation of high temperature electrical insulation material.”
D'HUMY, FERNAND EMILE, AIEE Fellow 1930. IRE Fellow 1949 “In recognition of his long service in the communications field and for pioneering in the application of radio relays to telegraph message service.”
DIAMOND, HARRY, AIEE Fellow 1947.
DIBBLE, BARRY, AIEE Fellow 1949.
DIBBLEE, JOHN, AIEE Fellow 1944.
DICK, W.A., AIEE Fellow 1913.
DICKENSON, ROBERT CHARLES, AIEE Fellow 1948.
DICKINSON, W.N., AIEE Fellow 1912.
DICKINSON, WILLIAM NOBLE, AIEE Fellow 1935.
DIEDERICH, PETER, AIEE Fellow 1942.
DIEHL, CARL W., AIEE Fellow 1959 “For contributions to the design of equipment and procedures for testing distribution and power transformers.”
DIEHL, GEORGE SANDY, AIEE Fellow 1949.
DIEHL, WILLIAM F., IRE Fellow 1936.
DILLARD, EDWARD W., AIEE Fellow 1946.
DILLON, JOHN F., IRE Fellow 1924.
DINGER, HAROLD EUGENE, IRE Fellow 1958 “For his contributions to the reduction of radio interference.” AIEE Fellow 1961 “For his contributions in the fields of radio propagation and interference.”
DINGLEY, EDWARD N., JR., IRE Fellow 1956 “For contributions in the fields of electronic guidance and detection systems.” AIEE Fellow 1957 “For his many contribu-
tions in the field of electrical engineering to the defense of the United States.”

DION, A.A., AIEE Fellow 1913.

DISHAL, MILTON, IRE Fellow 1957 "For research and invention in microwave waveguide techniques.”

DISQUE, ROBERT C., AIEE Fellow 1950.

DISSMEYER, EDWARD F., AIEE Fellow 1947.

DITORO, MICHAEL J., IRE Fellow 1958 “For his contributions to electroacoustics.”

DIXON, AMOS F., AIEE Fellow 1926.

DOANE, SAMUEL E., AIEE Fellow 1912.

DOBLE, FRANK CURRIER, AIEE Fellow 1947.

DOBSON, WILLIAM PERCY, AIEE Fellow 1943.

DODD, ROY LYON, AIEE Fellow 1941.

DODGE, CHESTER CARLTON, AIEE Fellow 1951.

DOGGETT, LEONARD ALLISON, AIEE Fellow 1936.

DOHERTY, HENRY L., AIEE Fellow 1913.

DOHERTY, ROBERT ERNEST, AIEE Fellow 1939.

DOLKART, LEO, AIEE Fellow 1958 “For contributions to design of diversified industrial distribution and lighting systems.”

DOMMERQUE, F.J., AIEE Fellow 1913.

DON CARLOS, HENRY C., AIEE Fellow 1918.

DONNELL, PHILIP STONE, AIEE Fellow 1937.

DOOLITTLE, CLARENCE E., AIEE Fellow 1913.

DOOLITTLE, F.M., IRE Fellow 1954 “For his pioneering work in radio communication and radio broadcasting.”

DORFMAN, L.O., AIEE Fellow 1949.

DORSEY, HERBERT GROVE, AIEE Fellow 1934. IRE Fellow 1934.

DOUGLAS, JOHN FREDERICK HOWARD, D, AIEE Fellow 1938.

DOUGLASS, FORREST S., AIEE Fellow 1945.

DOUGLASS, GEORGE WILLIAM, AIEE Fellow 1949.

DOVJIKOV, ALEXANDER, AIEE Fellow 1949.

DOW, ALEX, AIEE Fellow 1913.

DOW, JAMES CHASE, AIEE Fellow 1938.

DOW, JENNINGS B., IRE Fellow 1942 “For engineering leadership in the development and procurement of radio equipment for the United States Navy.”

DOWNING, PAUL M., AIEE Fellow 1942.

DOWNS, GEORGE WALLINGFORD, AIEE Fellow 1959 “For contributions to refinement of acoustical and data evaluation apparatus and systems.”

DOWS, CHESTER L., AIEE Fellow 1932.

DOYLE, EDGAR D., AIEE Fellow 1927.

DOYLE, HAROLD KINYON, AIEE Fellow 1945.

DRABELLE, JOHN MITCHELL, AIEE Fellow 1950.

DRAKE, CHESTER W., AIEE Fellow 1945.

DRAKE, F.H., IRE Fellow 1957 “For contributions to the field of airborne communications equipment.”

DRAKE, HERBERT W., AIEE Fellow 1925.

DREHER, CARL, IRE Fellow 1928. AIEE Fellow 1933.

DRUM, A.L., AIEE Fellow 1913.

DUBILIER, WILLIAM, AIEE Fellow 1925. IRE Fellow 1929.

DUBRIDGE, LEE, IRE Fellow 1942 “For engineering and administrative leadership in the development and application of new radio techniques.”

DUDDEL, WILLIAM, IRE Fellow 1915.

DUDLEY, ADOLPHUS M., AIEE Fellow 1913.

DUDLEY, H.W., IEE Fellow 1964 “For contributions to the fields of speech theory, speech signal processing and speech synthesis.”

DUER, JOHN VAN BUREN, AIEE Fellow 1929.

DUKE, CLIFFORD A., AIEE Fellow 1957 “For his contributions to the organization of a testing laboratory and staff for a large power system.”

DUMONT, ALLEN B., IRE Fellow 1931, AIEE Fellow 1943.

DUNCAN, LOUIS, AIEE Fellow 1913.

DUNKLE, WILLIAM FREEMONT, AIEE Fellow 1958 “For contributions to electrical system testing techniques particularly in the field of dielectrics.”

DUNLAP, W.K., AIEE Fellow 1912.

DUNN, GANO, AIEE Fellow 1912. IRE Fellow 1915.

DUNN, W. L., IRE Fellow 1954 “For his contribution in the development of radio receivers.”

DUTSCHMANN, KARL THEODORE, AIEE Fellow 1960 “For the prompt and efficient integration of many newly developed communication systems into a large and complex telephone plant.”

DUVALL, W. CLINTON, AIEE Fellow 1938.

DWIGHT, HERBERT BRISTOL, AIEE Fellow 1926.

DYCHE, HOWARD EDWARD, AIEE Fellow 1942.

E

EALES, HERBERT W., AIEE Fellow 1925.

EARLE, RALPH HILLIARD, AIEE Fellow 1959 “For contributions to development of equipment for electric distribution.”

EARLY, EDWARD DONALD, AIEE Fellow 1962 “For his inventions and contributions to the theory of economic dispatch of electric power systems.”

EASTHAM, MELVILLE, IRE Fellow 1925. AIEE Fellow 1946.

EASTMAN, AUSTIN V., IRE Fellow 1941. AIEE Fellow 1946.

PAST FELLOWS
EASTOM, FRANK A., AIEE Fellow 1951.
EASTWOOD, ARTHUR C., AIEE Fellow 1913.
EATON, MILTON, AIEE Fellow 1958 “For contributions to the design and automatic control of electric steam generators.”
EATON, WILLIAM W., IEEE Fellow 1969 “For contributions to the coupling of U.S. Government information to the civilian technology.”
EADES, A.J., IEEE Fellow 1964 “For pioneering developments of telegraph transmission systems, radio transmitters and sound amplifying systems.”
ECKERSLEY, P.P., IRE Fellow 1925.
ECKERSLEY, T.L., IRE Fellow 1930 “(1944 citation) For his outstanding contributions to the theory and practice of radio-wave-propagation research. Both his approach to the problem from the stand-point of practical communications and his computation of radiated fields are achievements of lasting value acclaimed by the whole radio world and form a monument of which he may be justly proud.”
ECKERT, J.P., JR., IRE Fellow 1956 “For contributions to electronic digital computation.”
EDDY, WILTON NATHANIEL, AIEE Fellow 1940.
EDGAR, CHARLES L., AIEE Fellow 1912.
EDISON, OSKAR EDWIN, AIEE Fellow 1945.
EDLEFSEN, N.E., IRE Fellow 1954 “For his contribution to radar, and his leadership in the development of military electronic equipment.”
EDMONDSON, FRANCIS CHARLES, AIEE Fellow 1940.
EDSON, JAMES O., IEEE Fellow 1969 “For contributions to multiplex communications.”
EDSTROM, J. SIGFRID, AIEE Fellow 1914.
EDWARDS, ANDREW WOOD, AIEE Fellow 1962 “For contributions in the field of distribution apparatus and for engineering applications of digital computers.”
EDWARDS, CHARLES P., IRE Fellow 1915.
EDWARDS, EVAN JAMES, AIEE Fellow 1939.
EDWARDS, GEORGE D., AIEE Fellow 1951.
EDWARDS, J. PAULDING, AIEE Fellow 1913.
EDWARDS, PAUL GRIFFITH, AIEE Fellow 1959 “For his contributions to the development of carrier, cable and microwave communication systems.” IRE Fellow 1960, “For his contributions in the field of telephone communication systems.”
EGLI, JOHN J., IEEE Fellow 1967 “For contributions to wave propagation, electromagnetic compatibility and advanced radio communications.”
EGLIN, WILLIAM C.L., AIEE Fellow 1912.
EHRET, CORNELIUS D., IRE Fellow 1916.
EICHBERG, FRIEDRICH, AIEE Fellow 1928.
EINTHOVEN, WILLEM F., IRE Fellow 1938.
ELDRED, BYRON E., AIEE Fellow 1930.
ELDRED, W. NOEL, IEEE Fellow 1970 “For contributions in designing radar equipment, transmitters, and vacuum tubes; for leadership in the marketing of electronic instrumentation.”
ELDREDGE, K.R., IEEE Fellow 1964 “For contributions to pattern recognition and magnetic character reading systems.”
ELDREDGE, MARK, AIEE Fellow 1933.
ELLEFSON, B.S., IRE Fellow 1948 “For his contributions to cathode-ray tube development, proximity-fuze tube design, and wartime electronic research.”
ELLESTAD, IRWIN M., AIEE Fellow 1960 “For contributions to the solution of fundamental engineering problems of inductive coordination and telephone transmission.”
ELLETT, ALEXANDER, IRE Fellow 1962 “For contributions to military electronics and television.”
ELLICOT, EDWARD B., AIEE Fellow 1916.
ELLIOTT, HAROLD F., IRE Fellow 1951 “For contributions of important mechanical advances in both the civil and the military electronic arts.”
ELLIOTT, ROBERT DRANE, AIEE Fellow 1959 “For contributions to the design and construction of large electric utility systems.”
ELLIS, ELVARADO LEROY, AIEE Fellow 1919.
ELLIS, FREDERICK W., AIEE Fellow 1920.
ELLWOOD, WALTER B., IEEE Fellow 1966 “For contributions to the field of magnetics.”
ELMEN, GUSTAF W., AIEE Fellow 1927.
ELSDEON-DEW, WILLIAM, AIEE Fellow 1914.
ELWELL, CYRIL F., IRE Fellow 1918.
EMANUELI, LUIGI P., AIEE Fellow 1956 “For the outstanding development of oil-filled cable which made practical underground power transmission at extra high voltages.”
EMBREE, CLAYTON J., AIEE Fellow 1918.
EMERSON, CHERRY L., AIEE Fellow 1933.
ENFIELD, WILLIAM LESTER, AIEE Fellow 1932.
ENGGLUND, CARL R., IRE Fellow 1928.
ENGSTROM, HOWARD T., IRE Fellow 1959 “For contributions in the development and utilization of high speed computers.”
ENOS, HOWARD A., AIEE Fellow 1954 “For developments in power distribution systems, particularly low-cost rural electrification.”
ENSIGN, ORVILLE H., AIEE Fellow 1913.
EPPELEY, MARION, AIEE Fellow 1952 “For contributions in the field of high-accuracy electrical measure-
ments.”

EPSTEIN, DAVID W., IRE Fellow 1952 “In recognition of his contributions in the field of cathode-ray tube development and application.”

ERIKSON, PER ENGELBERT, AIEE Fellow 1928.

ERNST, CARL CLARK, AIEE Fellow 1961 “For contributions to the development of a rapidly expanding and changing electric power system.”

ERSKINE-MURRAY, JAMES, IRE Fellow 1915.

ESHBACH, OVID W., AIEE Fellow 1937.

ESHY, WILLIAM D., AIEE Fellow 1913.

ESPLEY, D.C., IRE Fellow 1954 “For his creative contributions to microwave and television techniques in England.”

ESTERLINE, JOHN WALTER, AIEE Fellow 1941.

EVANS, CLARENCE TURNER, AIEE Fellow 1947.

EVANS, HERBERT S., AIEE Fellow 1938.

EVANS, LLEWELLYN, AIEE Fellow 1941.

EVANS, PORTER H., IRE Fellow 1931.

EVANS, ROBERT D., AIEE Fellow 1940.

EVANS, WALTER C., IRE Fellow 1945 “In recognition of his past contributions to radio and his present active participation in the affairs of the Institute.”

EVERIT, EDWARD H., AIEE Fellow 1912.

EWING, DRESSEL D., AIEE Fellow 1929.

F

FAHY, FRANK P., AIEE Fellow 1929.

FAIR, IRWIN E., IEEE Fellow 1967 “For distinguished scientific contributions and technical leadership in piezoelectric resonators and ultrasonic delay devices.”

FAIRFIELD, RONALD MCLEOD, AIEE Fellow 1957 “For contributions to the development, improvement and manufacture of high voltage electric power cables.”

FAIRMAN, FRANCIS E., JR., AIEE Fellow 1951.

FAIRMAN, JAMES F., AIEE Fellow 1935.

FALLOON, GLOVER PATTERSON, AIEE Fellow 1961 “For contributions to the engineering of a major electric utility system and to the development of microwave and radio communication.”

FARMER, F.M., AIEE Fellow 1913.

FARMER, G. EVERETT, AIEE Fellow 1960 “For contributions to the development of a comprehensive communication system for a large power system.”

FARNHAM, DALE, AIEE Fellow 1953 “For contributions to high voltage underground and submarine practice in transmission and distribution systems.”

FARNSWORTH, PHILIP, IRE Fellow 1915.

FARNSWORTH, PHILO T., IRE Fellow 1939.

FARON, FRANK A., AIEE Fellow 1951.

FARRAND, DUDLEY, AIEE Fellow 1912.

FARRELL, J.J., IRE Fellow 1948 “For his contributions to the design of radio and radar transmitters, and for his leadership in the establishment of industry standards.”

FARRINGTON, JOHN F., IRE Fellow 1931.

FARRY, O.T., AIEE Fellow 1953 “For original work in the development and design of power transformers, unit substations and their accessories.”

FASSENBIDER, HEINRICH, IRE Fellow 1930.

FAUCETT, IRVING THOMPSON, AIEE Fellow 1928.

FAUIOLI, G., AIEE Fellow 1912.

FAULKNER, HARRY, IRE Fellow 1953 “For his engineering achievements in the field of world-wide radio communication, and his contributions to international agreement on telecommunication practices.”

FAUS, HAROLD T., AIEE Fellow 1952 “For outstanding creative ability which has resulted in many distinctive contributions, particularly in the development and application of magnetic materials, together with advances in the design and performance of instruments, meters and associated systems.”

FAWCETT, CHARLES D., AIEE Fellow 1951.

FECHHEIMER, CARL J., AIEE Fellow 1914.

FEDER, JOSEPH BROWN, AIEE Fellow 1947.

FEKER, FREDERICK MORRIS, AIEE Fellow 1942.

FEISSEL, H. G., IEEE Fellow 1970 “For contributions to original design in the field of digital computers.”

FELDMAN, CARL B., IRE Fellow 1943 “For his investigations of the characteristics of radio waves and his development of antennas and receiving systems.”

FERGUSEN, LOUIS A., AIEE Fellow 1912.

FERGUSON, J.D., AIEE Fellow 1953 “For executive leadership and engineering contributions to the development of electric communication in the Republic of Ireland.”

FERGUSON, JOHN G., AIEE Fellow 1957 “In recognition of his contributions in the fields of primary electrical measurements and electronic measuring techniques.”

FERGUSON, O.J., AIEE Fellow 1913.

FERNOW, BERNARD E., AIEE Fellow 1920.

FERRI, LOUIS F., AIEE Fellow 1951.

FERRIE, GENERAL, IRE Fellow 1917.

FERRILL, RICHARD MILLEDGE, AIEE Fellow 1950.

FERRIS, LIVINGSTON POLK, AIEE Fellow 1934.

FETT, GILBERT H., IRE Fellow 1958 “For his contributions to the knowledge of circuit analysis.”

FIELD, A.B., AIEE Fellow 1913.

FIELD, CROSBY, AIEE Fellow 1922.

FIELD, KENNETH SELLERS, AIEE Fellow 1962 “For contributions to the construction, maintenance, and operation of utility electric distribution and sub-transmission

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systems.”

FIELD, ROBERT F., IRE Fellow 1947 “Who, as an engineer and physicist, improved methods and standards in alternating-current measurements.”

FIELD, STEPHEN D., AIEE Fellow 1912.

FIELDS, ERNEST S., AIEE Fellow 1929.

FIFER, WILLIAM HARTAGE, AIEE Fellow 1948.

FILIPOWSKY, RICHARD, IRE Fellow 1961 “For contributions in the application of information theory to communication systems.”

FINCH, J.L., IRE Fellow 1954 “For his contributions to radio communications, and particularly those associated with VLF antenna design.”

FINCH, TUDOR R., IEEE Fellow 1967 “For contributions in solid state circuits and for leadership in related professional activities.”

FINDLAY, JOHN H., IEEE Fellow 1966 “For contributions to development of electron tubes and devices for atomic weapons.”

FINE, HARRY, IEEE Fellow 1968 “For contributions to radio propagation and television and space communications.”

FINLAY, WALTER STEVENSON, JR., AIEE Fellow 1921.

FINZI, LEO ALDO, AIEE Fellow 1959 “For contributions to electrical engineering education and the theory of magnetic amplifiers.”

FISCHER, LOUIS ENGELMANN, AIEE Fellow 1929.

FISH, F.A., AIEE Fellow 1913.

FISH, WALTER C., AIEE Fellow 1913.

FISHER, HENRY W., AIEE Fellow 1912.

FISHMAN, SOLOMON, AIEE Fellow 1959 “For contributions to mathematical techniques in solving problems and teaching electrical engineering.”

FISK, ERNEST T., IRE Fellow 1926.

FISK, J.B., IRE Fellow 1955 “For his contributions to the development of the magnetron and his leadership in basic electronic research.”

FISK, WALTER B., AIEE Fellow 1955 “For contributions to the design, installation and operation of inside and outside plants in a large metropolitan electric system.”

FISKE, WARREN H., AIEE Fellow 1912.

FISKEN, JOHN B., AIEE Fellow 1913.

FITZGERALD, ALAN STEWART, AIEE Fellow 1962 “For contributions to power systems relaying and development of nonlinear magnetic circuit applications.”

FITZGERALD, ARTHUR E., AIEE Fellow 1956 “For his contributions to the teaching of electrical engineering and the analysis of electric power system stability and operation.”

FLANDERS, MILTON M., AIEE Fellow 1942.

FLANIGEN, JOHN MONTEITH, AIEE Fellow 1949.

FLATH, EARL H., AIEE Fellow 1943.

FLEAGER, CLARENCE E., AIEE Fellow 1926.

FLEMING, ARTHUR P.M., AIEE Fellow 1934.

FLETCHER, HARVEY, AIEE Fellow 1930.

FLOOD, HENRY, JR., AIEE Fellow 1930.

FLOY, HENRY, AIEE Fellow 1912.

FLOYD, GEORGE D., AIEE Fellow 1956 “For his planning and direction of the technical growth of a large electric utility system.”

FOLTZ, LEROY STEWART, AIEE Fellow 1946.

FORBES, E.D., IRE Fellow 1914.

FORBES, H.C., IRE Fellow 1948 “For his contributions as an engineer and executive in the field of home and automobile broadcast receivers and military radio equipment.”

FORD, ARTHUR H., AIEE Fellow 1912.

FORD, GAYLON T., IEEE Fellow 1965 “For contributions to the development of grid-controlled electron tubes.”

FORMAN, ALEXANDER HARDIE, AIEE Fellow 1943.

FORSTER, DONALD C., IEEE Fellow 1971 “For contributions to low-noise electron guns, lasers and high power millimeter-wavelength sources.”

FORSTER, ERIC O., IEEE Fellow 1979 “For contributions in the understanding of high-voltage conduction and breakdown phenomena and for leadership in related professional activities.”

FORTENBAUGH, S.B., AIEE Fellow 1913.

FORTESCUE, CHARLES L., AIEE Fellow 1921.

FOSTER, HORATIO, AIEE Fellow 1912.

FOSTER, R.M., IRE Fellow 1954 “For basic mathematical contributions to modern network theory.”

FOSTER, WILLIAM J., AIEE Fellow 1916.

FOULKROD, RAYMOND, AIEE Fellow 1949.

FOULTON, FRED, AIEE Fellow 1951.

FOUNTAIN, LAWRENCE L., AIEE Fellow 1951.

FOWLER, CHARLES VERN, AIEE Fellow 1948.

FOX, EDWIN GORDON, AIEE Fellow 1944.

FOX, JOHN CONDRY, AIEE Fellow 1945.

FRAENZ, KURT O., IEEE Fellow 1967 “For his contributions to the theory of noise in linear and nonlinear circuits and to antenna theory.”

FRAMPTON, ARTHUR H., AIEE Fellow 1945.

FRANK, JOHN J., AIEE Fellow 1919.

FRANKLIN, CHARLES WHITE, AIEE Fellow 1944.

FRANKLIN, MILTON W., AIEE Fellow 1912.
FRANKLIN, W.S., AIEE Fellow 1913.
FRASER, DANIEL M., AIEE Fellow 1920.
FRASER, J.W., AIEE Fellow 1913.
FREDERICK, HALSEY A., AIEE Fellow 1928.
FREED, JOSEPH D.R., IRE Fellow 1928.
FREEDMAN, W.H., AIEE Fellow 1913.
FREEHAFER, CARL R., AIEE Fellow 1954 “For inspiring leadership contributing to effective solution of difficult problems in communication engineering.”
FRIEDLANDER, ERICH S., IEEE Fellow 1973 “For services in the field of transmission, and for the design and development of magnetically saturating control and stabilizing devices.”
FRIEND, A.W., IRE Fellow 1954 “For his contributions to tropospheric echo research, and to the development of magnetic materials and circuits.”
FRIES, JOENS ELIAS, AIEE Fellow 1915.
FRIIS, HARELD TRAP, IRE Fellow 1929. AIEE Fellow 1941.
Fritz, Lorenz J., AIEE Fellow 1949.
FRUTH, HAL F., IEEE Fellow 1966 “For contributions in the application of electro-chemistry to electronic engineering and active participation of professional affairs.”
FRY, WILLIAM J., IEEE Fellow 1968 “For contributions to biophysics and neurological research by means of ultrasonics technologies.”
FUGILL, PERCIVAL A., AIEE Fellow 1955 “For contributions to overall planning and design of a large electric utility system of metalclad equipment, control of noise, and application of computing devices.”
FUNK, NEVIN E., AIEE Fellow 1934.
FURST, WALTER A., AIEE Fellow 1951.
FYNN, VALERIE, AIEE Fellow 1912.

G

GABY, FREDERICK A., AIEE Fellow 1918.
GAFFORD, BURNS N., AIEE Fellow 1956 “For his contributions as a teacher and administrator in a University and for his promotion of a better understanding of utility power problems.”
GAHAM, EARL A., AIEE Fellow 1920.
GAHILLARD, LAWRENCE LEE, AIEE Fellow 1913.
GAILE, WENDOLYN F., AIEE Fellow 1955 “For pioneering developments in transformer design; particularly the use of grain-oriented steel in cores.”
GALBRAITH, RALPH A., IEEE Fellow 1965 “For contributions to engineering education.”
GALINDO, VICTOR, IEEE Fellow 1977 “For contributions to the theory and analysis of phased array and reflector antennas.”

GALUSHA, DON L., AIEE Fellow 1919.
GAMBLE, LESTER RAYMOND, AIEE Fellow 1939.
GANNETT, DANFORTH K., IRE Fellow 1959 “For contributions to the transmission of television and sound broadcasting signals.”
GANZ, ALBERT, AIEE Fellow 1912.
GARDETT, HELMUTH C., AIEE Fellow 1941.
GARDNER, MURRAY F., AIEE Fellow 1951.
GARFIELD, A.S., AIEE Fellow 1913.
GARIN, ALEXIS NICHOLAS, AIEE Fellow 1949.
GARMAN, CHARLES PENROSE, AIEE Fellow 1946.
GARMAN, RAYMOND L., IRE Fellow 1958 “For his leadership in research and development of electronic devices.”

GASTON, JOHN RAOUL, AIEE Fellow 1951.
GATEWOOD, ARTHUR R., AIEE Fellow 1954 “For his contribution to the development and application of national and international standards relating to the installation of electrical equipment on shipboard.”
GATY, LEWIS R., AIEE Fellow 1950.
GAULT, JAMES SHERMAN, AIEE Fellow 1946.
GAY, FRAIZER WALKER, AIEE Fellow 1932.
GAY, GEORGE F., AIEE Fellow 1921.
GAYLORD, JAMES MASON, AIEE Fellow 1935.
GEAR, HARRY B., AIEE Fellow 1920.
GEAR, ROBERT S., AIEE Fellow 1955 “For contributions to the development of power generation and distribution in a large area.”

GEBHARD, LOUIS A., IRE Fellow 1949 “In recognition of his outstanding contributions to radio communication, radar, radio navigation, and radio countermeasures, and of his organization and direction of naval research and development in the fields.”
GEIGER, JAMES MARION, AIEE Fellow 1950.
GEORGE, EVERETT E., AIEE Fellow 1936.
GEORGE, ROSCOE H., IEEE Fellow 1966 “For pioneering work in cathode-ray tubes and television systems.”
GERELL, GORDON W., AIEE Fellow 1954 “For contributions to the improvement of electric service through advances in the application of protective relaying, and in preventive maintenances of oil insulated apparatus.”
GERRY, M.H., JR., AIEE Fellow 1913.
GERSZOWICS, SEGISMUNDO, AIEE Fellow 1950.
GEYGER, WILLIAM A., AIEE Fellow 1960 “For contributions in the field of electrical measurements and magnetic amplifiers.”

GHEITH, FATHY, IEEE Fellow 1966 “For contributions to telecommunications and broadcasting in Egypt, Syria, Ethiopia, and the Middle East.”

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GHEN, MELVILLE W., AIEE Fellow 1948.

GHERARDI, BANCROFT, AIEE Fellow 1912.

GHERKY, WILLIAM, AIEE Fellow 1913.

GIBBS, GEORGE, AIEE Fellow 1912.

GIBBS, H.P., AIEE Fellow 1913.

GIBBS, JESSE BERTHOLD, AIEE Fellow 1962 “For contributions to design of instrument transformers.”

GIBSON, JOHN J., AIEE Fellow 1918.

GIDLUND, HILDING FERDINAND, AIEE Fellow 1960 “For contributions to development and operation of a large electric distribution system.”

GIERING, PERCIVAL L., AIEE Fellow 1951.

GIFFORD, R.P., IEEE Fellow 1964 “For leadership in communications techniques and practice.”

GILBERT, JOHN JOSEPH, AIEE Fellow 1951.

GILES, MERRITT A., AIEE Fellow 1962 “For contributions to construction and operating methods of an electric power system.”

GILL, A.J., IRE Fellow 1940.

GILL, F., AIEE Fellow 1913.

GILL, LESLIE W., AIEE Fellow 1921.

GILLE, WILLIS HOWARD, AIEE Fellow 1958 “For contributions to the field of electrical control mechanisms, particularly for flight control.”

GILLESPIE, FONTAINE MAURY, AIEE Fellow 1938.

GILLET, GLENN D., IRE Fellow 1934.

GILMAN, FRANCIS L., AIEE Fellow 1913.

GILSON, WESLEY J., AIEE Fellow 1950.

GILT, CARL M., AIEE Fellow 1935.

GIROUX, CARL HUNTING, AIEE Fellow 1944.

GLASCO, ROY S., IRE Fellow 1955 “For his contributions to the field of engineering education.”

GLASGOW, ROY S., AIEE Fellow 1948.

GLASSCO, JOHN GIRDLESTONE, AIEE Fellow 1928.

GLENTZER, KENNETH VERLEY, AIEE Fellow 1950.

GLIENSKI, GEORGE S., IRE Fellow 1960 “For contributions to the field of computation.”

GOAR, ROY MITCHELL, AIEE Fellow 1962 “For executive guidance as well as personal technical contributions to the design of electric generating stations.”

GODLEY, P.F., IRE Fellow 1961 “For pioneering in the short wave art.”

GODSHO, A.P., AIEE Fellow 1953 “For distinguished service in contributing significantly to the high standard of performance of the telephone and radio facilities serving an important area of the nation.”

GOETZENBERGER, RALPH LEON, AIEE Fellow 1948.

GOLDSMARK, PETER C., IRE Fellow 1942 “For his contribution to the development of practical color television.”

GOLDSMITH, ALFRED N., IRE Fellow 1915.

GOLDSMITH, ALFRED N., IRE Fellow 1915. AIEE Fellow 1920.

GOLDUP, T.E., IRE Fellow 1955 “For his pioneering achievements in the design and development of thermionic tubes and his contributions to the technical and administrative counsels of the British radio industry.”

GONSETH, JULES EMMABLE, AIEE Fellow 1945.

GOODALE, JOSIAH ELMER, AIEE Fellow 1934.

GOODMAN, W.G.T., AIEE Fellow 1913.

GOODWIN, HAROLD, JR., AIEE Fellow 1923.

GOODWIN, VICTOR EARL, AIEE Fellow 1948.

GOODWIN, W.N., JR., AIEE Fellow 1913. IRE Fellow 1957 “For contributions in the field of electrical measuring instruments.”

GORDON, WILLIAM GORDON, AIEE Fellow 1916.

GORHAM, J.E., IRE Fellow 1954 “For his leadership and contributions in the field of high-power electron tubes for military applications.”

GOSS, FLOYD L., IEEE Fellow 1969 “For contributions to regional power system design and operation.”

GOSSLER, P.G., AIEE Fellow 1913.

GOUBAU, GEORGE, IRE Fellow 1957 “For contributions to the field of microwave transmission.”

GOULD, EDWARD F., AIEE Fellow 1913.

GOULD, GORDON T., JR., IEEE Fellow 1969 “For contributions and leadership in the development of command, control, and communications systems.”

GRABBE, EUGENE M., IEEE Fellow 1966 “For contributions in the field of automation and the control application of digital computers.”

GRACE, SERGIUS P., AIEE Fellow 1921.

GRAF, A.W., IRE Fellow 1955 “For his contributions to the radio engineering profession.”

GRAFF, JOSEPH WILFORD, AIEE Fellow 1959 “For contributions to power system planning.”

GRAFTIO, HENRY, AIEE Fellow 1913.

GRAHAM, EARL ADDISON, AIEE Fellow 1920.

GRAHAM, VIRGIL M., IRE Fellow 1935.

GRAHAM, WILLIAM P., AIEE Fellow 1923.

GRANFIELD, THOMAS H., AIEE Fellow 1955 “For skill in handling the engineering problems of an important communications enterprise, and for leadership in the de-
velopment and great enlargement of its engineering organization.”
GRAY, A.R., IRE Fellow 1961 “For contributions to reliability.”
GRAY, CLYDE D., AIEE Fellow 1920.
GRAY, ROY WILLIAM, AIEE Fellow 1928.
GRAY, WILLARD F., IEEF Fellow 1969 “For leadership in engineering education and research, and for contributions to university administration.”
GRAYBILL, KENNETH WAYNE, AIEE Fellow 1945.
GREAVES, V. FORD, IRE Fellow 1928.
GREBE, ALFRED H., IRE Fellow 1927.
GREEN, ALFRED L., IRE Fellow 1938.
GREEN, CHARLES F., AIEE Fellow 1961 “For contributions to precise control in the field of aviation, marine and space aircraft.”
GREEN, CHARLES WILLIAM, AIEE Fellow 1940.
GREEN, ESTILL L., AIEE Fellow 1946. IRE Fellow 1955 “For his contributions in the development of communication systems and apparatus components.”
GREEN, STANLEY, AIEE Fellow 1946.
GREENIDGE, CHARLES A., AIEE Fellow 1913.
GREER, LANIER, AIEE Fellow 1953 “For outstanding contributions to the design of direct-current motors, as a result of which their utility in railway and industrial applications has been significantly advanced.”
GREIBACH, E.H., IRE Fellow 1961 “For contributions to high sensitivity measuring instruments.”
GREIG, JAMES, IEEE Fellow 1968 “For his contributions in the educational field, and research on the behavior of magnetic materials, computers and automatic control processes.”
GRIEFSMANN, JOHN W.E., IRE Fellow 1959 “For contributions to microwave research.”
GRIER, LOUIS N., AIEE Fellow 1954 “For his contributions to the design and development of electric power supply systems in the aluminum industry and for improvements in the application of electric power to the fabrication of aluminum.”
GRIFFITH, HARVEY CONRAD, AIEE Fellow 1945.
GRIGSBY, LOGAN C., AIEE Fellow 1945.
GRIMSLY, ANDREW HOWARD, AIEE Fellow 1949.
GRISCOM, SAMUEL B., AIEE Fellow 1948.
GRISWINTER, ELWOOD, AIEE Fellow 1914.
GRISWINTER, GEORGE GORDON, AIEE Fellow 1948.
GROENEVELD MEIJER, NICOLAAS E., AIEE Fellow 1933.
GRONDAHL, LARS OLAI, AIEE Fellow 1947.
GROSS, GERALD, IRE Fellow 1957 “For contributions to international regulation of telecommunication.”
GROSS, ISAAC WATTS, AIEE Fellow 1945.
GROSSMAN, ALEXANDER J., IRE Fellow 1962 “For contributions to circuit design.”
GROVES, WILLIAM M., JR., AIEE Fellow 1945.
GRIEHR, ANATOLE R., AIEE Fellow 1957 “For his application of economic theory to engineering design.”
GRUEN, W.J., IRE Fellow 1957 “For contributions to the improvement of television receivers.”
GUANELLA, GUSTAV, IEEE Fellow 1965 “For contributions to the electronics art and for leadership in research.”
GUBIN, SAMUEL, IEEE Fellow 1970 “For contributions to communications technology for ground-based and space applications.”
GUENARD, P.R., IRE Fellow 1955 “For his scientific and technical contributions in the field of microwave tubes.”
GUIMLEMIN, ERNST ADOLPH, IRE Fellow 1949 “For outstanding work in the field of electric circuit analysis and synthesis, and for his inspired leadership as a teacher.” AIEE Fellow 1951.
GUNBY, FRANK MCCLELLAN, AIEE Fellow 1948.
GUNDLACH, WILLIAM E., AIEE Fellow 1936.
GUNN, ROSS, IRE Fellow 1949 “For his long service and many technical contributions in the radio and electronics fields.”
GUPTA, BIRENDRA CHANDRA, AIEE Fellow 1923.
GUSTAFSON, GILBERT E., IRE Fellow 1940.
GUTMANN, LUDWIG, AIEE Fellow 1913.
GUY, RAYMOND F., IRE Fellow 1939. AIEE Fellow 1959 “For contributions to the Technical development of radio and television network broadcasting.”
GUYER, EDWIN MICHAEL, AIEE Fellow 1962 “For contributions in the application of electricity to glass working.”

H

HAANTJES, JOHANNES, IEEE Fellow 1965 “For contributions to research and development, and the standardization of television systems in Europe.”
HACKBUSH, RALPH A., IRE Fellow 1937.
HADAWAY, W.S., JR., AIEE Fellow 1913.
HAGENGUTH, JULIUS H., AIEE Fellow 1951.
HAGGERTY, PATRICK E., IRE Fellow 1958 “For leadership in the advancement of semi-conductor devices.”
HAGLUND, HAKON H., AIEE Fellow 1954 “For contributions to the mechanization of ocean telegraph cable operation.”
HAINES, THOMAS HENRY, AIEE Fellow 1944.
HALBERG, MAYNARD N., AIEE Fellow 1951.
HALDANE, THOMAS GRAEME NELSON, AIEE Fellow 1950.
HALL, CHESTER L., AIEE Fellow 1920.
HALL, DAVID D.C., AIEE Fellow 1918.
HALL, HARRY Y., AIEE Fellow 1927.
HALL, N.L., IRE Fellow 1956 “For contributions to the measurement of the velocity of radio waves and the design of radar and guidance systems.”
HALL, WALTER A., AIEE Fellow 1912.
HALL, WAYNE CURTIS, AIEE Fellow 1958 “For notable contributions to improvement in economy of electric power generation.”
HALL, WESLEY B., AIEE Fellow 1947.
HALLBORG, HENRY EMMANUEL, IRE Fellow 1927. AIEE Fellow 1929.
HALMAN, THEODORE RITSON, AIEE Fellow 1960 “For contributions to protective relaying for electrical system performance.”
HALPENNY, ROBERT HARIAN, AIEE Fellow 1942.
HALPERT, PERCY, IEEE Fellow 1967 “For contributions to the theory and design of automatic controls and instrumentation for aircraft.”
HAMANN, ADOLPH MARTIN, AIEE Fellow 1934.
HAMDI, ABDULLAH FEYZI, AIEE Fellow 1946.
HAMILTON, GEORGE A., AIEE Fellow 1913.
HAMILTON, GEORGE WELLOGINGTON, AIEE Fellow 1929.
HAMILTON, HAROLD CYRLE, AIEE Fellow 1945.
HAMILTON, JAMES HUGH, AIEE Fellow 1951.
HAMILTON, ROBERT FRANK, AIEE Fellow 1946.
HAMMER, EDWIN W., AIEE Fellow 1912.
HAMMER, OWEN S.C., AIEE Fellow 1962 “For contributions to planning, development and engineering of a large transmission system.”
HAMMOND, EDMUND B., JR., IEEE Fellow 1973 “For contributions to the field of gun and missile armament systems and aircraft navigation instruments.”
HAMMOND, JOHN H., JR., IRE Fellow 1959 “For pioneering work in radio control and communication.”
HAMMOND, W.P., AIEE Fellow 1950.
HANCHETT, GEORGE T., AIEE Fellow 1913.
HANCOCK, MYRON SCOTT, AIEE Fellow 1950.
HANSELL, CLARENCE WESTON, IRE Fellow 1945 “For his pioneer work in the development and application of equipment for the ever higher frequencies employed for radio communication.” AIEE Fellow 1951.
HAHSEN, EDMUND H., IRE Fellow 1959 “For contributions to the development of motion picture sound recording and reproduction.”
HANSEN, KLAUS LOBECK, AIEE Fellow 1934.
HANSEN, WILLIAM W., IRE Fellow 1947 “In recognition of his many contributions to the theory of tubes, networks, circuits, and antennas.”
HANSON, O.B., IRE Fellow 1941.
HANSSON, I.E., AIEE Fellow 1913.
HANSSON, EDWIN, AIEE Fellow 1945.
HAPGOOD, KENNETH ELLSWORTH, AIEE Fellow 1944.
HARDAY, WARREN DUNHAM, AIEE Fellow 1951.
HARDIN, LEWIS H., AIEE Fellow 1954 “For achievement in the electrical design of large hydro electric generating stations and associated transmission lines.”
HARDING, ARTHUR L., AIEE Fellow 1931.
HARDING, CHARLES FRANCIS, AIEE Fellow 1914.
HARDING, WILLIAM KNOWLTON, AIEE Fellow 1961 “For contributions to the design and construction of transmission lines and substations.”
HARDY, HOWARD C., IRE Fellow 1960 “For contributions to electroacoustics.”
HARMAN, WILLIS W., IEEE Fellow 1965 “For contributions to engineering education in the fields of electronic dynamics, linear systems and communication theory.”
HARNETT, DANIEL EDWARD, IRE Fellow 1942 “In recognition of his constructive leadership and direction of radio engineering projects.” AIEE Fellow 1955 “For engineering leadership in peacetime and military radio design and for contributions to standardization in monochrome and color television.”
HARPER, H.R., AIEE Fellow 1913.
HARPER, J.L., AIEE Fellow 1913.
HARRELL, FREDERICK EDMUND, AIEE Fellow 1940.
HARRER, JOSEPH M., IEEE Fellow 1967 “For contributions to the development of nuclear reactor control technology and experiments with boiling water reactors leading to power plant applications.”
HARRIES, GEORGE H., AIEE Fellow 1922.
HARRINGTON, CHARLES A., AIEE Fellow 1939.
HARRINGTON, HOWARD L., AIEE Fellow 1950.
HARRIS, D.B., IRE Fellow 1956 “For contributions to telephonic communication practices and to the organization of electronic research and development.”
HARRIS, FORD W., AIEE Fellow 1913.
HARRIS, W. A., IRE Fellow 1955 “For his contributions to the development of frequency converter tubes and to the understanding of fluctuation phenomena in electronic tubes.”
HARRISON, A.E., IRE Fellow 1955 “For his contributions as a teacher, author, and engineer, especially in the field of klystrons.”

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HARRISON, ARTHUR MCCRIDE, AIEE Fellow 1958 “For contributions in the field of large rotating electrical machinery.”

HARRISON, JAMES, AIEE Fellow 1925.

HARRISON, WARD, AIEE Fellow 1936.

HARRISON, WILLIAM H., AIEE Fellow 1931.

HART, HARRY U., AIEE Fellow 1913.

HART, LESTER C., AIEE Fellow 1949.

HART, PERCY E., AIEE Fellow 1925.

HARTE, CHARLES RUFUS, AIEE Fellow 1946.

HARTIG, HENRY EDWARD, AIEE Fellow 1948. IRE Fellow 1952 “For his achievements as a teacher, his research in the field of acoustics, and his contributions to the underwater sound program during World War II.”

HARTLEY, RALPH VINTON LYON, IRE Fellow 1928. AIEE Fellow 1951.

HARVEY, HAROLD GIFFORD, AIEE Fellow 1933.

HARVEY, HENRY FRANKLIN, JR., AIEE Fellow 1949.

HARWOOD, PAISLEY B., AIEE Fellow 1942.

HASTINGS, CHARLES E., IRE Fellow 1961 “For contributions to radio surveying and navigation.” AIEE Fellow 1962 “For development of radar equipment for rapid measurement of distances with great accuracy.”

HAUSMANN, ERICK, AIEE Fellow 1918.

HAVILL, O.A., AIEE Fellow 1916.

HAWLEY, JOHN T., AIEE Fellow 1955 “For contributions to the application of electricity to the sanitary system of a large area.”

HAWLEY, KENT ALLEN, AIEE Fellow 1935.

HAYES, HAMMOND V., AIEE Fellow 1913.

HAYES, LESLIE W., IRE Fellow 1938.

HAYES, STEPHEN Q., AIEE Fellow 1912.

HAYLER, GEORGE ERNEST, JR., AIEE Fellow 1931.

HAYWARD, R.J., AIEE Fellow 1912.

HAZELTINE, HAROLD L., AIEE Fellow 1940.

HAZELTINE, LOUIS A., IRE Fellow 1921. AIEE Fellow 1921.

HAZEN, HAROLD LOCKE, AIEE Fellow 1943. IRE Fellow 1962 “For contribution in the field of servomechanism theory and in education.”

HEADRICK, LEWIS B., IRE Fellow 1953 “For contributions and leadership in the development of cathode-ray tubes and television camera tubes.”

HEATH, H.E., AIEE Fellow 1913.

HEATHER, H.J.S., AIEE Fellow 1913.

HECTOR, L.G., IRE Fellow 1961 “For contributions in the field of electronic devices.”

HEFELE, JOHN R., IEEE Fellow 1965 “For contributions to research and engineering on visual communications.”

HEFFELMAN, MALCOLM C., AIEE Fellow 1962 “For contributions to the development of a integrated power system in sparse territory.”

HEFFNER, HUBERT, IRE Fellow 1962 “For contributions to the theory of backward wave oscillators and parametric amplifiers.”

HEHRE, FREDERICK W., AIEE Fellow 1929.

HEIDENREICH, ALLAN H., AIEE Fellow 1927.

HEIDENREICH, GEORGE EDWARD, SR., AIEE Fellow 1950.

HEINTZ, RALPH M., IRE Fellow 1930. AIEE Fellow 1945.

HEINZE, CARL A., AIEE Fellow 1926.

HEISING, RAYMOND A., AIEE Fellow 1923. AIEE Fellow 1939.

HEITMANN, EDWARD, AIEE Fellow 1913.

HEITZLER, ALBERT H., AIEE Fellow 1938.

HEJDA, CHARLES JOSEPH, AIEE Fellow 1944.

HELLMUND, R.E., AIEE Fellow 1913.

HELPBRINGER, J., AIEE Fellow 1926.

HENDERSON, R.H., AIEE Fellow 1913.

HENDERSON, SAMUEL FARRELL, AIEE Fellow 1960 “For contributions to the determination of induction motors.”

HENDRICKS, CHESTER L., AIEE Fellow 1955 “For contributions to the design of electric distribution systems.”

HENLINE, HENRY HARRISON, AIEE Fellow 1943.

HENNINGSEN, EARLE S., AIEE Fellow 1939.

HENSCHAW, A.W., AIEE Fellow 1913.

HENTZ, ROBERT A., AIEE Fellow 1929.

HERBST, PHILIP J., IRE Fellow 1953 “For his contributions to numerous branches of radio engineering, particularly television and air navigation.”

HERDT, L.A., AIEE Fellow 1912.

HERGENROTHER, R.C., IRE Fellow 1956 “For contributions in electron optics and storage tube development.”

HERING, CARL, AIEE Fellow 1912.

HERLITZ, IVAR, AIEE Fellow 1956 “For distinguished contributions in the field of high voltage engineering.”

HERRICK, CHARLES H., AIEE Fellow 1912.

HERRON, JAMES HERVEY, AIEE Fellow 1941.

HERTOG, GERHARD, IRE Fellow 1955 “For his contributions to radioactive instrumentation for geological survey and medical application.”

HERTZ, STANTON S., AIEE Fellow 1939.

HERTZOG, EDWARD F., IRE Fellow 1959 “For contributions to military electronics.”
HERZ, ALFRED, AIEE Fellow 1921.
HERZOG, EUGENE, AIEE Fellow 1948.
HESS, WENDELL F., AIEE Fellow 1948.
HESS, WILLIAM T., AIEE Fellow 1956 “For his contributions in the development of electric power production, transmission and distribution systems.”
HESSEL, JOHN, IRE Fellow 1953 “For his contributions to military radio communications, particularly in the fields of man-carried combat radios and radio relay equipment.”
HESSLER, VICTOR PETER, AIEE Fellow 1943.
HESTER, EDGAR ALLEN, AIEE Fellow 1947.
HEWLETT, E.M., AIEE Fellow 1917.
HEYD, J.W., IRE Fellow 1961 “For contributions to the application of atomic energy.”
HIBBARD, ANGUS S., AIEE Fellow 1912.
HIBBARD, HARRY L., AIEE Fellow 1921.
HIBBARD, TRUMAN, AIEE Fellow 1926.
HIBBEN, SAMUEL GALLOWAY, AIEE Fellow 1961 “For contributions to advancement of the theory and practice of illumination engineering.”
HICKERNELL, LATIMER FARRINGTON, AIEE Fellow 1934.
HICKMAN, R.W., IRE Fellow 1961 “For contributions to electronics education.”
HICKOK, ROBERT D., AIEE Fellow 1932.
HIGBIE, HENRY HAROLD, AIEE Fellow 1943.
HIGGINS, NATHAN BERT, AIEE Fellow 1948.
HIGHFIELD, JOHN SOMERVILLE, AIEE Fellow 1942.
HILL, ALLAN W., AIEE Fellow 1948.
HILL, ARTHUR P., AIEE Fellow 1957 “For contributions to the development of wire and radio communications, sound motion pictures and acoustical technology.”
HILL, CHARLES FRANKLIN, AIEE Fellow 1939.
HILL, E. ROWLAND, AIEE Fellow 1912.
HILL, FREDERICK WILLIAM LANDIS, NDIS, AIEE Fellow 1934.
HILL, G. LESLIE, IEEE Fellow 1965 “For contributions to power circuit protection and the testing of electrical insulation.”
HILL, GUY, IRE Fellow 1915.
HILL, HALBERT P., AIEE Fellow 1922.
HILL, LEWIS C., AIEE Fellow 1938.
HINES, CLAUDE MANNING, AIEE Fellow 1962 “For achievements in the development and design of control equipment in the field of transportation.”
HINNERS, FRANK A., IRE Fellow 1926.
HINSON, NOEL BERTHARD, AIEE Fellow 1935.
HIRSCH, C.J., IRE Fellow 1951 “For his contributions in the fields of radio broadcast receivers, electronic aids to navigation, and electronic computers.”
HIRSFELD, CLARENCE FLOYD, AIEE Fellow 1936.
HOBART, H.M., AIEE Fellow 1912.
HOBART, K.E., AIEE Fellow 1926.
HOBBS, WILLIAM D., AIEE Fellow 1924.
HOBBS, MAURICE HILL, AIEE Fellow 1948.
HOBSON, JESSE EDWARD, AIEE Fellow 1948. IRE Fellow 1956 “For leadership in organization for research.”
HOCKADAY, OLIN S., AIEE Fellow 1944.
HODNETTE, JOHN K., AIEE Fellow 1942.
HODSON, HERBERT ORVILLE, AIEE Fellow 1962 “For contributions to the engineering, construction, and operations of a rapidly growing electric utility system.”
HODTUM, JOSEPH B., AIEE Fellow 1949.
HOFLE, ALOIS, AIEE Fellow 1957 “For his contributions to the restoration of electric power in Europe while on occupational duty with the Army of the United States and for the application of higher distribution voltages to the Toledo Edison System.”
HOEPNER, HENRY LOUIS, AIEE Fellow 1943.
HOGAN, JOHN V.L., JR., IRE Fellow 1915, AIEE Fellow 1954 “For his pioneer accomplishments in research, development, and engineering in the field of radio communications.”
HOGG, THOMAS HENRY, AIEE Fellow 1938.
HOK, GUNNER, IRE Fellow 1957 “For contributions to electronic science and education.”
HOLBROOK, HENRY STANLEY, AIEE Fellow 1931.
HOLCOMBE, ERNEST S., AIEE Fellow 1927.
HOLDEN, E.B., JR., AIEE Fellow 1913.
HOLLAND, LEWIS NELSON, IRE Fellow 1959 “For contributions to engineering education.” AIEE Fellow 1960 “For contributions to electrical engineering curricula especially the incorporation of UHF pedagogy.”
HOLLAND, MELVIN G., IEEE Fellow 1976 “For contributions to the field of surface and bulk acoustic wave devices and technology.”
HOLLAND, WALTER E., IRE Fellow 1936.
HOLLAND, WAYMAN A., AIEE Fellow 1949.
HOLLIDAY, THEODORE BERGEN, AIEE Fellow 1946.
HOLLISTER, FRANCIS HELMUT, AIEE Fellow 1943.
HOLLMAN, HANS E., IRE Fellow 1953 “For his fundamental analyses and inventions in the fields of electron tubes and high-frequency circuits.”
HOLMAN, HAROLD RUSSELL, AIEE Fellow 1949.
HOLMES, HOWARD A., AIEE Fellow 1939.
HOLMES, RALPH S., IRE Fellow 1952 “In recognition of his early contributions to the development of television and his work in the field of television standards.”
HOLSLAG, CLAUDE JOSEPH, AIEE Fellow 1941.
HOLTZ, FREDERICK CARL, AIEE Fellow 1947.
HOMAN, JOHN GREENLEAF, AIEE Fellow 1940.
HONAMAN, RICHARD K., AIEE Fellow 1936.
HOOKE, ROBERT GAY, AIEE Fellow 1951.
HOOPER, S.C., IRE Fellow 1928.
HOOPER, WILLIAM L., AIEE Fellow 1912.
HOVEN, MORRIS D., AIEE Fellow 1944.
HOPE, HARRY M., AIEE Fellow 1912.
HOPKINS, NEVIL MONROE, AIEE Fellow 1913.
HOPKINS, RAYMOND A., AIEE Fellow 1943.
HORELICK, SAMUEL, AIEE Fellow 1948.
HORLEY, LAWRENCE C.F., IRE Fellow 1925. AIEE Fellow 1935.
HORN, CHARLES W., IRE Fellow 1930.
HORN, HEINZ, IRE Fellow 1959 “For contributions in the development of ultra-high-frequency and submarine cables.”
HORNER, S. GEORGE L., IRE Fellow 1957 “For contributions to radio communications in Canadian Northern and Arctic regions.”
HORNFELD, ANTHONY J., AIEE Fellow 1955 “For contributions to telemetering and to instrumentation for process and generating station control.”
HORNOR, H.A., AIEE Fellow 1913.
HORTON, ARTHUR W., JR., IRE Fellow 1959 “For contributions to long distance telephony, electronic switching and military electronics.”
HORTON, J. WARREN, AIEE Fellow 1928. IRE Fellow 1929.
HOSMER, SIDNEY, AIEE Fellow 1912.
HOUCK, HAROLD EDGAR, AIEE Fellow 1959 “For contributions to the electrical aspects of industrial, chemical and nuclear projects.”
HOUGH, EUGENE LAWRENCE, AIEE Fellow 1948.
HOUSEKEEPER, WILLIAM G., AIEE Fellow 1925.
HOUSLEY, J. ELMER, AIEE Fellow 1943.
HOVEY, LINDSEY AM., IEEE Fellow 1970 “For contributions in hydro-speed governors.”
HOWARD, DAVID GOODALE, AIEE Fellow 1961 “For his contribution to the education in electrical engineering of the midshipmen of the U.S. Naval Academy.”
HOWE, G.W.O., IRE Fellow 1955 “For his pioneering work in radio and his outstanding contributions to engineering education.”
HOWE, K.L., AIEE Fellow 1936.

HOWE, WILFRED H., IEEE Fellow 1965 “For pioneering development of industrial process instrumentation, especially in the paper, rubber and plastics field.”
HOWELL, JOHN W., AIEE Fellow 1912.
HOWELLS, PAUL W., IRE Fellow 1960 “For contributions to color television.”
HOWES, ROBERT, AIEE Fellow 1913.
HOWLAND, LEWIS A., AIEE Fellow 1913.
HOXIE, GEORGE L., AIEE Fellow 1913.
HOYT, GERALD A., AIEE Fellow 1961 “For contributions to naval ordnance torpedoes and missiles.”
HUBBARD, HORACE STIMPSON, AIEE Fellow 1948.
HUBLEY, GEORGE W., AIEE Fellow 1926.
HUDSON, RALPH G., AIEE Fellow 1941.
HUFFMAN, DAVID A., IRE Fellow 1962 “For contributions to switching theory and information theory.”
HUGHES, CALVIN T., AIEE Fellow 1946.
HUGHES, MARTIN C., AIEE Fellow 1943.
HULL, A.W., IRE Fellow 1944 “In recognition of his many contributions to the development and design of electron tubes both for radio and industrial applications.”
HULL, ARTHUR HENRY, AIEE Fellow 1943.
HULL, BLAKE D., AIEE Fellow 1939.
HULL, JOHN IRVING, AIEE Fellow 1943.
HULL, JOSEPH F., IRE Fellow 1962 “For contributions to the advancement of the art of crossed field microwave devices.”
HULL, LEWIS M., IRE Fellow 1928. AIEE Fellow 1954 “For his many contributions to radio communication and to the utilization of vacuum tubes therein.”
HUMPHREY, C.W., AIEE Fellow 1913.
HUMPHREY, HENRY H., AIEE Fellow 1913.
HUMPHREYS, ALEX C., AIEE Fellow 1912.
HUMPHREYS, CLIFFORD W., AIEE Fellow 1913.
HUND, AUGUST, IRE Fellow 1927.
HUNT, FRED L., AIEE Fellow 1917.
HUNT, FRED V., IRE Fellow 1947 “For his work as a scientist, teacher, and administrator and his contributions to acoustics.”
HUNT, HENRY JAMES, AIEE Fellow 1962 “For contributions to improvements in the design of hydroelectric plants.”
HUNT, JOHN HERMAN, AIEE Fellow 1943.
HUNTER, EUGENE MURRAY, AIEE Fellow 1948.
HUNTER, PHILIP VASSAR, AIEE Fellow 1933.
HUNTER, THEODORE A., IRE Fellow 1953 “For his contributions to the design of stable tunable oscillators, and for his able promotion of the activities of the Institute.”

PAST FELLOWS
HUNTING, F.S., AIEE Fellow 1913.
HUNTINGTON, D.L., AIEE Fellow 1913.
HUNTLEY, HAROLD R., AIEE Fellow 1951. IRE Fellow 1960 "For contributions to communications engineering."
HURD, OWEN WILSON, AIEE Fellow 1958 "For contributions to design, operation and management of large electric power systems."
HUTCHINSON, CARY T., AIEE Fellow 1912.
HUTCHINSON, CHASE, AIEE Fellow 1951.
HUTTON, C.W., AIEE Fellow 1913.
HYDE, HARRY, AIEE Fellow 1962 "For contributions to the technical and management phases of a large municipal electrical system."
HYNES, FRANCIS B., AIEE Fellow 1931.

I
IDE, CHARLES EDWARD, AIEE Fellow 1951.
IHDLER, JOHN D., AIEE Fellow 1912.
IMLAY, L.E., AIEE Fellow 1913.
INCH, SYDNEY RICHARD, AIEE Fellow 1938.
INGLEDO, THOMAS, AIEE Fellow 1951.
INGLES, HARRY C., AIEE Fellow 1948.
INGVALDSEN, BERNT L., IEEE Fellow 1968 "For his prominent roles in developing and expanding the electrical industry, and in serving his government."
INSULL, SAMUEL, AIEE Fellow 1912.
ISHIKAWA, KIYOSHI, IEEE Fellow 1965 "For contributions to electrical insulating techniques and materials, and to the development of the atomic energy industry."
ISRAEL, DORMAN, IRE Fellow 1942 "In recognition of his leadership in the engineering of broadcast receivers."
IVES, HERBERT E., AIEE Fellow 1929.
IVES, JAMES E., IRE Fellow 1915.
IWAMI, KAZUO, IEEE Fellow 1982 "For leadership in applying electronic technology to consumer products."

J
JACK, HUGH, AIEE Fellow 1949.
JACKSON, DUGALD C., AIEE Fellow 1912.
JACKSON, DUGALD C., JR., AIEE Fellow 1930.
JACKSON, JOHN PRICE, AIEE Fellow 1912.
JACKSON, WILLIAM B., AIEE Fellow 1913.
JACKSON, WILLIAM E., IRE Fellow 1951 "For his technical contributions to electronic aids to air navigation, and control, and for his administrative contribution in the Civil Aeronautics Administration."
JACKSON, WILLIS, IRE Fellow 1950 "For his services as an educator and for his many contributions to the literature in both the radio and electrical fields."

JACOBS, ERNEST H., AIEE Fellow 1917.
JAFFE, HANS, IRE Fellow 1962 "For contributions in the field of piezoelectric-crystals and piezoelectric-ceramic materials."
JAFFE, J.L., IEEE Fellow 1964 "For contributions to the development of microwave electronic equipment."
JAMES, HENRY D., AIEE Fellow 1912.
JAMMESON, BERTRAND, AIEE Fellow 1922.
JANES, R.B., IRE Fellow 1955 "For his contributions to the development of improved camera tubes."
JANSKY, C.M., JR., IRE Fellow 1928.
JANSKY, CYRIL M., AIEE Fellow 1932.
JANSKY, KARL G., IRE Fellow 1947 "For his researches in the realm of cosmic and circuit noise affecting radio communication."
JAQUES, CLOYCE A., AIEE Fellow 1951.
JARVIS, KENNETH WARNER, IRE Fellow 1934. AIEE Fellow 1950.
JASIK, HENRY, IRE Fellow 1958 "For his contributions to the theory and design of VHF and microwave antennas."
JEFFERIES, ERNEST SMITH, AIEE Fellow 1924.
JEFFERS, C.L., IRE Fellow 1961 "For contributions to domestic and foreign broadcasting and to antenna development."
JEFFREY, FRASER, AIEE Fellow 1924.
JEFFRIES, ZAY, AIEE Fellow 1942.
JENNY, DIETRICH A., IRE Fellow 1962 "For research to the field of semiconductors."
JENSEN, J.C., IRE Fellow 1956 "For research in the field of static charges on aircraft and their relation to radio communication."
JENSON, AXEL G., IRE Fellow 1942 "For his contributions to the development of the short-wave transatlantic telephone, for his contributions to the development of broad-band, multichannel telephony, and for his further contributions to the art of television."
JETT, EWELL K., IRE Fellow 1939.
JEWETT, FRANK B., AIEE Fellow 1912. IRE Fellow 1920.
JOHANNESEN, SVEND E., AIEE Fellow 1913.
JOHN, KURT W., AIEE Fellow 1962 "For contributions to electrification in the rubber industry."
JOHNSON, CARL E., AIEE Fellow 1925.
JOHNSON, ERNEST A., AIEE Fellow 1958 "For his contributions to conversion of manual telephone systems to dial operations."
JOHNSON, ERNEST E., AIEE Fellow 1947.
JOHNSON, EWART FRANK, AIEE Fellow 1948.
JOHNSON, EWELL C., JR., IEEE Fellow 1967 "For contributions to the field of control systems technology,
numerically controlled machine tool systems and automation.”

JOHNSON, F.B., AIEE Fellow 1953 “For contribution to the improvement of commutation in rotary converters and to the development of remote control for urban substations.”

JOHNSON, FRANCIS ELLIS, AIEE Fellow 1931.

JOHNSON, GEORGE EDWARD, AIEE Fellow 1959 “For contributions to power systems for coordinated operations under public management.”

JOHNSON, HARWICK, IRE Fellow 1960 “For contributions to the development of electron devices.”

JOHNSON, J. ALLEN, AIEE Fellow 1927.

JOHNSON, J. HUGO, AIEE Fellow 1945.

JOHNSON, J.B., IRE Fellow 1951 “For his discovery of the fundamental limiting noise in electric circuits and his early development in cathode ray tubes.”

JOHNSON, ROYCE E., AIEE Fellow 1945.

JOHNSON, TOMLINSON F., JR., AIEE Fellow 1933.

JOHNSON, WILLIAM RODGERS, AIEE Fellow 1959 “For contributions to the development of major electric generating and transmission systems.”

JOLLIFFE, CHARLES BYRON, IRE Fellow 1930. AIEE Fellow 1949.

JOLLIFFE, JOHN P., AIEE Fellow 1949.

JOLLYMAN, JOSIAH PICKARD, AIEE Fellow 1930.

JONES, ARTHUR LUCAS, AIEE Fellow 1938.

JONES, BASSETT, AIEE Fellow 1930.

JONES, BENSON M., AIEE Fellow 1942.

JONES, CHARLES RAMEY, AIEE Fellow 1948.

JONES, GEORGE H., AIEE Fellow 1912.

JONES, J. COLEMAN, AIEE Fellow 1948.

JONES, JOHN WANDESFORD, AIEE Fellow 1961 “For contributions to the basic development of a major electric generating and transmission system and to standards for rotating machines.”

JONES, JOSEPH S., AIEE Fellow 1925.

JONES, LESTER L., IRE Fellow 1925.

JONES, RAY DEVERE, AIEE Fellow 1960 “For contributions to extended range and life of small motors, generators and dynamotors for military application.”

JONES, REGINALD LAMONT, AIEE Fellow 1931.

JONES, ROBERT A., AIEE Fellow 1951.

JONES, THOMAS F., JR., IRE Fellow 1962 “For contributions to electrical engineering education.”

JOSLIN, WILLIAM M., AIEE Fellow 1957 “For his development and inspiration of young electrical engineers and his engineering achievements in the development of a large electric utility system.”

JUCARONE, NICHOLAS T., AIEE Fellow 1950.

JUHNKE, PAUL B., AIEE Fellow 1936.

JUMP, GEORGE H., AIEE Fellow 1946.

JUNKERSTELD, PETER, AIEE Fellow 1912.

K

KAEBURN, LESLIE K., IRE Fellow 1965 “For his important work in medical electronics.”

KAHLMER, WILLIAM V., AIEE Fellow 1946.

KALB, WARREN C., AIEE Fellow 1940.

KALLMAN, HEINZ E., IRE Fellow 1959 “For contributions to transient response analysis of networks and to instrumentation.”

KALMUS, HENRY P., IRE Fellow 1956 “For contributions in the field of electromechanical devices and electronic measurement instruments.”

KAMMERMAN, JOHN OSCAR, AIEE Fellow 1950.

KAPIELIAN, ZOHRA B., IEEE Fellow 1971 “For contributions in the fields of electromagnetic theory and artificial dielectrics.”

KARAPETOFF, VLADIMIR, AIEE Fellow 1912.

KARLIN, JOHN E., IEEE Fellow 1965 “For contributions to the understanding of man-machine problems and their relation to telephony.”

KAROLUS, AUGUST, IEEE Fellow 1970 “For work in television and facsimile-transmission, in electro-optical methods for measuring distances, and in development of time and frequency standards.”

KARPLUS, EDUARD, IRE Fellow 1938.

KARR, J. HAROLD, AIEE Fellow 1960 “For contributions to design of electric motors and automotive directional signals.”

KARTAK, FRANZ AUGUST, AIEE Fellow 1933.

KASPAR, FRANK P., AIEE Fellow 1960 “For contributions to design and operating components of a large electric utility system.”

KATLE, EDWIN B., AIEE Fellow 1912.

KATZIN, MARTIN, IRE Fellow 1955 “For his contributions to the knowledge of microwave propagation.”

KAUFMAN, JACK, IEEE Fellow 1967 “For pioneering contributions and leadership in electron tube design, production and application particularly to communications.”

KAUFMAN, RICHARD HAROLD, AIEE Fellow 1948.

KEATH, HOWARD BASCOMB, AIEE Fellow 1939.

KEENAN, GEORGE M., AIEE Fellow 1929.

KEHOE, ARTHUR H., AIEE Fellow 1925.

KEILLER, THOMAS MITCHELL, AIEE Fellow 1962 “For contributions in distribution planning and engineering to the development of a rapidly growing utility.”

KEINATH, GEORGE, AIEE Fellow 1961 “For contributions to instrumentation for measurement and in recording of physical quantities by electrical means.”

PAST FELLOWS
KEITH, ALEXANDER E., AIEE Fellow 1913.
KEITH, FAY ELLSWORTH, AIEE Fellow 1956 “For his contributions to the engineering management field of the electrical construction industry.”
KELLEHER, KENNETH S., IEEE Fellow 1969 “For contributions to microwave optical scanners and to the military electronics industry.”
KELLER, ERNEST A., IRE Fellow 1960 “For contributions to sound recording and telephone switching systems.”
KELLEY, WILL G., AIEE Fellow 1926.
KELLY, JOHN F., AIEE Fellow 1912.
KELLY, MERVIN J., AIEE Fellow 1931. IRE Fellow 1938.
KELLY, WILLIAM, AIEE Fellow 1925.
KELMAN, JOSEPH NELSON, AIEE Fellow 1931.
KELSCHE, R.S., AIEE Fellow 1912.
KENDALL, BURTON W., AIEE Fellow 1929.
KENDRICK, WILLIAM HENRY, AIEE Fellow 1950.
KENNEDY, LUKE FRANCIS, AIEE Fellow 1949.
KENNEDY, M.E., IRE Fellow 1956 “For contributions in the flood control and civil defense communication systems.”
KENNEDY, TERRENCE O., AIEE Fellow 1939.
KENNELLY, ARTHUR E., AIEE Fellow 1913. IRE Fellow 1928.
KENNEY, NORWOOD D., IEEE Fellow 1969 “For outstanding contributions in the wire and cable field, particularly in the pioneering work connected with the development and application of solid dielectrics for high voltages.”
KENRICK, GLEASON W., IRE Fellow 1933.
KENYON, ALONZO F., IEEE Fellow 1967 “For contributions to the development and application of automated electrical drive systems for steel rolling mills.”
KEOHLER, GLENN, IRE Fellow 1956 “For contributions to engineering education and educational broadcasting.”
KEPLER, LEONARD, AIEE Fellow 1923.
KERR, DONALD E., IEEE Fellow 1966 “For leadership and research in microwave propagation and plasma physics.”
KERR, HENRY H., AIEE Fellow 1944.
KERR, WILLIAM E., AIEE Fellow 1948.
KETTERING, CHARLES FRANKLIN, AIEE Fellow 1914.
KIDDER, HARRY ALVIN, AIEE Fellow 1929.
KIEBERT, MARTIN V., JR., IRE Fellow 1959 “For contributions to telemetry and automatic data reduction.”
KIERSTEAD, FRIEND HANS, AIEE Fellow 1949.
KIFER, EDWIN HENRY, AIEE Fellow 1945.
KILBY, HUBERT ST. CLAIR, AIEE Fellow 1948.
KILGOUR, C.E., IRE Fellow 1951 “For his contributions in the application of graphical methods to the analysis of detector and output tube performance.”
KILGOUR, HAMILTON, AIEE Fellow 1913.
KILLIAN, T.J., IRE Fellow 1951 “For his enlightened guidance of basic scientific research.”
KIM, W.H., IEEE Fellow 1964 “For contributions to network theory, particularly network topology.”
KIMBERLY, EMERSON E., AIEE Fellow 1954 “For contributions in the field of electrical engineering education.”
KIMBRELL, MARVIN REA, AIEE Fellow 1947.
KING, ARCHIE P., IRE Fellow 1962 “For contributions to waveguide theory and application.”
KING, ARTHUR C., AIEE Fellow 1920.
KING, MORELAND, AIEE Fellow 1925.
KINNAN, T.H., IRE Fellow 1957 “For contributions in high-frequency research and semiconductor devices.”
KINN, THEODORE P., IRE Fellow 1959 “For contributions in the field of industrial heating.”
KINNARD, ISAAC F., AIEE Fellow 1943.
KINSLEY, CARL, AIEE Fellow 1935.
KINTER, SAMUEL M., IRE Fellow 1915.
KINZLY, NELSON T., AIEE Fellow 1951.
KIRKE, HAROLD L., IRE Fellow 1945 “For his services to broadcasting in the British Isles and in particular for his leadership in the research activities of the British Broadcasting Corporation.”
KIRKNER, HARRY L., AIEE Fellow 1913.
KIRKWOOD, L.R., IEEE Fellow 1964 “For contributions to color television receiver design.”
KIRSTEN, K. FRIEDRICH J., AIEE Fellow 1930.
KISTLER, ROY E., AIEE Fellow 1946.
KITTREDGE, LINUS E., AIEE Fellow 1947.
KITTRIDGE, CARLYLE, AIEE Fellow 1922.
KLAUBER, LAURENCE M., AIEE Fellow 1923.
KLINCK, J. HENRY, AIEE Fellow 1913.
KLOEFFLER, ROYCE G., AIEE Fellow 1932. IRE Fellow 1953 “In recognition of his achievements as an educator and author in the fields of electrical and electronic engineering.”
KLOSS, MAX, AIEE Fellow 1926.
KLUMPP, J.B., AIEE Fellow 1913.
KNAPP, PETER RICHARD, AIEE Fellow 1938.
KNICKERBOCKER, WALTER G., AIEE Fellow 1946.
KNIGHT, CHARLES D., AIEE Fellow 1913.
KNIGHT, FRED D., AIEE Fellow 1950.
KNIGHT, GEORGE LAURENCE, AIEE Fellow 1917.
KLINK, NORMAN, AIEE Fellow 1944.
KNIPEGANN, CLARENCE CARL, AIEE Fellow 1951.
KNOLL, MAX, IRE Fellow 1962 “For work on cathode ray tubes, in particular the electron microscope and image storage tubes.”
KNOWLES, DEWEY D., AIEE Fellow 1957 “For his contributions in research, design and application in the field of gas-filled tubes and for his leadership in the electronic industry.”
KNOWLTON, ARCHER E., AIEE Fellow 1930.
KNOWLTON, CHARLES E., AIEE Fellow 1913.
KNUDSEN, KNUD JOHANNES, AIEE Fellow 1944.
KNUTZ, WILLIAM HENRY, AIEE Fellow 1948.
KOH, MARSHALL MCKINLEY, AIEE Fellow 1957 “For administrative achievements in directing the engineering, construction and operation activities of a rapidly expanding electric utility system.”
KOCHELBERGER, RALPH J., IEEE Fellow 1967 “For contributions to engineering education and to the advancement of nonlinear control theory and its application.”
KOCK, WINSTON E., IRE Fellow 1952 “In recognition of his contributions in the field of electromagnetic-wave lenses and antennas.”
KOENIG, HERMAN CHARLES, AIEE Fellow 1951.
KOENIG, HERMAN E., IEEE Fellow 1973 “For leadership in the use of system concepts in electrical engineering curricula, and n pioneering their use in the socioeconomic and biological disciplines.”
KOGA, ISSAC, IRE Fellow 1957 “For contributions in quartz crystal techniques and engineering education.”
KOHLHAAS, HERMAN THEODORE, AIEE Fellow 1948.
KOINER, C.W., AIEE Fellow 1912.
KOLSTER, FREDERICK A., IRE Fellow 1916.
KOMIVES, LASZLO L., AIEE Fellow 1954 “For contributions to the development and application of high-voltage transmission cable systems.”
KOMPFLNER, RUDOLPH, IRE Fellow 1950 “For his research in electron tube theory and particularly for his original contributions to the concepts of the traveling-wave amplifier.”
KONGSTED, LUDVIG P., AIEE Fellow 1929.
KOONTZ, JOHN ANDREWS, AIEE Fellow 1949.
KORNER, A. JULIUS, AIEE Fellow 1939.
KOSITZKY, GUSTAV ADOLPH, AIEE Fellow 1929.
KOUNENHOVEN, WILLIAM B., AIEE Fellow 1934.
KOZANOWSKI, HENRY N., IRE Fellow 1962 “For early contributions to electronic circuits.”
KRAFT, CHRIS H., AIEE Fellow 1931.

KRAMER, ERNST, IEEE Fellow 1965 “For contributions to aircraft radio navigation.”
KRASIK, SIDNEY, IRE Fellow 1962 “For contributions toward the development of microwave devices and nuclear power plants.”
KRAUSS, HERBERT L., IRE Fellow 1962 “For contributions to electrical engineering education.”
KREE, JOHN C., IRE Fellow 1962 “For contributions to standardization.”
KROGER, F.H., IRE Fellow 1928.
KRONG, GABRIEL, AIEE Fellow 1951.
KRUG, FREDERICK, AIEE Fellow 1936.
KRUM, HOWARD L., AIEE Fellow 1927.
KRYP, ALEXANDER JOSEPH, AIEE Fellow 1946.
KUEHNI, HANS PAUL, AIEE Fellow 1960 “For contributions to measuring and recording techniques for electrical and physical quantities.”
KUHL, FRANK P., AIEE Fellow 1962 “For contributions to electric utility station design and lighting.”
KUHN, CLARENCE WILBUR, AIEE Fellow 1939.
KUHN, R.J., IEEE Fellow 1964 “For contributions in the fields of corrosion and cathodic protection.”
KULIKOWSKI, EDWIN FRANK, AIEE Fellow 1959 “For contributions to the application of electronics to military uses, particularly to automatic processing of combat data.”
KULJIAN, HARRY ASDOUR, AIEE Fellow 1962 “For contributions to the design and construction of thermal electric generating stations.”
KUO, BENJAMIN CHUNG-I, IEEE Fellow 1974 “For contributions to control system theory and practice.”
KURTICHANO, LEONARD E., AIEE Fellow 1934.
KURTZ, EDWIN, AIEE Fellow 1929.
KURTZ, WILLIAM OVERTON, AIEE Fellow 1940.
KUSTERS, NORBERT L., IEEE Fellow 1965 “For leadership in research and development and for contributions in the field of electrical measurements.”
KYNCH, JAMES, AIEE Fellow 1918.

L
LABIN, EMILE, IEEE Fellow 1971 “For contributions in television, radar, pulse communication, radio location, and UHF vacuum tubes.”
LABORDE, MAURICE E., AIEE Fellow 1956 “For his contributions in the development and application of extra high voltage cables to underground power transmission.”
LACHOTTE, FRANCIS WILLIAMS, AIEE Fellow 1950.
LACKIE, WILLIAM WALKER, AIEE Fellow 1916.
LACOMBE, CHARLES F., AIEE Fellow 1913.
LACY, THOMAS NORMAN, AIEE Fellow 1944.
LAFFOON, CARThRAE MERRETTE, AIEE Fellow 1945.
LAKE, EDWARD N., AIEE Fellow 1912.
LAKIN, C. EARL, AIEE Fellow 1947.
LAMAR, ROBERT W., AIEE Fellow 1936.
LAMB, FRANCIS XAVIER, AIEE Fellow 1958 "For contributions to electrical measurements by invention and by design, especially for exacting and rugged military service."
LAMMERS, E.S., JR., AIEE Fellow 1953 "For many inventions in the field of steel rolling mills and for the achievement of electronics to industrial processes."
LAMOTTE, WILLIAM REED, AIEE Fellow 1951.
LAMSON, HORATIO W., IRE Fellow 1933.
LANCASTER, W.C., AIEE Fellow 1913.
LANDIS, GEORGE G., AIEE Fellow 1940.
LANDIS, GEORGE H., AIEE Fellow 1949.
LANDON, V.D., IRE Fellow 1951 "For contributions to communication system, filter and noise theory."
LANCE, FRANCIS HOWARD, AIEE Fellow 1937.
LANE, RICHARD KELVIN, AIEE Fellow 1943.
LANG, WILMARTH Y., IEEE Fellow 1967 "For broad-ranging contributions to the development of telegraph, data transmission, and teletypewriter systems."
LANGDELL, JOSEPH CHESTER, AIEE Fellow 1947.
LANGE, ERNEST O., AIEE Fellow 1950.
LANGLEY, GORDON R., AIEE Fellow 1923.
LANGLOIS-BERTHELOT, RICHARD, IEEE Fellow 1969 "For contributions to research, production, education, and international activities in electrical engineering."
LANGMUIR, IRVING, IRE Fellow 1922.
LANGSDORF, ALEXANDER S., AIEE Fellow 1912.
LANGSTAFF, HAROLD, 1943 Fellow A.P.
LANGTON, JOHN, AIEE Fellow 1912.
LANIER, ALEXANDER CARTWRIGHT, AIEE Fellow 1939.
LANK, WILLIAM JEFFERIS, AIEE Fellow 1947.
LANPHIER, ROBERT C., AIEE Fellow 1913.
LANSIGN, VAN RENSSLER, AIEE Fellow 1913.
LAPOE, ALBERT EDWARD, AIEE Fellow 1948.
LAPORT, EDMUND A., IRE Fellow 1953 "For his contributions to transmitter development, international communication systems and to antenna engineering."
LARDNER, HENRY A., AIEE Fellow 1913.
LARNER, RAY A., AIEE Fellow 1955 "For his contribution in the field of relaying and metering as applied to a far flung power system."
LARSEN, CHRISTIAN JULIUS, AIEE Fellow 1929.
LARSH, EVERETT PAUL, AIEE Fellow 1958 "For inventions and administration in the field of electrical apparatus."
LARSON, LEE RUSSEL, AIEE Fellow 1962 "For contributions in the development of electrical and electronic systems for aircraft and missile system."
LATEY, HARRY N., AIEE Fellow 1913.
LATIMER, CHESTER W., IRE Fellow 1929.
LAURIE, RUSSELL M., AIEE Fellow 1955 "For development of interconnected pool operation of large electric power systems on an international scale."
LAW, RUSSELL R., IRE Fellow 1953 "For his contributions to vacuum tube and television development."
LAWRENCE, RALPH R., AIEE Fellow 1928.
LAWS, FRANK ARTHUR, AIEE Fellow 1928.
LAWSON, CHARLES S., AIEE Fellow 1921.
LAWTON, ARTHUR H., AIEE Fellow 1919.
LAWTON, FREDERIC L., AIEE Fellow 1952 "For outstanding achievements in the development and operation of large power plants, especially hydroelectric plants in Canada and other countries, thereby contributing materially to the solution of the problem of electric power supply posed by the enormous growth of the aluminum industry."
LAYMAN, W.A., AIEE Fellow 1912.
LEAR, WILLIAM P., Sr., IEEE Fellow 1967 "For pioneering efforts and continuing contributions to the field of electronics in aircraft communications and automatic flight control systems."
LEBENBAUM, PAUL, AIEE Fellow 1942.
LECLAIR, TITUS GEORGE, AIEE Fellow 1940.
LEE, ALBERT G., IRE Fellow 1929.
LEE, CLAUDIUS, AIEE Fellow 1946.
LEE, EDGAR M., IEEE Fellow 1968 "For contributions to design, specification and safety of electronic equipment and components, and co-ordination of industry and government in electronic development, production and inspection."
LEE, EVERETT S., AIEE Fellow 1930.
LEE, HAROLD R., AIEE Fellow 1950.
LEE, LOUIS R., AIEE Fellow 1926.
LEE, WILLIAM S., AIEE Fellow 1913.
LEE, Y.W., IRE Fellow 1961 "For contributions to communication theory and engineering education."
LEEDS, L.M., IRE Fellow 1957 "For contributions to the design of television equipment for studio and industrial applications."
LEEDS, MORRIS E., AIEE Fellow 1926.
LEEDY, H. A., IRE Fellow 1961 "For contributions to electronic research management."
LEEGERBURGER, FRANKLIN J., AIEE Fellow 1951.
LEFEVER, ORLAND LESTER, AIEE Fellow 1944.
LEHDE, PENDLETON E., IRE Fellow 1927.
LEITCH, JOHN DAVIE, AIEE Fellow 1948.
LELAND, GEORGE HAROLD, AIEE Fellow 1944.
LEMP, HERMANN, JR., AIEE Fellow 1913.
LENSNER, HERBERT W., IEEE Fellow 1968 “For outstanding contributions in the field of protective relaying for electric power systems, utilizing power-line carrier and microwave pilot channels.”
LENZ, CHARLES OTTO, AIEE Fellow 1916.
LENZER, EMIL, IRE Fellow 1961 “For leadership in military communication-electronics.”
LEONARD, C. STEPHEN, IEEE Fellow 1965 “For contributions to the fields of measurement, instrumentation and controls.”
LEONARD, H. WARD, AIEE Fellow 1913.
LEONARD, MERRILL GRANT, AIEE Fellow 1962 “For contributions to components of distribution transformers, particularly of the protected type.”
LEONARZ, E., AIEE Fellow 1913.
LE VEE, CLARENCE HUGHES, AIEE Fellow 1950.
LEVI, GUSTAV, AIEE Fellow 1950.
LEVINGER, DAVID, AIEE Fellow 1950.
LEVY, DAVID H., AIEE Fellow 1947.
LEWIS, CHARLES HENRY, AIEE Fellow 1949.
LEWIS, GEORGE, IRE Fellow 1951 “In recognition of important pioneering contributions including the objective coordination of many management and engineering activities.”
LEWIS, WALTER W., AIEE Fellow 1938.
LEWIS, WARREN B., AIEE Fellow 1913.
LEYTON, E.M., IEEE Fellow 1964 “For contributions to the development of television transmitters and video tape systems.”
LIAO, T.W., IEEE Fellow 1964 “For contributions to the fields of insulating structures, corona and radio influence, gas insulated electric apparatus and the mass accelerator.”
LIBBEY, J.H., AIEE Fellow 1912.
LIBBY, T.M., IRE Fellow 1955 “For his technical contributions and long service in the field of communications.”
LICHTENBERG, CHESTER, AIEE Fellow 1949.
LIDDLE, URNER, IRE Fellow 1955 “For his contributions to the establishment, promotion and integration of government sponsored nuclear research in academic institutions.”
LIEB, JOHN W., AIEE Fellow 1913.
LIGHT, PHILIP H., AIEE Fellow 1959 “For contributions to electric power transmission.”
LIGHTRIPE, JAMES A., AIEE Fellow 1913.
LILJENROTH, FRANS G., AIEE Fellow 1921.
LINCOLN, EDWIN S., AIEE Fellow 1930.
LINCOLN, JAMES F., AIEE Fellow 1939.
LINCOLN, JOHN CROMWELL, AIEE Fellow 1932.
LINCOLN, PAUL M., AIEE Fellow 1912.
LINDE, LEONARD JOSEPH, AIEE Fellow 1951.
LINDELL, SIGURD L., IEEE Fellow 1965 “For creativity and guidance in the development, design and utilization of high voltage fuses and interrupter gear.”
LINDENBLAD, N.E., IRE Fellow 1948 “For his many contributions to the theory and design of transmitting antennas and related equipment.”
LINDER, E.G., IRE Fellow 1955 “For his contributions to microwave electronics.”
LINDSAY, RICHARD W., AIEE Fellow 1944.
LINDSAY, WILLIAM W., JR., IRE Fellow 1939.
LINKS, GEORGE F., AIEE Fellow 1954 “For contributions to coordinated fault protection of distribution systems.”
LINNEY, RALPH WALL, AIEE Fellow 1951.
LINVILL, WILLIAM K., IEEE Fellow 1968 “For contributions to sampled-data and computer control systems, and to systems analysis techniques.”
LIPPINCOTT, DONALD K., IRE Fellow 1959 “For outstanding service in the field of patent law.”
LISBERGER, SYLVAN JOSEPH, AIEE Fellow 1939.
LITTLE, D.S., IEEE Fellow 1964 “For contributions to electronic communication and to reliability and safety in aviation.”
LITTLETON, JESSE TALBOT, JR., AIEE Fellow 1928.
LITTON, CHARLES V., IRE Fellow 1947 “For his contributions to theory and practice in the field of high vacuum techniques, including processes and precision devices for the production of electron tubes.”
LIVERSIDGE, HORACE P., AIEE Fellow 1943.
LIWSCHITZ, MICHAEL, AIEE Fellow 1951.
LLEWELLYN, FREDERICK B., IRE Fellow 1938.
LLOYD, MORTON G., AIEE Fellow 1912.
LLOYD, TOM COX, AIEE Fellow 1958 “For contributions to the art of electrical motor design.”
LOBO, GUSTAVE, AIEE Fellow 1912.
LOCKWOOD, THOMAS D., AIEE Fellow 1912.
LOEW, EDGAR ALLAN, AIEE Fellow 1936.
LOGAN, FRANK G., AIEE Fellow 1956 “In recognition of pioneering work in the field of self-saturating reactors.”
LOGAN, HENRY, AIEE Fellow 1943.
LOGAN, KIRK HAROLD, AIEE Fellow 1943.
LOIZEAUX, ALFRED S., AIEE Fellow 1929.
LOMAX, CLARENCE E., AIEEE Fellow 1946.
LONGACRE, ANDREW, IRE Fellow 1962 "For originality and resourcefulness in developing military electronic equipment."
LOOMIS, A.L., IRE Fellow 1944 "In recognition of his work in the application of electronic techniques to medical research and for contributions to microwave development."
LOOMIS, ROBERT OLWINE, AIEEE Fellow 1958 "For contributions to the planning and development of a large electric power system."
LORD, CHARLES E., AIEEE Fellow 1912.
LORY, MARION RICHARDS, AIEEE Fellow 1960 "For contributions to design of large synchronous motors and electric couplings."
LOTT, HARRY ABLE, AIEEE Fellow 1958 "For contributions to the planning and operation of a major power system and the operation of major power system interconnections."
LOUD, FRANCIS MARTIN, AIEEE Fellow 1950.
LOUGHLIN, WILLIAM D., IRE Fellow 1935.
LOUGHRIDGE, CLYDE HIGBEE, AIEEE Fellow 1945.
LOUIS, HENRY CHARLES, AIEEE Fellow 1948.
LOVEJOY, J.R., AIEEE Fellow 1913.
LOVELADY, MARCUS HENRY, AIEEE Fellow 1960 "For contributions to the Southwest Power Pool Interconnected System and to engineering and management of an expanding power system."
LOVELL, ALFRED HENRY, AIEEE Fellow 1939.
LOVELL, CLEMENS MALON, AIEEE Fellow 1944.
LOVELL, WILLIAM VAIL, AIEEE Fellow 1932.
LOWE, HERBERT LAURENCE, AIEEE Fellow 1947.
LOWENBERG, MAURICE JOSEPH, AIEEE Fellow 1946.
LOWRY, HITER H., AIEEE Fellow 1929.
LOZIER, ROBERT TEN EYCK, AIEEE Fellow 1914.
LUBKIN, SAMUEL, IRE Fellow 1961 "For applications of digital computers to airborne systems."
LUCE, DONALD C., AIEEE Fellow 1949.
LUCK, DAVID G.C., IRE Fellow 1951 "For his early development of the omni-directional radio range."
LUCK, FRED T.W., AIEEE Fellow 1912.
LUCKIESH, MATTHEW, AIEEE Fellow 1940.
LUKOFF, HERMAN, IEEE Fellow 1970 "For pioneering in the development of digital computers and digital input and output devices."
LUNDY, AYRES D., AIEEE Fellow 1920.
LUTZ, SAMUEL G., IRE Fellow 1962 "For improvements in long distance communications techniques and methods of miniaturizing electronic circuitry."
LYFORD, OLIVER S., JR., AIEEE Fellow 1913.
LYMAN, JAMES, AIEEE Fellow 1913.
LYMAN, WALTER JORDAN, AIEEE Fellow 1943.
LYNDON, LAMAR, AIEEE Fellow 1917.
LYNN, CLARENCE, AIEEE Fellow 1950.
LYNN, SCOTT, AIEEE Fellow 1929.
LYON, JESSE D., AIEEE Fellow 1917.
LYON, WALDO VINTON, AIEEE Fellow 1933.
LYONS, HAROLD, IRE Fellow 1958 "For contributions to the development of atomic frequency standards."
LYONS, WALTER, IEEE Fellow 1965 "For contributions to telecommunications systems, particularly in diversity reception and spectrum conservation."
LYTLE, C. MYRON, AIEEE Fellow 1951.

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MACCALLA, C.S., AIEEE Fellow 1913.
MACCUTCHEON, A., AIEEE Fellow 1926.
MACDONALD, ANGUS A., IRE Fellow 1962 "For contributions to spectrum conservation in VHF and UHF mobile radio."
MACDONALD, WILLIAM A., IRE Fellow 1953 "For his engineering contributions and his sustained leadership in electronic development."
MACGAHAN, PAUL, AIEEE Fellow 1942.
MACGREGOR, JOHN ROY, AIEEE Fellow 1939.
MACKAVANAGH, THOMAS J., AIEEE Fellow 1934.
MAC KEOWN, SAMUEL S., IRE Fellow 1940.
MACLACHLAN, WILLS, AIEEE Fellow 1921.
MACLEOD, DONALD RIDGWAY, AIEEE Fellow 1948.
MACLEOD, HECTOR JOHN, AIEEE Fellow 1945.
MACNAUGHTON, ARCHIBALD K., AIEEE Fellow 1937.
MAGALHAES, FRANK V., AIEEE Fellow 1919.
MAGINNIS, FRANK J., AIEEE Fellow 1960 "For contributions to the application of digital computers in solution of engineering problems."
MAGNUSKI, HENRY, IEEE Fellow 1965 "For contributions to very high frequency and microwave radio communications."
MAGNUSSON, C. EDWARD, AIEEE Fellow 1913.
MAHAN, JAMES S., AIEEE Fellow 1927.
MAHONEY, HARRY PAUL, AIEEE Fellow 1947.
MAHONEY, JOSEPH N., AIEEE Fellow 1918.
MAHOOD, EDWIN TERRELL, AIEEE Fellow 1936.
MAILEY, ROY D., AIEEE Fellow 1930.
MAILLARD, ALBERT LUDOVIC, AIEEE Fellow 1948.
MAILLOUX, C.O., AIEEE Fellow 1912.
MALLETT, JOHN P., AIEEE Fellow 1913.

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A CENTURY OF HONORS
MALOFF, IOURY G., IRE Fellow 1936.
MALONEY, CHARLES WILLIAM, AIEE Fellow 1961
“For contributions to the design of electric generating stations and to a major system frequency conversion.”
MALTER, LOUIS, IRE Fellow 1952 “In recognition of his many contributions in the fields of vacuum and gas-filled tubes.”
MALTZ, MICHEL GEORGE, AIEE Fellow 1959 “For contributions to electrical engineering education through his teaching and publications.”
MANIER, ROBERT FRANCIS, AIEE Fellow 1960
“For contributions to the thermal performance of motors particularly, in enclosed forms and small ratings.”
MANSON, GEORGE K., AIEE Fellow 1923.
MANSON, RAY HERBERT, IRE Fellow 1930. AIEE Fellow 1944.
MANZ, OTTO W., J.R., IEEF Fellow 1966 “For contributions to research, design, fabrication and testing of power and communication cables.”
MAPES, LELAND RUSSELL, AIEE Fellow 1937.
MARBURG, L.C., AIEE Fellow 1913.
MARCONI, GUGLIERMO, IRE Fellow 1916.
MARKS, LOUIS B., AIEE Fellow 1913.
MARKS, RALPH L., IEEF Fellow 1966 “For contributions to communications techniques and systems and upgrading of circuit standards for global services.”
MARKS, WILLIAM S., J.R., IRE Fellow 1952 “For his contributions and leadership in the field of military communications, and his pioneering work in radio-relay systems.”
MARRIOTT, ROBERT H., IRE Fellow 1915. AIEE Fellow 1926.
MARRISON, WARREN A., IRE Fellow 1958 “For the achievement of high precision in the measurement of frequency and time by the use of piezoelectric materials.”
MARRS, R.E., IEEE Fellow 1964 “For contributions to electrification and automation of the steel industry.”
MARSH, HARRY H., J.R., AIEE Fellow 1948.
MARSHAL, ALFRED C., AIEE Fellow 1929.
MARSHALL, DONALD E., AIEE Fellow 1957 “For basic contributions to gas type electronic tubes and igniton rectifiers.”
MARSHALL, L.C., IEEE Fellow 1964 “For contributions in the fields of linear accelerators and high power microwave sources.”
MARTI, OTHMAR KARL, AIEE Fellow 1939.
MARTIN, CLARENCE ARTHUR, AIEE Fellow 1959
“For management of electrical construction of the steel, oil and chemical industries.”
MARTIN, EDWARD R., AIEE Fellow 1947.
MARTIN, TALBOT GRANT, AIEE Fellow 1932.
MARTIN, WILLIAM HENNICK, AIEE Fellow 1930.
MARTON, LADISLAUS S., IEEE Fellow 1969 “For pioneer work in electron physics (electron microscopy, electron optics, electron interferences and scattering) and for distinguished editorship.”
MARVIN, HARRY B., IRE Fellow 1950 “For his contributions to the measurements art and for pioneering work in FM, television and allied fields.”
MARYATT, ELMER F., AIEE Fellow 1947.
MASLIN, ALBERT JOSEPH, AIEE Fellow 1959 “For contributions to development of power transformers particularly for use with mercury rectifiers.”
MASON, C. RUSSELL, AIEE Fellow 1958 “For contributions to development and application of power system protective apparatus.”
MASON, SAMUEL J., IRE Fellow 1959 “For contributions in the fields of active networks and engineering education.”
MASON, WAYNE, IEEF Fellow 1965 “For contributions to international agreements on maritime radio communications and safety.”
MASSINGILL, JENNINGS A., IEEE Fellow 1978 “For contributions to the design of large steam turbine generators.”
MATHES, ROBERT CARL, AIEE Fellow 1941.
MATHEWS, CLAUDE L., AIEE Fellow 1927.
MATHEWSON, HAROLD GRANT, AIEE Fellow 1949.
MATHEY, E.D., AIEE Fellow 1919.
MATTHIEU, GASTON A., IRE Fellow 1934.
MATTHEWS, CLAUDE LEVERING, AIEE Fellow 1927.
MATTHEWS, HOWARD DAVID, AIEE Fellow 1948.
MATTHEWS, WHITNEY, AIEE Fellow 1961 “For contributions to the engineering application of Solid State phenomena and to telemetry systems.”
MATTHIES, WILLIAM H., AIEE Fellow 1929.
MAUCHLY, J.W., IRE Fellow 1957 “For pioneering contributions to the field of electronic computers.”
MAVER, WILLIAM, J.R., AIEE Fellow 1912.
MAVOR, H.A., AIEE Fellow 1913.
MAXIAN, JOHN, AIEE Fellow 1957 “For pioneering work in the application of electrical engineering principles to the design and development of electrical systems in aircraft.”
MAXWELL, ALEXANDER, AIEE Fellow 1937.
MAYER, EMIL E., IRE Fellow 1915. AIEE Fellow 1935.
MAYOTT, CLARENCE WILBUR, AIEE Fellow 1950.
MAZEN, NATALIS, AIEE Fellow 1922.
MCADAM, JOHN C., IEEE Fellow 1969 “For original and continued engineering accomplishment in the field of heat dissipation, leading to greater reliability of electronic equipment.”

MCALLISTER, A.S., AIEE Fellow 1912.

MCAULEY, P.H., IEEE Fellow 1964 “For contribution to the development, evaluation and standardization of high-voltage insulation.”

MCBARTY, FRANK ROBERT, AIEE Fellow 1918.

MCCANN, WILLIAM R., AIEE Fellow 1924.

MCCARTHY, J.B., AIEE Fellow 1927.

MCCARTY, WILLARD ROBERT, AIEE Fellow 1959 “For contributions to techniques of high voltage and corona tests of power transformers.”

MCCLELLAN, WILLIAM, AIEE Fellow 1912.

MCCLANAHEY, WILLIAM M., AIEE Fellow 1922.

MCCLAND, A. RAY, IEEE Fellow 1983 “For contributions to the development of radar and infrared reconnaissance systems and leadership in the electronics industry.”

MCCLARKIN, J. ELIOT, AIEE Fellow 1944.

MCCLARICK, BRADLEY T., AIEE Fellow 1913.

MCCLAY, DAVID O., IRE Fellow 1959 “For research in the field of radio astronomy.”

MCCLAY, ROBERT LESLIE, AIEE Fellow 1951.

MCCLAY, WALTER E., AIEE Fellow 1913.

MCCLAY, ARTHUR JAMES, AIEE Fellow 1946.

MCCLAY, JAMES W., AIEE Fellow 1915.

MCCLAY, J. J. GERALD, AIEE Fellow 1971 “For contributions to the field of ultrasonics and for editorial leadership.”

MCCLAY, W.S., IEEE Fellow 1964 “For research into the information handling processes of the nervous system.”

MCCLAY, RALPH GORDON, AIEE Fellow 1934.

MCCLAY, MARCELLUS B., AIEE Fellow 1951.

MCCLAY, ARTHUR S., IRE Fellow 1941.

MCCLAY, JOHN A., AIEE Fellow 1918.

MCCLAY, C.S., AIEE Fellow 1918.

MCCLAY, KARL B., AIEE Fellow 1937.

MC ELROY, PAUL K., IEEE Fellow 1931.

MC GELROY, PAUL K., IRE Fellow 1931.

MC GELROY, THOMAS CLAIR, AIEE Fellow 1945.

MC GELROY, JOHN ROBERT, AIEE Fellow 1951.

MC GOVERN, WILLIAM R., AIEE Fellow 1917.

MC GRAHAM, M. H., AIEE Fellow 1959 “For contributions to progressive development of high voltage power cables, particularly the pipe-enclosed gas pressure type.”

MC HENRY, MORRIS JAMES, AIEE Fellow 1947.

MC MELAINE, KNOX, IRE Fellow 1948 “For his contribution to the technical literature of radio and his activity in the field of radio aids to navigation.”

MC IVIE, GEORGE W., AIEE Fellow 1926.

MC KAY, C.R., AIEE Fellow 1913.

MC KEARIN, JAMES PATRICK, AIEE Fellow 1938.

MC KEE, EDD RUTHVEN, AIEE Fellow 1962 “For contributions to engineering education.”

MC LACHLAN, WILLARD J., AIEE Fellow 1951.

MC LAUGHLIN, HAROLD ANDREW, AIEE Fellow 1962 “For contributions to the development of principles and equipment for power system protection.”

MC LEAN, DAVID A., IRE Fellow 1962 “For contributions to the fields of capacitors and dielectric material.”

MC LEAN, WILLIAM B., IEEE Fellow 1973 “For contributions and inspiring leadership in missile and ocean technology.”

MC LEER, CHARLES B., AIEE Fellow 1920.

MC LEAN, WILLIAM, AIEE Fellow 1913.

MC LEAN, D.W., AIEE Fellow 1953 “For important developments and contributions in air conditioning, aircraft head exchanges, transformer cooling and heat pumps.”

MC LEAN, WILLARD W., JR., IEEE Fellow 1972 “For contributions to cross-field technology in high-frequency vacuum tubes for increased coherency.”

MC MANUS, CLIFFORD BRASWELL, AIEE Fellow 1958 “For contributions to reinforcement and expansion of electric utility systems serving a large area.”

MC MEEN, S.G., AIEE Fellow 1912.

MC MICHAEL, LESLIE, IRE Fellow 1925.

MC MILLAN, FRED O., IRE Fellow 1932.

MC NALL, JOHN W., IEEE Fellow 1970 “For contributions in microwave technology, and for direction of research and development in light sources.”

MC NEELY, JOHN K., AIEE Fellow 1931.

MC NICHOL, DONALD, IRE Fellow 1924.

MC NICHOL, DONALD, AIEE Fellow 1918. IRE Fellow 1924.

MC PAILL, HARVEY F., AIEE Fellow 1942.

MC QUARIE, JAMES L., AIEE Fellow 1926.

MC RAE, JAMES W., IRE Fellow 1947 “For outstanding work in the planning of research and development programs in radar and countermeasures and for his researches in radio transmitting methods.”

MC RCHAM, L.A., IRE Fellow 1948 “For his contributions in the fields of radar range measurement and pulse code modulation.”

MC RCHAM, DANI W., AIEE Fellow 1913.

MC RCHAM, WILLIAM G., IEEE Fellow 1978 “For research management in the electric power industry.”

MEISSNER, ALEXANDER, IRE Fellow 1915.
MEKELBURG, EARL F., AIEE Fellow 1957 “For contributions to the design and application of industrial control.”

MELLETT, JOHN EDWARD, AIEE Fellow 1949.
MELSON, SYDNEY WILLIAM, AIEE Fellow 1926.
MEREDITH, WYNN, AIEE Fellow 1913.
MERGENTHALER, ADOLF H., AIEE Fellow 1959 “For contributions to planning of economic power system generating capacity.”

MERRELL, EDWIN JOSEPH, AIEE Fellow 1958 “For contributions to the art of high voltage cables.”

MERRILL, BARRETT M., AIEE Fellow 1928.
MERRILL, FRANK WINTHROP, AIEE Fellow 1950.
MERRILL, JOSEPH F., AIEE Fellow 1913.
MERSHON, RALPH D., AIEE Fellow 1912.

MERTZ, PIERRE, IRE Fellow 1950 “In recognition of his important contributions to the fundamental concepts of television transmission and reception.”

MERWIN, LOUIS TUNIS, AIEE Fellow 1933.
MERWIN, ROBERT B., IEEE Fellow 1975 “For development of ferrite core memories and computer hardware and software programs.”

MERZ, CHARLES H., AIEE Fellow 1913.
MESERVE, WILBUR E., IEEE Fellow 1965 “For contributions to engineering education.”

MESZAR, JOHN, AIEE Fellow 1959 “For contributions in the field of automatic telephone interconnecting technology.”

MEYER, EDWARD B., AIEE Fellow 1927.
MEYER, FRANK J., AIEE Fellow 1936.

MEYER, H. F., IEEE Fellow 1964 “For contributions to the development of advanced communication systems for the Armed Forces.”

MEYERHOFF, LOUIS, AIEE Fellow 1958 “For contributions to the development of high voltage cables.”

MICHALOWICZ, JOSEPH CASIMIR, AIEE Fellow 1959 “For contributions to the education of electrical engineers.”

MICHELL, HUMPHREY G., AIEE Fellow 1949.
MIER, C. WALKER, AIEE Fellow 1939.

MIKINA, STANLEY JOSEPH, AIEE Fellow 1948.
MILBURN, LOYAL R., AIEE Fellow 1939.

MILDNER, RAYMOND C., IEEE Fellow 1973 “For contributions in the research, development, and manufacture of high-voltage, line communication and radio frequency cables.”

MILES, PAUL D., IEEE Fellow 1966 “For contributions to the efficient utilization of the radio spectrum and management of frequency allocations.”

MILLAN, WALTER H., AIEE Fellow 1927.

MILLARD, THOMAS O., AIEE Fellow 1951.
MILLER, ALLEN S., AIEE Fellow 1912.

MILLER, ARTHUR, IEEE Fellow 1971 “For contributions to data amplification and recording in medical and industrial application.”

MILLER, B.F., IRE Fellow 1956 “For improvements in sound recording techniques, and for the application of electronics in isotope separation.”

MILLER, CHARLES J., JR., AIEE Fellow 1956 “For his contributions to the knowledge of factors influencing high-voltage phenomena.”

MILLER, CHARLEY WALTER, AIEE Fellow 1962 “For contributions in the field of large power transformer design, and in high voltage insulation.”

MILLER, DECATUR S., AIEE Fellow 1913.

MILLER, J. EDGAR, AIEE Fellow 1913.

MILLER, JAMES SHANNON, JR., AIEE Fellow 1947.

MILLER, JOHN HAROLD, AIEE Fellow 1942. IRE Fellow 1950 “For his long activity and many contributions in the field of electrical metering and measuring technique.”

MILLER, JOHN LEONARD, AIEE Fellow 1947.

MILLER, JOHN M., IRE Fellow 1920.

MILLER, KEMPSTER B., AIEE Fellow 1927.

MILLER, LLOYD E., AIEE Fellow 1945.

MILLER, WILLIAM COOK, AIEE Fellow 1943.

MILLER, WILLIAM J., AIEE Fellow 1944.

MILLIKEN, HUMPHREYS, AIEE Fellow 1939.

MILLIS, WALTER T., IEEE Fellow 1966 “For contributions to the electron tube art and standardization.”

MILLS, GEORGE ARTHUR, AIEE Fellow 1945.

MILLS, JOHN, AIEE Fellow 1923. IRE Fellow 1930.

MILLS, WILLIAM F., IRE Fellow 1925.

MILNE, GORDON R., AIEE Fellow 1949.

MILNER, CALRISLE K., AIEE Fellow 1957 “For his contributions to executive and technological leadership of a communication enterprise.”

MILNOR, JOSEPH WILLARD, AIEE Fellow 1930.

MILTON, TAILAFERRO, AIEE Fellow 1920.

MIMNO, HARRY R., IRE Fellow 1958 “For his leadership in ionospheric research.”

MINER, DOUGLAS FULLER, AIEE Fellow 1940.

MINNIBUM, BYRON B., IEEE Fellow 1959 “For the development of electronic components and for service to the radio engineering profession.”

MINOR, EDWARD E., JR., AIEE Fellow 1948.

MINSKY, MARVIN L., IEEE Fellow 1968 “For his research and educational leadership in the field of artificial intelligence and heuristic programming.”
MINTON, JOHN P., IRE Fellow 1923.
MIRANDA, FREDERICK J., IEE Fellow 1974 "For contributions to the design and development of extra-high-voltage cables."
MIRICK, CARLOS BROWN, AIEE Fellow 1947.
MITCHELL, JAMES, AIEE Fellow 1916.
MITCHELL, WILLIAM E., AIEE Fellow 1922.
MITSCHRICH, MELVILLE F., AIEE Fellow 1945.
MITSUDA, RYOTARO, AIEE Fellow 1920.
MITSURA, SAYEKI, IRE Fellow 1916.
MITTAG, ALBERT H., AIEE Fellow 1956 "For his contributions in the field of power rectification."
MITTELMANN, EUGENE, IRE Fellow 1957 "For pioneering in the field of industrial electronics."
MIYAZAKI, GENTARO, IEEE Fellow 1978 "For contributions to color television receiver development and leadership in international communications."
MOLE, HARVEY E., AIEE Fellow 1913.
MOLINA, EDWARD C., AIEE Fellow 1951.
MOLLER, ROLF, IRE Fellow 1956 "For contributions to the development of television in Germany."
MOLLERUS, FRED J., Sr., AIEE Fellow 1962 "For contributions to the design and operation of electrical systems for atomic energy plants."
MOLNER, J.P., IRE Fellow 1960 "For contributions to gaseous and solid-state electron devices."
MOLONEY, THOMAS O., AIEE Fellow 1945.
MONK, NEWTON, IEEE Fellow 1964 "For contributions to mobile radio telephone systems for railroads."
MONROE, WILLIAM S., AIEE Fellow 1925.
MONTGOMERY, A.W., IRE Fellow 1954 "For his leadership in radio and telecommunication research in England, and his services in the international liaison in these fields."
MONTGOMERY, TERRYL B., AIEE Fellow 1949.
MONTIETH, ALEXANDER CRAWFORD, AIEE Fellow 1945.
MONTSINGER, VINCENT M., AIEE Fellow 1929.
MOODY, V.D., AIEE Fellow 1912.
MOODY, WALTER S., AIEE Fellow 1912.
MOON, PARRY H., AIEE Fellow 1934.
MOORE, D. MCFARLAN, AIEE Fellow 1912.
MOORE, EDWARD ROYAL, AIEE Fellow 1958 "For his contributions in the planning and development of a large electric power system."
MOORE, EDWARD T., AIEE Fellow 1921.
MOORE, ERNEST ELLSWORTH, AIEE Fellow 1931.
MOORE, J. BURTON, IRE Fellow 1960 "For improvements in communications coding techniques."
MOORE, LEE M., AIEE Fellow 1945.
MOORE, LEONARD J., AIEE Fellow 1942.
MOORE, R.C., IRE Fellow 1955 "For his contributions to television circuitry."
MOORE, ROBERT B., IEEE Fellow 1975 "For leadership and technical contributions to the advancement of systems engineering in serving the needs of industry."
MOORE, WILLIAM E., AIEE Fellow 1913.
MORACK, MARVIN M., AIEE Fellow 1953 "For contributions in the development of mercury arc rectifiers, and their application to electronic frequency conversion and variable speed power drives."
MORECOCK, EARL M., AIEE Fellow 1948.
MORECROFT, JOHN H., AIEE Fellow 1919. IRE Fellow 1922.
MOREHEAD, JOHN M., AIEE Fellow 1919.
MOREHOUSE, LYMAN F., AIEE Fellow 1920.
MORELAND, EDWARD L., AIEE Fellow 1921.
MORELAND, HENRY D., AIEE Fellow 1948.
MORENO, THEODORE, IRE Fellow 1960 "For contributions in the field of microwave electronics."
MORGAN, SAMUEL P., IRE Fellow 1962 "For contributions to electromagnetic theory."
MORGAN, THEODORE HARDING, AIEE Fellow 1939.
MORGAN, WENDERAL ALTON, AIEE Fellow 1951.
MORITA, TETSU, IEEE Fellow 1966 "For contributions in the fields of antennas and the interaction of electromagnetic energy with plasmas."
MORITZ, CHARLES H., AIEE Fellow 1913.
MORKENSEN, NIELS L., AIEE Fellow 1920.
MORLOCK, W.J., IRE Fellow 1957 "For pioneering work in sound systems, and for contributions to engineering management."
MORRILL, WESTON, IEEE Fellow 1967 "For his outstanding contributions in the development of magnetic core materials that have drastically reduced the cost of producing and transmitting electrical power."
MORRIS, SAMUEL B., AIEE Fellow 1957 "For his achievements in engineering education and in the development and operation of a large metropolitan water and power system."
MORRISON, JOHN WILLIAM, AIEE Fellow 1943.
MORRISON, LAURENCE W., IEEE Fellow 1970 "For contributions and leadership in the development of large electronic systems."
MORROW, L.W.W., AIEE Fellow 1925.
MORSE, GEORGE HART, AIEE Fellow 1922.
MORSS, EVERETT, AIEE Fellow 1913.
MORTON, JACK A., IRE Fellow 1953 "For his leadership and contributions to the engineering physics and de-
velopment of transistors and of wide-band microwave electron tubes.”

MORTON, ROBERT B., AIEE Fellow 1920.
MORTON, WALTER B., AIEE Fellow 1942.
MOSES, GRAHAM LEE, AIEE Fellow 1950.
MOSES, PERCIVAL R., AIEE Fellow 1912.
MOSMAN, CHARLES T., AIEE Fellow 1913.
MOSSAY, PAUL A., AIEE Fellow 1928.
MOTTER, W.N., AIEE Fellow 1912.
MOULTRON, JAMES SEYMOUR, AIEE Fellow 1949.
MOULTROP, IRVING E., AIEE Fellow 1929.
MOUNTAIN, JOHN T., AIEE Fellow 1920.
MOUROMTSEFF, ILIA E., IRE Fellow 1947 “In recognition of his contributions to vacuum tube development, particularly transmitting tubes.”

MOWBRAY, WILLIAM J., AIEE Fellow 1931.
MOXLEY, STEPHEN D., JR., IEEE Fellow 1975 “For contributions to electronic geophysical exploration, air traffic control technology, and engineering management.”

MOYERS, WALTER RAYMOND, JR., AIEE Fellow 1962 “For contributions to the development and management of a large electric utility system.”

MUDGE, A.L., AIEE Fellow 1912.
MUELLER, GEORGE VERNON, AIEE Fellow 1950.
MUIR, ROY CUMMINGS, AIEE Fellow 1936.
MULLEN, JAMES J., AIEE Fellow 1944.
MULLER, CORNELIS A., IEEE Fellow 1973 “For contribution to the knowledge of the the structure of galexies.”

MULLER, HENRY NICHOLAS, JR., AIEE Fellow 1949.

MULLER, HENRY NIKOLA, AIEE Fellow 1947.
MULLER, JOHN H., IEEE Fellow 1968 “For contributions in the extending radiocommunication to global telegraph and telephone systems.”

MURPHY, FRANCIS H., AIEE Fellow 1930.
MURPHY, GEORGE R., IEEE Fellow 1920.
MURPHY, JOHN, AIEE Fellow 1913.
MURPHY, O.J., IEEE Fellow 1964 “For contributions to the art of communication system signaling and switching control.”

MURRAY, ALBERT F., IRE Fellow 1938.
MURRAY, THOMAS E., AIEE Fellow 1912.
MURRAY, THOMAS EDWARD, JR., AIEE Fellow 1933.

MURRAY, WILLIAM ARTHUR, AIEE Fellow 1944.
MURRAY, WILLIAM S., AIEE Fellow 1912.
MUSGROVE, ALBERT MILLARD, AIEE Fellow 1945.

MYERS, BASIL R., IEEE Fellow 1969 “For outstanding leadership in engineering education and administration.”

MYERS, OSCAR, IEEE Fellow 1966 “For contributions to the development of common-control telephone switching systems and direct distance dialing.”

NAEF, OTTO, AIEE Fellow 1961 “For contributions in the fields of arc extinction and insulation coordination which contributed to successful design of high voltage power systems, especially for extra high voltage circuit breakers.”

NAETER, ALBRECHT, AIEE Fellow 1953 “For achievement in coordinating effective technical teaching with educational administration and direction of collegiate research.”

NANCE, HORACE H., AIEE Fellow 1947.
NARBUT, PAUL, AIEE Fellow 1962 “For contributions in the thermal field of transformers, and the development of transformer insulation and cooling systems.”

NARESKY, JOSEPH J., IEEE Fellow 1976 “For contributions to the quantification of electronic equipment reliability.”

NASH, GEORGE HOWARD, AIEE Fellow 1920.
NASH, JOHN P., IEEE Fellow 1969 “For contributions to the design and programming of computers, and leadership in industrial applications of information processing.”

NASON, HORACE EDWARD, AIEE Fellow 1951.
NATHAN, EUGENE J., AIEE Fellow 1940.
NEALL, N.J., AIEE Fellow 1912.

NEHER, JOHN HUTCHINS, AIEE Fellow 1958 “For contributions to protective relay schemes and research on the thermal factors in underground power cables.”

NEIDIG, RALPH E., AIEE Fellow 19 . 9 “For contributions to planned development and operating reliability of an electric power system.”

NEILER, SAMUEL G., AIEE Fellow 1913.

NELSON, ARTHUR R., AIEE Fellow 1955 “In recognition of his engineering and administrative achievement in the overall guidance of the continued development and expansion of one of the nations largest transmission and distribution systems.”

NELSON, EDWARD L., IRE Fellow 1938.

NELSON, JOHN MAGNUS, AIEE Fellow 1962 “For contributions to the engineering and management of a large electric public utility.”

NELSON, RICHARD B., IRE Fellow 1962 “For contributions to high power wideband klystrons.”

NESTEL, WERNER M., IEEE Fellow 1965 “For achievements in radio and electronics, especially FM radio broadcasting and television networks.”

NETHERCUT, DONALD WARREN, AIEE Fellow 1945.
NEWBOLD, R.M., AIEE Fellow 1912.
NEWBURY, FRANK D., AIEE Fellow 1921.
NEWMAN, JOHN MILTON, AIEE Fellow 1949.
NEWTON, JOHN M., SR., AIEE Fellow 1937.
NICHOLS, LOUIS C., AIEE Fellow 1913.
NICHOLS, W.A., IRE Fellow 1955 "For his contributions to the construction of the national radio system in Canada."
NICHOLSON, S.L., AIEE Fellow 1913.
NICOLL, F.H., IRE Fellow 1961 "For contributions in electron optics and electroluminescence."
NIKLAS, WILFRID F., IEEE Fellow 1971 "For technical contributions in image intensification devices, and leadership in the application of these devices for medical diagnostic purposes."
NIMS, ALBERT ARMSTRONG, AIEE Fellow 1953 "For outstanding contributions to the electrical engineering profession in the theory and design of arc welding equipments, armature windings of electric machines, and in electric network analysis. Also, outstanding contributions to engineering education."
NIMS, FREDERICK, AIEE Fellow 1912.
NIPPEL, IRA S., AIEE Fellow 1949.
NISSEN, JACOB PREBENSEN, AIEE Fellow 1922.
NIWA, YASUJIRO, IRE Fellow 1954 "For his leadership in radio engineering in Japan, and his contributions to vocational education."
NOAKES, FRANK, AIEE Fellow 1962 "For contributions to electrical engineering education and research."
NOBLE, DANIEL EARL, IRE Fellow 1947 "In recognition of his contributions to the design and application of very-high frequency voice communication systems for police and other emergency services."
NOBLE, HARRELL V., IRE Fellow 1958 "For leadership in the development of electron tubes and components."
NOBLE, PAUL O., AIEE Fellow 1949.
NOE, JAMES BRYAN, AIEE Fellow 1930.
NOEGGERATH, J.E., AIEE Fellow 1913.
NOEST, JOHN G., AIEE Fellow 1951.
NOODLEMAN, SAMUEL, IEEE Fellow 1977 "For contributions to the design of electric motors."
NORDELL, ROBERT, AIEE Fellow 1961 "For contribution to the design and manufacturing of high voltage cables and for the development of welded aluminum sheaths for cables."
NORDLUND, RAYMOND J., IEEE Fellow 1970 "For research in aerospace digital computers, microelectronic technology, and advanced navigation and guidance equipment; and for pioneering effort in system analysis."
NORELL, ELMER G., AIEE Fellow 1958 "For his contributions to the advancement of large scale electrical power generation."
NORINDER, HAROLD, AIEE Fellow 1956 "For his preeminent contributions to lightning protection of electrical circuits and to high voltage power transmission."
NORMAN, HENRY M.P., IRE Fellow 1915.
NORRIS, ERIC DOUGLAS TOBIAS, AIEE Fellow 1930.
NORRIS, FERRIS WALDO, AIEE Fellow 1945.
NORRIS, HENRY N., AIEE Fellow 1912.
NORTHMORE, EMANUEL RICHARD, AIEE Fellow 1928.
NORTHROP, EDWIN F., AIEE Fellow 1913.
NORTON, EDWARD L., IRE Fellow 1962 "For fundamental contributions to circuit theory."
NORTON, FRANK R., IRE Fellow 1960 "For contributions to radar television."
NORTON, WILLIAM J., AIEE Fellow 1922.
NOTT, GORDON EUGENE, AIEE Fellow 1945.
NOTTINGHAM, W.B., IRE Fellow 1956 "For basic studies, teaching, and leadership in the field of physical electronics."
NOTTORF, WILLIAM E.A., AIEE Fellow 1930.
NUNAN, JAMES KNEELAND, AIEE Fellow 1962 "For contributions to the direction of scientific military and industrial engineering projects."
NYE, HENRY V., AIEE Fellow 1940.
NYQUIST, HARRY, AIEE Fellow 1951. IRE Fellow 1952 "In recognition of his fundamental contributions to physical and mathematical sciences in the field of communications."
NYSTROM, C.W., AIEE Fellow 1945.

O

O'BANION, ALBERT LEE, AIEE Fellow 1950.
OBOUKHOFF, NICOLAS MICHAILOVICH, AIEE Fellow 1938.
OCH, HENRY G., IEEE Fellow 1968 "For his contributions to analog and digital computer design and utilization in military systems."
O'CONNOR, ROGER RUSSELL, AIEE Fellow 1950.
ODARENKO, TODOS M., IRE Fellow 1959 "For contributions to the development of radio transmission systems, techniques and components."
OEHLER, ALFRED G., AIEE Fellow 1926.
OESTERREICH, EDMUND W., AIEE Fellow 1942.
OETINGER, HERBERT WILLIAM, AIEE Fellow 1952.
OGDEN, HAROLD STEPHEN, AIEE Fellow 1962 "For contributions to electric locomotive and multiple unit
control systems.”

OHITSUKI, TAKASHI, IEEE Fellow 1967 “For his contributions to the theory and techniques of electric power transmission and his services to engineering education.”

OLDACRE, MARMION S., AIEE Fellow 1947.

OLIVE, G.W., IRE Fellow 1951 “For major contributions to the development of radio broadcasting in Canada, and in particular, for the engineering and organization of Canadian Overseas broadcast service during the war.”

OLLENDORF, FRANZ, IRE Fellow 1960 “For contributions to electromagnetic theory and engineering education.”

OLSEN, MAXWELL L., AIEE Fellow 1951.

OLSON, H.F., IRE Fellow 1949 “For his outstanding developments and publications in the fields of acoustics and underwater sound.”

OLSON, ROBERT W., IRE Fellow 1959 “For leadership in geophysical research.”

O’NEILL, GEORGE, IRE Fellow 1949 “For his work in electron tube theory and design.”

OPLINGER, KIRK AUGUSTUS, AIEE Fellow 1948.

ORSETTICH, ROBERT, AIEE Fellow 1926.

ORTUSI, JEAN A., IEEE Fellow 1970 “For pioneering work in wave-guide theory, for original studies of circuit analysis and synthesis, and for contributions to the education of electronic engineers.”

OSBORN, JOSEPH AUGUSTUS, AIEE Fellow 1912.

OSBORNE, LOYALL A., AIEE Fellow 1912.

OSENBAUGH, CHESTER LAMOTT, AIEE Fellow 1958 “For design and administrative achievements in directing the engineering, construction and operation of an electric utility system.”

OSGOOD, FARLEY, AIEE Fellow 1912.

OSTERGREN, CLARENCE N., IEEE Fellow 1964 “For contributions to engineering economics in public utilities.”

OSTLINE, JOHN ELLIS, AIEE Fellow 1946.

OSTRANDER, JOHN K., AIEE Fellow 1954 “In recognition of extensive contributions made to large industrial and public utility power projects.”

OSWALD, ARTHUR A., IRE Fellow 1928. AIEE Fellow 1930.

OTTEN, HARRY CHARLES, AIEE Fellow 1962 “For contributions in the field of electric public utility system operation and power interchange.”

OUDIN, JEAN M.A.H., IEEE Fellow 1971 “For contribution to the development of high-voltage cables and submarine cables for power and communications.”

OWENS, JAMES W., AIEE Fellow 1927.

OXLEY, ALLEN B., IRE Fellow 1953 “For his contributions and sustained leadership in radio engineering and manufacturing in Canada.”

PACENT, LOUIS GERARD, IRE Fellow 1927. AIEE Fellow 1930.

PACKARD, L.E., IRE Fellow 1957 “For contributions in the field of electronic instrumentation.”

PAGE, ARCHIBALD, AIEE Fellow 1929.

PAGE, GLENN L., AIEE Fellow 1945.

PAINE, F.B.H., AIEE Fellow 1912.

PAINE, SIDNEY B., AIEE Fellow 1912.

PALANDRI, GIUSEPPE L., IEEE Fellow 1966 “For contributions to the development of power cable systems.”

PALMER, GEORGE W., AIEE Fellow 1912.

PALMER, GRANVILLE ERNST, AIEE Fellow 1936.

PALMER, RALPH L., IEEE Fellow 1967 “For technical and managerial leadership in the development and design of digital computers.”

PALMER, RAY, AIEE Fellow 1915.

PALUEV, KONSTANTIN K., AIEE Fellow 1948.

PANNEL, ERNEST V., AIEE Fellow 1925.

PANNILL, CHARLES JACKSON, IRE Fellow 1929.

PANTER, THOMAS ALFRED, AIEE Fellow 1926.

PARKER, HENRY W., IRE Fellow 1952 “In recognition of his contributions in the field of electron tube design.”

PARKER, JOHN C., AIEE Fellow 1912.

PARKER, JOHN CLIFTON, AIEE Fellow 1951.

PARKER, RALZEMOND DRAKE, AIEE Fellow 1946. IRE Fellow 1959 “For pioneer developments of teleprinter and data transmission systems.”

PARKHURST, CHARLES W., AIEE Fellow 1913.

PARKS, CHARLES WELLMAN, AIEE Fellow 1923.

PARRACK, VASCO R., AIEE Fellow 1949.

PARSHALL, HORACE F., AIEE Fellow 1913.

PATCHELL, WILLIAM H., AIEE Fellow 1913.

PATTERSON, GEORGE W., IEEE Fellow 1913, IRE Fellow 1959 “For leadership in the development of machine logic and switching theory.”

PATTERSON, JAMES GEORGE, AIEE Fellow 1944.

PATTERSON, LEROY R., AIEE Fellow 1957 “For his contributions to the planning and development of an electric power system and related interconnections.”

PATTERSON, LUCIUS LAMAR, AIEE Fellow 1951.

PATTISON, DONALD R., AIEE Fellow 1948.

PATTISON, FRANK, AIEE Fellow 1913.

PAULSEN, ALFRED G., AIEE Fellow 1928.

PAULUS, CLARENCE FRANCIS, AIEE Fellow 1960 “For contributions to the technology and design of large thermal electric generating stations.”

PAXSON, HOUSTON RANDOLPH, AIEE Fellow 1951.
PAXTON, EARL B., AIEE Fellow 1954 “For contributions to the formulation and organization of standards in the electrical field and promotion of their acceptance and use by industry, and their coordination with other national and international codes.”

PAXTON, ROBERT, AIEE Fellow 1948.

PAYNE, BASIL THEODORE, AIEE Fellow 1962 “For contributions in electrical substation design and standardization.”

PEARCE, CULLEN THOMAS, AIEE Fellow 1949.

PEARCE, JAMES G., IEEE Fellow 1973 “For contributions to the development of electronic telephone switching systems.”

PEARCE, S.L., AIEE Fellow 1912.

PEARSON, EDGAR FORD, AIEE Fellow 1937.

PEASE, EUGENE L., AIEE Fellow 1951.

PEASLEE, W.D.A., AIEE Fellow 1927.

PECK, BERT H., AIEE Fellow 1923.

PECK, EMERSON P., AIEE Fellow 1923.

PECK, HENRY W., AIEE Fellow 1913.

PECK, J.S., AIEE Fellow 1912.

PEDERSEN, PEDER OLUF, IRE Fellow 1915. AIEE Fellow 1920.

PEDERSEN, SVEND A.C., IEEE Fellow 1970 “For contributions in the development of measurement methods applicable to radio receivers, and for leadership in international standardization.”

PEEBLES, JOHN B., AIEE Fellow 1933.

PEEK, FRANK W., AIEE Fellow 1925.

PEIRCE, ALBERT EDWIN, AIEE Fellow 1917.

PEND DELL, C.W., AIEE Fellow 1912.

PENDER, HAROLD, AIEE Fellow 1914.

PENMAN, ROY FRANKLIN, AIEE Fellow 1944.

PENN, MARION, AIEE Fellow 1935.

PENNELL, WALTER O., AIEE Fellow 1922.

PENNIMAN, ABBOTT L., JR., AIEE Fellow 1943.

PERKINS, CHARLES ALBERT, AIEE Fellow 1940.

PERRY, IRVING DAVIDSON, AIEE Fellow 1959 “For contributions to the use of microwaves for utility system communication and protection.”

PERRY, LESLIE LAURENCE, AIEE Fellow 1912.

PERRY, WILLIAM W., AIEE Fellow 1946.

PERSONS, JAMES TURNER, AIEE Fellow 1951.

PESHELL, WILLIAM, AIEE Fellow 1913.

PESHION, GIUSEPPE, IRE Fellow 1929.

PETERS, JOHN FINDLEY, AIEE Fellow 1923.

PETERSON, ARTHUR C., IRE Fellow 1962 “For contributions to short-wave telephony.”

PETERSON, EUGENE, AIEE Fellow 1951. IRE Fellow 1959 “For analysis and application of nonlinear devices in communication.”

PETERSON, JOHN BEVILL, AIEE Fellow 1948.

PETERSON, R.S., AIEE Fellow 1953 “For outstanding ingenuity and important contributions in the field of underground transmission and distribution of large blocks of power at high voltages in the form of improved types of insulated cables and cable accessories.”

PETERSON, WILLIAM SIMON, AIEE Fellow 1946.

PETURA, FRANK J., AIEE Fellow 1931.

PETZINGER, AMBROSE J., AIEE Fellow 1957 “For original developments in the field of electrical measurements.”

PHILLIPS, LEO A., AIEE Fellow 1913.

PIATT, WILLIAM MCKINNEY, AIEE Fellow 1939.

PICKARD, GREENLEAF W., AIEE Fellow 1912. IRE Fellow 1916.

PICKING, JAY WILFRED, AIEE Fellow 1960 “For contributions to development of automation by means of electronically controlled systems.”

PIELOW, HANSWERNER K., IEEE Fellow 1965 “For pioneering work in electoacoustics, photographic recording, and tape recording.”

PIECE, ARTHUR G., AIEE Fellow 1920.

PIECE, D. LAWRENCE, IEEE Fellow 1966 “For his inventions and leadership in developing and standardizing industrial control equipments.”

PIECE, DANA, AIEE Fellow 1928.

PIECE, GEORGE W., IRE Fellow 1915.

PIECE, HOMER J., AIEE Fellow 1951.

PIKE, O.W., IRE Fellow 1951 “For his pioneering contributions and his leadership in the development and design of industrial and radio tubes.”

PIKLER, ARMIN H., AIEE Fellow 1913.

PIKLER, HENRY, AIEE Fellow 1921.

PILLIOD, JAMES J., AIEE Fellow 1934.

PINTO, ANTHONY, AIEE Fellow 1951.

PIPER, WILLIAM JOHN, AIEE Fellow 1961 “For contributions to the field of power metering.”

PIPES, LOUIS A., IRE Fellow 1958 “For his contributions to the fields of electronics and engineering mathematics.”

PLUMB, HENRY HAMMOND, AIEE Fellow 1951.

PLUMB, HYLON THERON, AIEE Fellow 1941.

PODOLSKY, LEON, AIEE Fellow 1956, IRE Fellow 1957 “For his leadership and contributions in the field of electronics and electrical component engineering.”

POLHEMUS, JAMES H., AIEE Fellow 1946.

POLLARD, ALFRED LEON, AIEE Fellow 1959 “For contributions to development and operating management of a large electric utility.”
POLLARD, N.L., AIEE Fellow 1913.
POLLACK, SAMUEL HURLEY, AIEE Fellow 1962 "For contributions to the application and control of capacitors of Power Systems."
PONATOFF, ALEXANDER M., IEEE Fellow 1965 "For outstanding leadership in the magnetic recording industry."
PONTE, M. J. H., IRE Fellow 1954 "For his contributions to high-power electron tubes, and his unswerving leadership in electronic research in France."
POOLE, ARTHUR BARNARD, AIEE Fellow 1959 "For contributions to creative design and manufacture of refined timing mechanisms by electrical means."
POOLE, C.O., AIEE Fellow 1913.
POOLE, CECIL P., AIEE Fellow 1913.
POOLE, ROBERT E., AIEE Fellow 1953 "In recognition of able administration of scientific and engineering projects, and contributions to the development of radio telephony and television, radar, and atomic weapons."
PORSKIEVES, ANTHONY J., AIEE Fellow 1925.
PORTER, FREDERICK MEREDITH, AIEE Fellow 1960 "For contributions to hydrogen cooling of synchronous condensers and generators, excitation systems and high voltage transmission."
PORTER, GEORGE A., AIEE Fellow 1961 "For contributions to engineering, organization and professional development in a large electric utility."
PORTER, JOSEPH F., AIEE Fellow 1933.
PORTER, LAWRENCE COPELAND, AIEE Fellow 1936.
PORTER, ROLAND GUER, AIEE Fellow 1944.
PORTS, D.C., IRE Fellow 1961 "For contributions to research in electromagnetic propagation."
PORTS, EARL GEORGE, AIEE Fellow 1946.
POST, GEORGE GILBERT, AIEE Fellow 1933.
POTE, ALFRED J., IRE Fellow 1959 "For contributions to high power accelerators, radio frequency heating and communication systems."
POTTER, CHARLES P., AIEE Fellow 1929.
POTTER, JOHN T., IEEE Fellow 1971 "For contributions to the technology of electronic data-processing equipment, and for leadership in the design and production of such equipment."
POTTER, RALPH K., IRE Fellow 1941.
POUARD, MICHEL J., IEEE Fellow 1978 "For contributions to the development and testing of high-voltage switchgear and to high-voltage and high-current testing."
Poulsen, Valdemar, IRE Fellow 1915.
PoweL, CHARLES ALFRED, AIEE Fellow 1941.
Powell, ALVIN L., AIEE Fellow 1926.
Powell, WILLIAM H., AIEE Fellow 1912.
PRATT, HARRADEN, IRE Fellow 1929. AIEE Fellow 1937.
PRATT, WILLIAM H., AIEE Fellow 1913.
PRICE, L.M., IRE Fellow 1949 "For his contributions to the development, production and application of electron tubes in Canada."
PRICE, LESLIE D., AIEE Fellow 1951.
PRICE, WILLIAM S., IEEE Fellow 1970 "For contributions to the electrical, mechanical, and environmental aspects of EHV transmission."
PRIEST, CONAN A., IRE Fellow 1947 "For his contributions as an engineer, executive and organizer in the field of radio transmitter development and design."
PRIEST, DONALD H., IEEE Fellow 1965 "For contributions in extending the limits on power and frequency in communications and radar."
PRIHAR, ZVI, IEEE Fellow 1964 "For contributions to communications systems, and for applications of operations analysis to communications networks."
Puchstein, Albert F., AIEE Fellow 1951.
Puffer, William L., AIEE Fellow 1913.
Punchard, J.C.R., IRE Fellow 1953 "For his contributions to the design and development of communication and radar equipment, particularly for the Canadian Armed Services."
Pupin, Michael L., IRE Fellow 1915.
Putman, Henry St. Clair, AIEE Fellow 1912.
Pye, Harvey Norris, AIEE Fellow 1950.
Q
Quarles, Donald Aubrey, AIEE Fellow 1941.
Quarles 1954 "For his distinguished service in the administration of major technical programs in the fields of communications, military electronics and atomic ordnance."
Quinan, George E., AIEE Fellow 1918.
R
Raddin, Ellery H., AIEE Fellow 1956 "For his accomplishments in applying engineering principles to the development of new light sources."
Rader, John Frank, AIEE Fellow 1959 "For contributions to design, construction and operation of an electric utility system."
Rader, Ray, AIEE Fellow 1950.
Radford, William Henry, IRE Fellow 1954 "In recognition of his contributions through teaching and research in the field of radio communications."
Ralph E. AIEE Fellow 1959 "For his contributions to national defense through education and communications."
RANDOLPH, L.S., AIEE Fellow 1913.
RANGER, RICHARD HOWLAND, IRE Fellow 1928.
AIEE Fellow 1951.
RAO, VEPA V.I., IEEE Fellow 1965 “For contributions
to engineering education in India.”
RAPPAORT, PAUL, IEE Fellow 1970 “For contributions
to energy-conversion devices, and for leadership
in the professional organization of this field.”
RATHBUN, HAROLD VERNON, AIEE Fellow 1961
“For contributions to the design and development of trans-
mission and distribution systems in Central Kansas.”
RAUTH, ADOLPH WILLIAM, AIEE Fellow 1948.
RAWCLIFFE, GORDON H., IEEE Fellow 1970 “For contribu-
tions to electrical-machines development, particularly
in the field of pole-amplitude modulation.”
RAYMOND, FRANCOIS H., IRE Fellow 1962 “For contribu-
tions to the analysis and development of electronic
computers and automation systems.”
REA, WILTON TREAT, AIEE Fellow 1962 “For contribu-
tions to telegraph, teletype and data transmission sys-
tems.”
READ, ERNEST KENNETH, AIEE Fellow 1948.
READY, LESTER S., AIEE Fellow 1936.
REAGAN, MAURICE E., AIEE Fellow 1941.
REBER, HENRY LINTON, AIEE Fellow 1913.
REBER, SAMUEL, AIEE Fellow 1912. IRE Fellow
1923.
REDDING, CHARLES SUMMERFIELD, AIEE Fel-
low 1948.
REED, HARRISON P., AIEE Fellow 1921.
REED, HENRY R., AIEE Fellow 1947. IRE Fellow 1960
“For contributions to engineering education.”
REED, M.B., IRE Fellow 1961 “For contributions to the
understanding of electrical networks.”
REED, W. EDGAR, AIEE Fellow 1913.
REES, JOHN BARTOW, AIEE Fellow 1932.
REEVE, JOHN, IEEE Fellow 1981 “For contributions
to high-voltage direct current transmission systems.”
REIBER, ALBERT H., AIEE Fellow 1940.
REID, CHARLES ROY, AIEE Fellow 1944.
REID, HARRY, AIEE Fellow 1931.
REID, JOHN D., IRE Fellow 1949 “For his develop-
ments in radio frequency circuits.”
REIGER, SIEGFRIED H., IEEE Fellow 1969 “For con-
tributions to data transmission and to the establish-
ment of the first commercial communications satellite system.”
REIMERS, THEODORE D., AIEE Fellow 1956 “For his
contributions to design of electric production, trans-
mission and distribution systems for a highly concentrated
metropolitan load area.”
REINARTZ, JOHN L., IRE Fellow 1958 “For his early
work on radio wave propagation.”
REINHARD, LOUIS F., AIEE Fellow 1920.
REIST, HENRY G., AIEE Fellow 1913.
REISZ, EUGENE, IRE Fellow 1954 “In recognition of
his pioneering contribution to the development of grid-
controlled electronic tubes.”
RENO, C.S., AIEE Fellow 1913.
RENSHAW, DAVID E., AIEE Fellow 1946.
REOCH, ALEXANDER E., IRE Fellow 1916.
REPPY, W. HOWARD, AIEE Fellow 1912.
REUKEMA, L. E., IRE Fellow 1951 “For research in
电磁学的辐射和一项有教科书价值的记录在电
子教学中的电子计算机和自动化系统。”
REYNOLDS, HERBERT B., AIEE Fellow 1947.
RHEA, T.R., IEEE Fellow 1964 “For contributions to the
electrification of industry, and to the teaching and training of
engineers.”
RHODES, FREDERICK L., AIEE Fellow 1913.
RHODES, GEORGE L., AIEE Fellow 1918.
RHODES, SAM R., AIEE Fellow 1941.
RHODES, SAMUEL G., AIEE Fellow 1913.
RIAD, MAHNOUD M., IEEE Fellow 1972 “For contribu-
tions to the development of telecommunications net-
works and leadership in engineering education.”
RICE, CALVIN W., AIEE Fellow 1912.
RICE, CHESTER W., IRE Fellow 1928. AIEE Fellow
1939.
RICE, EDWIN WILBUR, JR., AIEE Fellow 1913.
RICE, RALPH H., AIEE Fellow 1920.
RICHARDS, WILLIAM E., AIEE Fellow 1926.
RICHARDSON, DONALD ELMER, AIEE Fellow
1950.
RICHARDSON, W.G., IRE Fellow 1955 “For his contribu-
tions to the art of broadcasting, both sound and televi-
sion, in Canada.”
RICHEY, ALBERT S., AIEE Fellow 1912.
RICHMOND, HAROLD BOURS, IRE Fellow 1929.
AIEE Fellow 1940.
RICKER, CHARLES W., AIEE Fellow 1919.
RICKER, CLAIRE WILLIAM, AIEE Fellow 1945.
RICKETTS, FORREST E., AIEE Fellow 1950.
RIDDILE, JOHN SCOTT, AIEE Fellow 1921.
RIDDLE, FRANK H., AIEE Fellow 1947.
RIDENOUR, L.N., IRE Fellow 1955 “For his stimulating
leadership in the field of electronic engineering.”
RIED, HARRY, AIEE Fellow 1931.
RIESZ, ROBERT R., IEEE Fellow 1966 “For basic con-
tributions in the areas of speech, hearing and the human
factor in communication systems.”

A CENTURY OF HONORS
RIETZ, EARL B., IEEE Fellow 1969 “For contributions to the formulation of circuit breaker testing standards and procedures.”

RIGGS, ARTHUR FORREST, AIEE Fellow 1945.

RIGGS, W.M., AIEE Fellow 1913.

RIVES, T.C., IRE Fellow 1954 “For his leadership in military electronic research and development.”

RIXSE, JOHN H., JR., IEEE Fellow 1975 “For contributions to rural electrification in the United States and in developing nations.”

ROBB, W.L., AIEE Fellow 1913.

ROBERTS, EDWARD A., IEEE Fellow 1983 “For contributions to frequency control and advancements in magnetic recording technology.”

ROBERTS, EDWARD ALEXANDER, AIEE Fellow 1951.

ROBERTSON, BURTIS L., AIEE Fellow 1943.

ROBERTSON, ELGIN BARNETT, AIEE Fellow 1945.

ROBERTSON, S.D., IRE Fellow 1961 “For contributions to engineering in the microwave field.”

ROBINSON, CHARLES A., AIEE Fellow 1922.

ROBINSON, DURGHT P., AIEE Fellow 1913.

ROBINSON, EDGAR W., AIEE Fellow 1956 “For his engineering and administrative achievements in the design and operation of a large steam and hydroelectric power utility.”

ROBINSON, HENRY B., AIEE Fellow 1950.

ROBINSON, J.K., AIEE Fellow 1912.

ROBINSON, LEWIS T., AIEE Fellow 1912.

ROBINSON, LLOYD N., AIEE Fellow 1925.

ROBINSON, PRESTON, IEEE Fellow 1965 “For contributions to the development of electrochemical capacitors.”

ROBINSON, WILLIAM, AIEE Fellow 1913.

ROBISON, ARCH R., AIEE Fellow 1941.

ROBISON, SAMUEL S., IRE Fellow 1915.

ROBLEY, ROY R., AIEE Fellow 1945.

ROCKWELL, RONALD J., IRE Fellow 1945 “For active work in the affairs of the Institute and in the engineering of high-power international broadcast transmitters.” AIEE Fellow 1956 “For his contributions in the field of high power radio broadcasting.”

ROCKWOOD, ALAN C., IRE Fellow 1959 “For contributions to standardization of electron devices.”

RODE, NORMAN FREDERICK, AIEE Fellow 1943.

RODMAN, WALTER SHELDON, AIEE Fellow 1928.

ROE, FREEMONT LEE, AIEE Fellow 1958 “For contributions to electric power system development in pioneer territory.”

ROE, RALPH COATS, AIEE Fellow 1933.

ROEHL, C.E., AIEE Fellow 1912.

ROETKEN, ALFRED A., IRE Fellow 1953 “For his contributions to the development of transcontinental microwave radio relay system and the development of single-sideband radio telephone receivers.”

ROGERS, CLARENCE ELLAMS, AIEE Fellow 1936.

ROGOFF, JULIAN, AIEE Fellow 1961 “For contributions to improvement of electrical connections and to design and development of circuit protective devices.”

ROLLER, F.W., AIEE Fellow 1912.

ROLLINS, NORMAN A., AIEE Fellow 1940.

ROLLOW, JAMES GRADY, AIEE Fellow 1942.

ROMANOWITZ, H. ALEX, AIEE Fellow 1962 “For contributions to engineering education and to raising the standards of technical institutes.”

ROMIG, HARRY G., IEEE Fellow 1965 “For contributions to quality control.”

RONNES, HAAKON L., AIEE Fellow 1957 “For his leadership in and contributions to communication engineering.” IRE Fellow 1961 “For contributions in the field of communications engineering and management.”

RONCI, V.L., IRE Fellow 1961 “For contributions to the development of electron devices.”

ROOS, OSCAR C., IRE Fellow 1917.

ROPER, DENNEY W., AIEE Fellow 1914.

RORDEN, HAROLD L., AIEE Fellow 1957 “For his contributions to control of lightning and surges of power transmission circuits.”

ROSA, EDWARD B., AIEE Fellow 1913.

ROSE, ARTHUR FISHER, AIEE Fellow 1951.

ROSE, G.M., JR., IRE Fellow 1954 “For his contributions to vacuum tube research, design, and manufacture, and his transistor developments.”

ROSENBLUTH, WALTER A., IEEE Fellow 1973 “For contributions to the quantification of sensory and neural functions, and for professional and educational activities linking engineering and living systems.”

ROSENBUSCH, GILBERT, AIEE Fellow 1912.

ROSENTHAL, LEON W., AIEE Fellow 1919.

ROSS, IRVINE EMERSON, JR., AIEE Fellow 1960 “For contributions to development of commutations at high altitudes.”

ROSS, J.D., AIEE Fellow 1912.

ROSS, JAMES HARVEY, AIEE Fellow 1936.

ROSS, MALCOM D., AIEE Fellow 1948.

ROSS, NORMAN N., AIEE Fellow 1912.

ROSS, PHILIP N., IEEE Fellow 1972 “For his contributions to nuclear propulsion systems and nuclear power plants.”

ROSS, R.A., AIEE Fellow 1912.
ROSS, RALPH H., AIEE Fellow 1943.
ROSSELOT, GERALD A., IEEE Fellow 1965 "For contributions to engineering management research and education."
ROSSMAN, ALLEN M., AIEE Fellow 1926.
ROTERS, HERBERT C., IEEE Fellow 1972 "For his contributions to teaching and practical applications of magnetic materials and devices and particularly for his development of the hysteresis motor."
ROTHE, HORST, IRE Fellow 1959 "For contributions in the fields of electron tubes and the theory of noise."
ROTTY, OSCAR J., AIEE Fellow 1945.
ROULSTON, KENNETH L., IEEE Fellow 1968 "For contributions to the improvement of scintillation counter techniques both in nuclear physics and geo-physics."
ROWE, BERTRAND P., AIEE Fellow 1913.
ROWE, HARTLEY, AIEE Fellow 1948.
ROWELL, RALPH M., IEEE Fellow 1968 "For outstanding engineering contributions in the field of electrical measurements and technical leadership in the development, design and application of electrical recording and indicating instruments."
ROY, JAMES A.S., AIEE Fellow 1947.
RUCKER, B. PARKS, AIEE Fellow 1913.
RUDENBERG, REINHOLD, AIEE Fellow 1950.
RUDGE, WILLIAM JEROME, JR., AIEE Fellow 1951.
RUHFNER, CHARLES S., AIEE Fellow 1912.
RUMSEY, AUSTIN L., AIEE Fellow 1943.
RUNYON, FREDERICK O., AIEE Fellow 1923.
RUPIN, MICHAEL, AIEE Fellow 1915.
RUSH, WALTER A., IRE Fellow 1924.
RUSHMORE, D.B., AIEE Fellow 1913.
RUSSELL, JOHN BENJAMIN, JR., AIEE Fellow 1951. IRE Fellow 1958 "For his management of electronic development and research organizations."
RUTH, EDWARD S., AIEE Fellow 1945.
RYAN, HARRIS J., AIEE Fellow 1923.
RYAN, PHILIP, AIEE Fellow 1959 "For contributions to creation and production of electrical controls."
RYBNER, JORGEN, IRE Fellow 1953 "For outstanding contributions to research and teaching in the field of telecommunications."
RYERSON, WILLIAM S., AIEE Fellow 1912.

S
SAATHOFF, GEORGE WEBSTER, AIEE Fellow 1930.
SABBAH, HASSAN C.A., AIEE Fellow 1933.
SACHS, JOSEPH, AIEE Fellow 1912.
SAH, ADAM PEN-TUNG, AIEE Fellow 1945.
SAKRISON, DAVID J., IEEE Fellow 1974 "For contributions in research and teaching in communication theory and its applications."
SALINGER, H.W.G., IRE Fellow 1951 "For his original contributions to electron optic and filter theory."
SALMON, VINCENT, IRE Fellow 1962 "For contributions to acoustics."
SALSBURY, RAYMOND J., AIEE Fellow 1955 "For contributions to protection, standardization, testing and development of power system equipment."
SALTON, HARRY D., AIEE Fellow 1948.
SAMUELS, MAURICE, AIEE Fellow 1924.
SANDERSON, CLARENCE H., AIEE Fellow 1918.
SANFORD, FRANK E., AIEE Fellow 1946.
SARAGA, WOLJA, IRE Fellow 1962 "For contributions to network theory and its application in communications."
SARGENT, F.C., AIEE Fellow 1912.
SARNOFF, DAVID, IRE Fellow 1917. AIEE Fellow 1951.
SAUNDERS, CECIL CLIFTON, AIEE Fellow 1959 "For contributions to the electrical aspects of industrial, chemical and nuclear projects."
SAUNDERS, LLEWELLYN, AIEE Fellow 1952.
SAVANT, DOMENICO P., AIEE Fellow 1935.
SAWTELLE, E.M., AIEE Fellow 1912.
SAWYER, MARK A., AIEE Fellow 1948.
SAWYER, W.H., AIEE Fellow 1913.
SAYLES, EDGAR VAN SYCKEL, AIEE Fellow 1938.
SCATTERGOOD, EZRA FREDERICK, AIEE Fellow 1913.
SCHADE, OTTO H., IRE Fellow 1951 "For his many contributions in the development of circuits and electronic devices used in television."
SCHAECHLIN, WALTER, AIEE Fellow 1956 "For his control engineering achievements in the field of industry and marine propulsion."
SCHAIRER, O.S., IRE Fellow 1957 "For distinguished service in fostering and administering electronic research."
SCHAMBERGER, SANFORD O., AIEE Fellow 1949.
SCHEFFER, SEBASTIAN L., AIEE Fellow 1956 "For his contributions to control of transportation of bulk materials by rail and belt."
SCHEFFLER, FREDERICK A., AIEE Fellow 1912.
SCHELDORF, MARVEL W., IRE Fellow 1958 "For his contributions to the fields of radio frequency transmission lines and radiating systems."
SCHENK, M.H., IRE Fellow 1957 "For pioneering achievements in naval aviation electronics."
SCHICK, D. FREDERICK, AIEE Fellow 1913.
SCHIFF, MARTIN, AIEE Fellow 1939.
SCHIFREEN, CLEMENT SOLOMON, AIEE Fellow 1958 “For contributions toward extended life and load ratings of underground power cables.”
SCHILDAUER, EDWARD, AIEE Fellow 1913.
SCHILLER, A.R., AIEE Fellow 1953 “For distinction as an executive of a large electric utility and particularly for engineering, design, construction, and successful operation of a fast growing system, including the pioneering of the first completely integrated binary-cycle (mercury-steam) plant.”
SCHILLING, E.W., AIEE Fellow 1944.
SCHLIECHER, GEORGE BERTHOLD, AIEE Fellow 1961 “For contributions to the development of transformer-loss compensation techniques for effecting economies in high tension metering.”
SCHLESINGER, KURT, IRE Fellow 1954 “For many contributions to cathode-ray tubes and television circuitry.”
SCHMIDT, MARVIN L., AIEE Fellow 1949.
SCHMIDT, WALTER CARL, AIEE Fellow 1962 “For contributions to the development of wood pole high voltage transmission.”
SCHMITT, DOMINIC F., IRE Fellow 1951 “For outstanding leadership and direction in many phases of radio engineering.”
SCHMITT, GILBERT EUGENE, AIEE Fellow 1949.
SCHNEEBERGER, GROVER B., AIEE Fellow 1945.
SCHNURE, FRED OSCAR, AIEE Fellow 1949.
SCHOEN, A.M., AIEE Fellow 1913.
SCHOEPF, T.H., AIEE Fellow 1913.
SCHOLZ, CARL E., AIEE Fellow 1955 “For his design of high-power radio transmission systems and for contributions to international radiotelegraph operations.” IRE Fellow 1956 “For contributions to international radio communication.”
SCHOOLFIELD, HARRISON HERBERT, AIEE Fellow 1940.
SCHOUTEN, JAN F., IEEE Fellow 1969 “For contributions to research in visual and auditory perception and to telecommunications.”
SCHRADER, H.J., IRE Fellow 1954 “For his application of information theory to navigation and television systems.”
SCHREGARDUS, DIRK, AIEE Fellow 1940.
SCHREIBER, E.H., IRE Fellow 1957 “For contributions to radio and television broadcasting.”
SCHRIBNER, CHARLES E., AIEE Fellow 1913.
SCHROEDER, GIULIO, AIEE Fellow 1918.
SCHUCHARDT, R.F., AIEE Fellow 1912.
SCHUCK, O.H., IRE Fellow 1957 “For contributions in the field of instrumentation and control.”
SCHULKE, HERBERT A., JR., IEEE Fellow 1973 “For technical leadership and major contributions to the planning, research, development, and performance of worldwide communications systems.”
SCHULTZ, NORMAN RUDOLPH, AIEE Fellow 1962 “For contributions to the analysis and planning of electric utility systems.”
SCHULZ, THOMAS NORBERG, AIEE Fellow 1920.
SCHURIG, OTTO R., AIEE Fellow 1955 “For contributions to increased knowledge and understanding in several areas of electrical engineering; particularly of the electromagnetic forces and temperature rises of buses and conductors carrying heavy currents.”
SCHWAGER, AUGUST CHARLES, AIEE Fellow 1944.
SCHWAN, CLARENCE FRED, AIEE Fellow 1960 “For contributions to design of rotation machinery, especially for high-frequency inductor heating.”
SCHWARZ, B.A., IRE Fellow 1955 “For his contributions to the development and production of automobile radio.”
SCHWEITZER, EDMUND O., AIEE Fellow 1920.
SCLATER, J.H., AIEE Fellow 1927.
SCOTT, A.H., IEEE Fellow 1964 “For contributions to precision electrical measurements, particularly in the field of dielectrics.”
SCOTT, CARL FORSE, AIEE Fellow 1947.
SCOTT, CHARLES F., AIEE Fellow 1925.
SCOTT, HERMON H., IRE Fellow 1952 “For his contributions to acoustic measurement and the reduction of noise in audio reproduction.”
SCOTT, J.C.W., IRE Fellow 1957 “For contributions in the field of ionospheric propagation.”
SCOTT, ROBERT CLYDE, AIEE Fellow 1939.
SCOTT, ROBERT J., AIEE Fellow 1913.
SCOTT-TAGGART, JOHN, IRE Fellow 1935. AIEE Fellow 1938.
SCUDDER, FREDERICK J., AIEE Fellow 1947.
SEALEY, WILLIAM C., AIEE Fellow 1948.
SEAMANS, ROBERT C., JR., IEEE Fellow 1970 “For leadership in the application of electronics to guidance and control problems, and for direction of space programs.”
SEARBY, NORMAN H., IEEE Fellow 1968 “For his contributions to research and development in the application of electronics to guided missile projects.”
SEARING, EMERY DEFOREST, AIEE Fellow 1928.
SEARING, HUDSON R., AIEE Fellow 1930.
SEBAST, FREDERICK M., AIEE Fellow 1951.
SEDDON, J. CARL, IRE Fellow 1958 “For his theoretical studies and rocket-borne experiments leading to a better understanding of the ionosphere.”
SEEGER, EDWIN WILBUR, AIEE Fellow 1936.
SEELEY, H.T., IEEE Fellow 1964 “For contributions to the design and application of relays for power system protection.”
SEELEY, STUART W., IRE Fellow 1943 “For the development of practical apparatus for the radio industry, particularly in the fields of television and high-frequency broadcast reception.”
SEELEY, WALTER J., AIEE Fellow 1945.
SEELYE, HOWARD P., AIEE Fellow 1943.
SEIBT, GEORGE, IRE Fellow 1915.
SEINYARD, WILLIAM O., IRE Fellow 1945 “In recognition of his work in promoting electronics and the affairs of the Institute, particularly in his district.”
SELBY, MYRON C., IEEE Fellow 1968 “For outstanding scientific achievement in high-frequency radioelectronics measurement techniques and standards, and for promoting, initiating and implementing national and international standardization activities and cooperation.”
SELLERS, LESTER RALPH, AIEE Fellow 1958 “For contributions to the coordination of design of large hydroelectric and steam plants.”
SESSIONS, E.O., AIEE Fellow 1913.
SEVER, GEORGE F., AIEE Fellow 1912.
SHAAD, GEORGE C., AIEE Fellow 1913.
SHACKELFORD, BENJAMIN E., IRE Fellow 1938, AIEE Fellow 1949.
SHAFFER, LEE JAY, AIEE Fellow 1960 “For contributions to the development of personnel for communications engineering.”
SHANKLIN, GEORGE BRYAN, AIEE Fellow 1946.
SHARP, CLAYTON H., AIEE Fellow 1912.
SHARP, HUBERT, AIEE Fellow 1951.
SHAW, G.R., IRE Fellow 1954 “For his technical contributions to the manufacture of radio tubes and their standardization.”
SHAW, HENRY S., IRE Fellow 1935.
SHEALS, VINCENT ALLEN, AIEE Fellow 1950.
SHELBYS, ROBERT EVART, IRE Fellow 1948 “For his many contributions to sound and television broadcasting.” AIEE Fellow 1951.
SHELDON, S.R., AIEE Fellow 1913.
SHELDON, SAMUEL, AIEE Fellow 1913.
SHEPARD, FRANCIS H., AIEE Fellow 1924.
SHEPARD, ROBERT BLANCHARD, AIEE Fellow 1936.
SHEPHERD, JUDSON O’DONALD, AIEE Fellow 1950.
SHEPHERD, ROBERT V., AIEE Fellow 1957 “For his contributions to the design of large electric motors and generators.”

SHOEMAKER, GUY T., AIEE Fellow 1939.
SHOEMAKER, RICHARD WOOLSEY, AIEE Fellow 1941.
SHOVER, BARTON R., AIEE Fellow 1912.
SHREEVE, HERBERT EDWARD, AIEE Fellow 1930.
SHULER, WILLIAM, AIEE Fellow 1944.
SHUTE, EMMETT R., AIEE Fellow 1945.
SHUTT, CHARLES COURTER, AIEE Fellow 1950.
SIBLEY, EDGAR DOW, AIEE Fellow 1936.
SIBLEY, ROBERT, AIEE Fellow 1913.
SIEGEL, K.M., IEEE Fellow 1964 “For contributions in the field of scattering of electromagnetic waves by complex targets.”
SIEGFRIED, VICTOR, AIEE Fellow 1957 “For his contributions to the field of dielectrics and cable insulation.”
SIEGMUND, HUMPHREYS OLIVER, AIEE Fellow 1945.
SILING, P.F., IRE Fellow 1951 “For contributions to the establishment and administration of national and international radio frequency allocations.”
SILLS, HUBERT R., AIEE Fellow 1955 “For his contributions to the design of large hydroelectric generators.”
SILSBE, FRANCIS B., AIEE Fellow 1942.
SILVER, ARTHUR E., AIEE Fellow 1926.
SILVER, SAMUEL, IRE Fellow 1954 “For research in the field of electromagnetic radiation.”
SIMMONS, B.F., AIEE Fellow 1913.
SIMMONS, DONALD MACLAREN, AIEE Fellow 1928.
SIMON, ARTHUR, AIEE Fellow 1913.
SIMON, EMIL J., IRE Fellow 1915.
SIMPSON, FREDERICK G., IRE Fellow 1915.
SIMPSON, LEROY C., IRE Fellow 1959 “For contributions to broadcasting and telecommunication.”
SIMS, WILLIAM F., AIEE Fellow 1933.
SINCLAIR, CARROLL T., AIEE Fellow 1936.
SINCLAIR, H.A., AIEE Fellow 1912.
SINDEBAND, M.L., AIEE Fellow 1926.
SINGER, FRED J., AIEE Fellow 1951.
SINK, ROBERT L., IRE Fellow 1960 “For contributions to the field of digital instrumentation systems.”
SINNETT, C.M., IRE Fellow 1955 “For his contributions in the field of electronic circuitry.”
SISSON, CHARLES E., AIEE Fellow 1944.
SITZ, EARL LEROY, AIEE Fellow 1961 “For contributions to the teaching of Electrical Engineering.”
SKEETS, WILFRED FRANCIS, AIEE Fellow 1943.
SKIFF, WARNER M., AIEE Fellow 1939.
SKIFTER, H.R., IRE Fellow 1951 “For his technical contributions to radio broadcasting and leadership of electronics research and development.”

SKINKER, MURRAY FONTAINE, AIEE Fellow 1934.

SKINNER, CHARLES E., AIEE Fellow 1912.

SKIRROW, JOHN F., AIEE Fellow 1925.

SLEE, JOHN A., IRE Fellow 1929.

SLEEMAN, HECTOR, AIEE Fellow 1936.

SLEEPER, HARVEY PRESCOTT, AIEE Fellow 1949.

SLEPIAN, JOSEPH, AIEE Fellow 1927. IRE Fellow 1945 “For his contributions as scientist, engineer and inventor in the field of electronics.”

SLICHTER, WALTER I., AIEE Fellow 1912.

SLIGANT, STANLEY, AIEE Fellow 1927.

SLOAN, MATTHEW SCOTT, AIEE Fellow 1930.

SMALIE, J.A., IRE Fellow 1958 “For his pioneering work in telecommunications.”

SMALL, ALVAH, AIEE Fellow 1943.

SMALLEY, DAVID D., AIEE Fellow 1947.

SMITH, ARTHUR BESSEY, AIEE Fellow 1922.

SMITH, BOB H., IEEE Fellow 1969 “For pioneering contributions to large radio-frequency-type particle accelerators, and for developing unique methods of resonator analysis in the accelerator field.”

SMITH, CHARLES G., IEEE Fellow 1969 “For fundamental contributions to the development and understanding of plasma phenomena and devices.”

SMITH, ERNEST F., AIEE Fellow 1921.

SMITH, HAROLD B., AIEE Fellow 1913.

SMITH, HAROLD LEONARD, AIEE Fellow 1942.

SMITH, HOMER KEPHART, AIEE Fellow 1944.

SMITH, HOWARD H., IEEE Fellow 1967 “For pioneering work in voice frequency signalling system transmission standards.”

SMITH, J.E., IRE Fellow 1955 “For his contributions to the art of radio communications.”

SMITH, JOHN HERBERT, AIEE Fellow 1962 “For contributions to electrical system design and project administration.”

SMITH, JULIAN C., AIEE Fellow 1912.

SMITH, KILBURN M., AIEE Fellow 1953 “For contributions to the field of power system engineering, particularly in the pioneering of high-voltage transmission of bulk power in densely loaded areas.”

SMITH, LOUIS GOLDEN, AIEE Fellow 1934.

SMITH, MALCOLM W., AIEE Fellow 1956 “For his contributions to the economical construction of transmission and generation facilities of a large electric power system.”

SMITH, PHILIP T., IRE Fellow 1960 “For contributions to the development of high-power transmitting tubes.”

SMITH, ROBERT S., JR., AIEE Fellow 1957 “For contributions to the development of protective devices for electric power distribution systems.”

SMITH, SAMUEL BAILEY, AIEE Fellow 1961 “For contributions to the development of interconnected high voltage power systems for the electric utility industry.”

SMITH, VICTOR G., IEEE Fellow 1966 “For his work in applied mathematics in the solution of systems engineering problems.”

SMITH, WALTER CHARLES, AIEE Fellow 1940.

SMITH, WALTER CURTIS, AIEE Fellow 1949.

SMITH, WILLIAM LINCOLN, AIEE Fellow 1940.

SMITH, WILLIE RALPH, AIEE Fellow 1930.

SMITH-ROSE, R.L., IRE Fellow 1944 “In recognition of his pioneer work in the field of direction finding and radio propagation, allied to his leadership of an outstanding radio research group.”

SMOUREOFF, ALEXANDER, AIEE Fellow 1924.

SMULLIN, L.D., IRE Fellow 1957 “For contributions in the field of microwave tubes.”

SMYTH, J.B., IRE Fellow 1956 “For contributions and leadership in electromagnetic propagation research.”

SNAVELY, A. BOWMAN, AIEE Fellow 1951.

SNELL, JOHN F.C., AIEE Fellow 1912.

SNIEDER, GEORGE E., AIEE Fellow 1939.

SNOOK, H. CLYDE, AIEE Fellow 1920.

SNOW, WILLIAM B., IRE Fellow 1962 “For contributions to sound systems.”

SNYDER, CLAYTON EDWARD, AIEE Fellow 1950.

SNYDER, FRANKLIN LLOYD, AIEE Fellow 1951.

SOGGE, RICHARD C., AIEE Fellow 1953 “For achievement in national and international electrical standardization.”

SOMERVILLE, GARTH GERAINT, AIEE Fellow 1960 “For contributions to the development of magnetic cores for power transformers.”

SORENSEN, ROYAL W., AIEE Fellow 1919.

SOTHMAN, P.W., AIEE Fellow 1917.

SOUTHWORTH, GEORGE C., IRE Fellow 1942.

SPAGNOLETTI, PHILIP H., IEEE Fellow 1968 “For contributions to the design of short-wave broadcasting equipment and single side-band telecommunications equipment.”

SPALDING, SAMUEL ALBERT, AIEE Fellow 1929.

SPANGENBERG, KARL, IRE Fellow 1949 “For his many technical contributions, particularly his analytical work on vacuum tubes.”

SPARKES, HARRY P., AIEE Fellow 1942.

SPaulding, GEORGE WHITTIER, AIEE Fellow 1950.
SPEIGHT, HERBERT, AIEE Fellow 1951.
SPENCER, CLARENCE G., AIEE Fellow 1924.
SPENCER, P.L., IRE Fellow 1955 "For his contributions to the design and development of electron tubes."
SPENCER, PAUL, AIEE Fellow 1912.
SPENCER, ROY C., IRE Fellow 1960 "For contributions to the theory of microwave antennas."
SPOONER, THOMAS, AIEE Fellow 1929.
SPORN, PHILIP, AIEE Fellow 1930.
SPRACKLEN, EMERY EVERLIEGH, AIEE Fellow 1941.
SPRAGUE, FRANK, AIEE Fellow 1912.
SPRINGER, F.W., AIEE Fellow 1913.
SPRONG, SEVERN D., AIEE Fellow 1912.
SPURCK, ROBERT MICHAEL, AIEE Fellow 1937.
SQUIER, GEORGE O., IRE Fellow 1916. AIEE Fellow 1919.
STAEGE, STEPHEN A., AIEE Fellow 1919.
STAFFORD, RICHARD THOMAS, AIEE Fellow 1947.
STAHL, EDWARD C.M., AIEE Fellow 1951.
STAHL, NICHOLAS, AIEE Fellow 1913.
STANFORD, ALAN GRIFFITH, AIEE Fellow 1950.
STANLEY, ROY MORGAN, AIEE Fellow 1923.
STANLEY, WILLIAM, AIEE Fellow 1913.
STANSBURY, CARROLL, AIEE Fellow 1938.
STANSEL, NUMAN REID, AIEE Fellow 1945.
STARBIRD, LEVI C., AIEE Fellow 1944.
STARK, E.E., AIEE Fellow 1913.
STARR, JAMES HAMMOND, AIEE Fellow 1946.
ST. CLAIR, HARRY PRENTICE, AIEE Fellow 1944.
STEBBINS, THEODORE, AIEE Fellow 1913.
STEEDLE, JACK HOSFORD, AIEE Fellow 1962 "For contributions to planning, engineering and operation of an electric utility."
STEEL, WILLIAM ARTHUR, IRE Fellow 1950 "For his contributions in Canada in advancing development of military radio broadcasting and international communication."
STEEN, HALFDAN, AIEE Fellow 1915.
STEIN, ADAM, JR., IRE Fellow 1917.
STEIN, I. MELVILLE, AIEE Fellow 1939.
STEINBERG, MAX JACOB, AIEE Fellow 1948.
STEINMAYER, ALWIN G., AIEE Fellow 1957 "For contributions to equipment for power distribution systems particularly in the field of cutouts and fuses."
STEINMETZ, CHARLES P., AIEE Fellow 1912.
STEMMONS, BEVERLY L., AIEE Fellow 1951.
STERLING, GEORGE E., IRE Fellow 1949 "In recognition of his long public service in the radio communication
field and, in particular, for the organization and operation of radio wartime intelligence activities, which were of significant importance."
STEVENS, ARCHIE M., IRE Fellow 1931.
STEVENS, FRANK J., AIEE Fellow 1944.
STEVENS, J. FRANKLIN, AIEE Fellow 1913.
STEVENS, THEODORE, AIEE Fellow 1938.
STEVENS, WILLIAM C., AIEE Fellow 1920.
STEVENVSON, ALEXANDER R., JR., AIEE Fellow 1937.
STEVENS, JAMES ROSS, AIEE Fellow 1946.
STEWART, WELBY, IEEE Fellow 1969 "For contributions in the fields of audio, magnetic recording, and communication."
STICKNEY, GEORGE H., AIEE Fellow 1924.
STIGANT, STANLEY AUSTEN, AIEE Fellow 1938.
STILL, ALFRED, AIEE Fellow 1914.
STILLWELL, LEWIS B., AIEE Fellow 1912.
STUNER, H. WRAY, AIEE Fellow 1943.
STUTZ, ARTHUR B., AIEE Fellow 1913.
STIVENDER, EDWARD H., AIEE Fellow 1949.
STOCKER, CLOSMAN P., AIEE Fellow 1955 "For his developments of static ringing machines and dial tone generators."
STODDART, RICHARD R., IRE Fellow 1958 "For his development of instrumentation for the measurement of radio interference."
STOEKLE, ERWIN R., AIEE Fellow 1933.
STOELTING, HERMAN O., IEEE Fellow 1976 "For contributions to the electric power industry in the field of surge arrester design and standardization."
STONE, CHARLES W., AIEE Fellow 1912.
STONE, EDMUND CUSHING, AIEE Fellow 1930.
STONE, ELLERY W., IRE Fellow 1924.
STONE, HENRY A., JR., IEEE Fellow 1968 "For contributions to the development of advanced components for communications systems."
STONE, JOHN STONE, IRE Fellow 1915.
STOPPELMANN, FRED HENRY, AIEE Fellow 1951.
STORER, N.W., AIEE Fellow 1913.
STORER, SIMON B., AIEE Fellow 1913.
STOUT, MELVILLE B., AIEE Fellow 1950.
STRANDBERG, HERBERT V., AIEE Fellow 1956 "For his accomplishments in the development of a transmission and distribution system to supply electricity to a metropolitan area."
STRASBOURGER, JULIUS C., AIEE Fellow 1960 "For contributions to mechanization of electric utility system construction and maintenance."
STRATLON, SAMUEL W., AIEE Fellow 1924.
STRELFSTOFF, JOSEPH A., AIEE Fellow 1961 “For contributions to the engineering education and the teaching of Electro-magnetic Theory.”
STRENG, LEWIS S., AIEE Fellow 1926.
STRIEBY, MAURICE EDWARD, AIEE Fellow 1941. IRE Fellow 1961.
STRINGFIELD, THEODORE FRANK, AIEE Fellow 1958 “For his contributions to high frequency powering of communication systems.”
STROBERG, ERIC ARVID, AIEE Fellow 1951.
STRONG, FREDERICK G., AIEE Fellow 1913.
STROVER, JAMES R., AIEE Fellow 1953 “For contributions to the electrical development of an electric utility particularly in transmission and distribution.”
STUART, DONALD M., IRE Fellow 1962 “For contributions to electronic aids to air navigation.”
STUART, HARVE R., AIEE Fellow 1913.
STUEVE, WINFRED H., AIEE Fellow 1954 “For contributions to the use of electric power in the petroleum industry; particularly to the movement of oil and gas through pipe lines.”
STUMPF, MALCOLM W., IEEE Fellow 1968 “For contributions to original design and direction of pioneering development of publicly acceptable overhead urban transmission lines.”
SUHR, FRED W., IEEE Fellow 1966 “For outstanding contributions to the design of fractional horsepower induction machines.”
SUMMERHAYES, HENRY ROSWELL, AIEE Fellow 1939.
SUMNER, WILLIAM ANDROSS, AIEE Fellow 1959 “For contributions to design of self-protective distribution transformers and to use of grain-oriented sheet steel transformer cores.”
SUNDIUS, HERBERT WILLIAM, AIEE Fellow 1947.
SUNDT, EDWARD V., IEEE Fellow 1968 “For contributions to the understanding of circuit interruption phenomena.”
SUNNY, BERNARD E., AIEE Fellow 1913.
SUNSTEIN, DAVID E., IRE Fellow 1958 “For his contributions to the field of airborne radar.”
SUOPE, GERARD, AIEE Fellow 1922.
SUTHERLAND, GEORGE, AIEE Fellow 1927.
SVOBODA, ANTONIN, IEEE Fellow 1968 “For his contributions in logical design, mechanical design and his fundamental work on residual class number systems.”
SWANSTROM, FRANK N., AIEE Fellow 1943.
SWEETNAM, A.H., AIEE Fellow 1948.
SWENSON, B.V., AIEE Fellow 1913.
SWENSON, GEORGE W., AIEE Fellow 1936.
SWINTON, A.A. CAMPBELL, AIEE Fellow 1913. IRE Fellow 1914.
SWISS, JACK, IEEE Fellow 1970 “For leadership and contributions in insulating materials and processes.”
SWOPE, GERARD, AIEE Fellow 1922.
SYKES, WILFRED, AIEE Fellow 1914.

T
TAIT, FRANK M., AIEE Fellow 1912.
TALBOT, EMMETT D., AIEE Fellow 1936.
TAPPAN, FRANK G., AIEE Fellow 1936.
TAPSCOTT, RALPH HENRY, AIEE Fellow 1929.
TAPY, RALPH WILVER, AIEE Fellow 1948.
TARBOUX, JOSEPH G., AIEE Fellow 1943.
TATE, THOMAS ROUSE, AIEE Fellow 1935.
TATUM, FINLEY W., AIEE Fellow 1956 “For his contributions in the field of engineering education.”
TATUM, LEWIS L., AIEE Fellow 1913.
TAYLOR, ALBERT HOYT, IRE Fellow 1920. AIEE Fellow 1946.
TAYLOR, ALBERT LEROY, AIEE Fellow 1941.
TAYLOR, ARTHUR Y., IEEE Fellow 1970 “For leadership in the planning and management of nuclear power.”
TAYLOR, CHARLES H., IRE Fellow 1915.
TAYLOR, EDWARD, AIEE Fellow 1922.
TAYLOR, HAMILTON DANA, AIEE Fellow 1949.
TAYLOR, JOHN BELLAMY, AIEE Fellow 1914.
TAYLOR, JOHN J.W., AIEE Fellow 1913.
TAYLOR, NORMAN H., IEEE Fellow 1970 “For pioneer work in computer logic, circuitry and techniques, electronic system reliability, and in the application of computers to real-time control.”
TAYLOR, THOMAS A., AIEE Fellow 1955 “For leadership in solution of inductive coordination problems and in the field of communication engineering.”
TAYLOR, WILLIAM T., AIEE Fellow 1912.
TEAGUE, WILLIAM LUDY, AIEE Fellow 1950.
TEBO, GORDON BUCHANAN, AIEE Fellow 1961 “For contributions to research and to developments relating to the safe use of electric power.”
TELLEGEN, B.D.H., IRE Fellow 1955 “For his contributions and teachings in the field of vacuum tubes and communication networks.”
TEMPLE, W.E.S., AIEE Fellow 1913.
TEMPLIN, JOHN R., AIEE Fellow 1927.
TENNEY, HARRY W., AIEE Fellow 1943.
TERMAN, FREDERICK E., IRE Fellow 1937, AIEE Fellow 1945.

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TERRELL, CHARLES FOSTER, AIEE Fellow 1946.
TERRELL, W.D., IRE Fellow 1929.
TERRY, CLARK ARTHUR, AIEE Fellow 1938.
TERWILLIGER, CHARLES VAN ORDEN, AIEE Fellow 1944.
TESLA, NICOLA, AIEE Fellow 1917.
THACKER, MANEKAL S., AIEE Fellow 1949.
THALER, J.A., AIEE Fellow 1913.
THAMES, WILLIAM M., IRE Fellow 1962 “For contributions to military electronics.”
THOMAS, DONALD E., IEEE Fellow 1967 “For contributions to communication devices and systems.”
THOMAS, EARL ROGER, AIEE Fellow 1949.
THOMAS, GEORGE N., AIEE Fellow 1926.
THOMAS, HENRY P., IRE Fellow 1951 “In recognition of his pioneering contributions in the development of high-frequency and microwave equipment and communication systems.”
THOMAS, JAMES WINTHROP, AIEE Fellow 1920.
THOMAS, PERCY H., AIEE Fellow 1912.
THOMAS, RALPH L., AIEE Fellow 1944.
THOMAS, TALMAGE DEWITT, AIEE Fellow 1961 “For contributions in guiding the design and construction of a large electric utility system.”
THOMAS, WILLIAM A., AIEE Fellow 1913.
THOMPSON, BROWDER J., IRE Fellow 1938.
THOMPSON, GORDON, AIEE Fellow 1946.
THOMPSON, HENRY HAVELOCK, AIEE Fellow 1947.
THOMPSON, JOSEPH S., AIEE Fellow 1938.
THOMPSON, WILBUR H., AIEE Fellow 1913.
THOMS, ALEXANDER P., AIEE Fellow 1926.
THOMSON, ELIHU, AIEE Fellow 1913.
THORESEN, JETMUND J., AIEE Fellow 1921.
THORNTON, FRANK, JR., AIEE Fellow 1921.
THURNAUER, E., AIEE Fellow 1913.
THURSTON, ERNEST B., AIEE Fellow 1923.
TIMBIE, WILLIAM H., AIEE Fellow 1924.
TIMMERMAN, A.H., AIEE Fellow 1912.
TISCHENDORFER, F., AIEE Fellow 1913.
TITUS, OLCOTT WOOD, AIEE Fellow 1944.
TODD, JAMES M., AIEE Fellow 1945.
TOEPFER, A.H., IEEE Fellow 1964 “For his contributions to atomic reactors.”
TOLMIE, J.R., IRE Fellow 1955 “For his early contributions to radio.”
TOLSON, W.A., IRE Fellow 1956 “For invention and development in the field of television receivers and military target tracking.”

TOMBERG, VICTOR T., IEEE Fellow 1970 “For pioneering work in medical electronics, particularly radiation hazards.”
TOMPKINS, FREDERICK NEALE, AIEE Fellow 1944.
TORCHIO, PHILIP, AIEE Fellow 1912.
TORGERSEN, HAROLD, AIEE Fellow 1959 “For contributions to engineering education.”
TOTH, EMERICK, IRE Fellow 1958 “For his contributions to the field of military communications.”
TOWN, GEORGE R., IRE Fellow 1950 “For his contributions in radio receiver engineering and research.” AIEE Fellow 1954 “For contributions as an engineer, teacher, research administrator, and author in the fields of radio and television.”
TOWNLEY, CALVERT, AIEE Fellow 1912.
TOWNSEND, STANLEY C., AIEE Fellow 1957 “For his contributions to the production and transmission of electric power.”
TRACY, ATLEC H., AIEE Fellow 1923.
TRACY, GORDON FREDERICK, AIEE Fellow 1961 “For contributions to electrical engineering education.”
TRADUP, ALBERT, AIEE Fellow 1951.
TRAFFORD, E.W., AIEE Fellow 1913.
TRAVER, OLIVER CLEAGGETT, AIEE Fellow 1943.
TREANOR, EDWARD DONELLY, AIEE Fellow 1948.
TREAT, ROBERT, AIEE Fellow 1939.
TREVOR, BERTRAM A., IRE Fellow 1953 “For contributions in the field of pulse multiplex communication systems and long-range receiving equipment.”
TRICE, THOMAS WHEELER, AIEE Fellow 1961 “For contributions to the management of engineering and operations of a major electric utility system.”
TRIPLETT, HUGH A., AIEE Fellow 1948.
TROLESE, LOUIS G., IRE Fellow 1960 “For contributions to the understanding of radio wave propagation.”
TRONE, DIMITRI, AIEE Fellow 1953 “For pioneering activities in electric power generation on the electrification of transportation system in foreign fields particularly in Russia and Brazil.”
TROTTER, HERBERT, JR., IEEE Fellow 1971 “For leadership in communication technology.”
TROUARD, SIDNEY E., AIEE Fellow 1962 “For contributions to corrosion protection.”
TRUCKSESS, DAVID E., AIEE Fellow 1958 “For his contributions to power supplies for high frequency communication systems.”
TRUEBLOOD, HOWARD M., AIEE Fellow 1940.
TUCKER, CARLTON EVERETT, AIEE Fellow 1939.
TULLER, W.G., IRE Fellow 1955 “For contributions to the advance of theoretical analysis of information theory
and its practical application.”
TUNIS, WILLIAM C., IRE Fellow 1951 “For his contributions to fire control radar and his guidance of postwar electronic development for military purposes.”
TUPPER, B.R., IRE Fellow 1954 “In recognition of his application of radio techniques to the extension of toll telephone services in Canada.”
TURNER, HUBERT M., IRE Fellow 1937. AIEE Fellow 1944.
TURNER, WILLIAM S., AIEE Fellow 1913.
TUVE, MERLE ANTHONY, IRE Fellow 1945 “For pioneering in the experimental probing of the ionosphere and giving to the world the first publication of the experimental proof of the existence of the ionosphere; and for having initiated at an early date the pulse method of probing by reflection which is the basis of modern radar.”
TYKOCINER, J.T., IEEE Fellow 1964 “For his pioneering contributions to radio science.”
TYVAND, JAMES ADDISON, AIEE Fellow 1945.

U
UCHIDA, HIDENARI, IEEE Fellow 1974 “For contributions to the theory and practice of VHF and UHF antennas.”
UEHLING, FRITZ FREDERICK, AIEE Fellow 1950.
UHL, WILLIAM F., AIEE Fellow 1955 “For his contributions to the development and design of hydroelectric generating plants.”
UHR, IRWIN A., AIEE Fellow 1950.
ULLRICH, EDWARD H., IRE Fellow 1939.
ULREY, DAYTON, IRE Fellow 1950 “For pioneering research and for administrative and technical contributions to the development of special purpose and power tubes.”
UMANSKY, LEONID A., AIEE Fellow 1945.
UNDERHILL, CHARLES REGINALD, AIEE Fellow 1914.
UNDERHILL, GEORGE HAROLD, AIEE Fellow 1961 “For contributions to the development of common neutral primary distribution aerial cable systems.”

V
VAITSES, GREGORY S., AIEE Fellow 1949.
VAN ANTWERP, GEORGE STEWART, AIEE Fellow 1951.
VANCE, ARTHUR W., IEEE Fellow 1973 “For pioneering contributions to television, electronic instruments, regulated power supplies, weapons systems, and simulators.”
VAN DER BIJL, HENDRIK J., IRE Fellow 1928.
VAN DER POL, BALTH, JR., IRE Fellow 1929.
VANDERSLUIS, WARREN M., AIEE Fellow 1929.
VAN DEUSEN, GEORGE L., IRE Fellow 1958 “For his direction of research and development of military electronics equipment.”
VAN DUUREN, H.C. A., IRE Fellow 1961 “For contributions toward the reliability of radio communication.”
VAN DYCK, ARTHUR F., IRE Fellow 1925.
VAN DYKE, K.S., IRE Fellow 1944 “In recognition of his work in research on characteristics of Piezo-Electric Crystals and their application to frequency control.”
VANN NESS, BARTOW, JR., AIEE Fellow 1947.
VAN SOEST, JOHANNES L., IRE Fellow 1962 “For contributions to defense research in the Netherlands.”
VAN VALKENBURG, HERMON LEACH, AIEE Fellow 1939.
VARIAN, RUSSELL H., IRE Fellow 1952 “For his contributions in the field of applied physics and, particularly, in the field of velocity-modulated tubes.”
VAUGHAN, DANIEL C., AIEE Fellow 1948.
VAUGHAN, H. EARLE, IRE Fellow 1962 “For contributions to the development of high-speed switching systems.”
VAUGHAN, JOHN F., AIEE Fellow 1912.
VAUGHN, FRANCIS A., AIEE Fellow 1913.
VERNIER, CHARLES, AIEE Fellow 1927.
VICKERS, HERBERT, AIEE Fellow 1934.
VINAL, GEORGE W., AIEE Fellow 1942.
VINCENT, HAROLD BLANCHARD, AIEE Fellow 1930.
VIVIAN, JOSEPH H., AIEE Fellow 1948.
VOGEL, WILHELM, AIEE Fellow 1950.
VOKAC, CHARLES W., IEEE Fellow 1967 “For his contributions to the electric-arc furnace, education and standardization.”
VOLKMER, THEODORE FREDERICK, AIEE Fellow 1962 “For his contribution to the design and standardization of transformers.”
VON KROGH, KARL KONORA, AIEE Fellow 1917.
VREELAND, FREDERICK K., AIEE Fellow 1913. IRE Fellow 1926.

W
WADA, MASAMOBU, IEEE Fellow 1980 “For contributions to the development of display devices, and for leadership in engineering education.”
WADDELL, CHARLES E., AIEE Fellow 1912.
WADDINGTON, CHARLES VERNE, AIEE Fellow 1949.
WAGNER, CHARLES F., AIEE Fellow 1940.
WAGNER, DONALD M., AIEE Fellow 1927.

PAST FELLOWS
WAGNER, EDWARD A., AIEE Fellow 1927.
WAGNER, HOMER H., AIEE Fellow 1943.
WAGNER, MILTON HENRY, AIEE Fellow 1930.
WAGNER, WALTER CALVIN, AIEE Fellow 1941.
WAGSTAFF, ROBERT R., AIEE Fellow 1958 “For his contributions to design and execution of large power projects.”
WAITE, LESLIE OSGOOD, AIEE Fellow 1950.
WALDSCHMITT, JOSEPH A., IEEE Fellow 1968 “For technical and administrative contributions to advanced world-wide communications systems.”
WALL, HARRY RUTHERFORD, AIEE Fellow 1960 “For contributions to development and operation of a large utility system.”
WALLACE, JAMES M., IEEE Fellow 1966 “For contributions in electrical distribution equipment and technical direction in this field.”
WALLACE, JOHN N., AIEE Fellow 1920.
WALLAU, H.L., AIEE Fellow 1913.
WALLER, ALFRED E., AIEE Fellow 1921.
WALLIS, JOHN, AIEE Fellow 1956 “For his accomplishments in power transmission and distribution design and in system planning.”
WALLS, JOHN A., AIEE Fellow 1913.
WALTON, PERCY JAMES, AIEE Fellow 1944.
WARD, O.M., AIEE Fellow 1941.
WARDER, WALTER, AIEE Fellow 1913.
WARE, JOHN S., AIEE Fellow 1944.
WARE, PERRY H., IEEE Fellow 1969 “For work in the field of solid dielectrics, and for ability to communicate such knowledge to the industry.”
WARNECKE, R.R., IRE Fellow 1950 “For his engineering and research contributions to vacuum tube theory and design in France.”
WARNER, JOHN C., IRE Fellow 1933.
WARNER, KENNETH B., IRE Fellow 1936.
WARNER, ROBERT W., AIEE Fellow 1939.
WARNER, RUSSELL GILLETTE, AIEE Fellow 1945.
WARREN, HENRY ELLIS, AIEE Fellow 1948.
WARREN, HOWARD S., AIEE Fellow 1913.
WARREN, MEAD, JR., IEEE Fellow 1967 “For contributions to power generation and transmission, in the advancement of communication, telemetry, and preventive maintenance.”
WARRINGTON, A. VAN COURTLANDT, AIEE Fellow 1949.
WASHINGTON, BOWDEN, IRE Fellow 1923.
WASSERMAN, CHARLES, AIEE Fellow 1962 “For contributions to the design and application of power system controls.”
WATANABE, MICHAEL S., IEEE Fellow 1973 “For contributions to probabilistic information processing and the foundations of cybernetics.”
WATERMAN, FRANK N., AIEE Fellow 1912.
WATERS, GRANVILLE, AIEE Fellow 1921.
WATERS, JAMES S., AIEE Fellow 1949.
WATERS, W.L., AIEE Fellow 1913.
WATERSON, KARL W., AIEE Fellow 1922.
WATKINS, SAMUEL S., AIEE Fellow 1946.
WATSON, ARTHUR EUGENE, AIEE Fellow 1937.
WATSON, THOMAS AUGUSTUS, AIEE Fellow 1915.
WATSON-WATT, ROBERT, IRE Fellow 1947 “For his early contributions to radio and for his pioneering work in radar.”
WATTSON, HAROLD E., IRE Fellow 1923.
WATTS, FRANK WILMER, AIEE Fellow 1945.
WATTS, GEORGE W., AIEE Fellow 1912.
WAUGH, LESTER R., AIEE Fellow 1933.
WAY, SYLVESTER BEDELL, AIEE Fellow 1938.
WAYNE, A.H., IRE Fellow 1957 “For contributions in radio transmission, ionosphere research, and engineering education.”
WEAGANT, ROY A., IRE Fellow 1915.
WEAVER, WILLIAM D., AIEE Fellow 1913.
WEBB, W.L., IRE Fellow 1954 “For early contributions and engineering leadership in radio direction finding, radar, and radio communication.”
WEBER, CLIFFORD A.M., AIEE Fellow 1922.
WEBSTER, ARTHUR GORDON, AIEE Fellow 1919.
WEEKS, EDWIN R., AIEE Fellow 1913.
WEICHSEL, HANS, AIEE Fellow 1921.
WEIL, JOSEPH, AIEE Fellow 1936. IRE Fellow 1957 “For contributions to engineering education.”
WEIL, ROBERT T., JR., AIEE Fellow 1961 “For contributions to engineering education.”
WEINBACH, MENDEL P., AIEE Fellow 1939.
WEIR, I.R., IRE Fellow 1949 “For his pioneering work in the development and application of transmitting equipment for higher frequencies and higher power.”
WEISS, FERNAND CARL, AIEE Fellow 1951.
WEISS, H.G., IEEE Fellow 1964 “For contributions to the development of high-power radar.”
WEISS, HERBERT, IEEE Fellow 1977 “For contributions to the development and applications of semiconducting galvanomagnetic devices.”
WELLER, GEORGE LOUIS, AIEE Fellow 1931.
WELLER, HARRY W., AIEE Fellow 1912.
WELLS, G.A., AIEE Fellow 1912.
WELLS, HARRY W., IRE Fellow 1953 “In recognition of his contributions to ionospheric research and the organi-
zation of a world-wide network of ionospheric stations.”
WELLS, WALTER F., AIEE Fellow 1912.
WELLWOOD, ARTHUR RUSSELL, AIEE Fellow 1936.
WELSCH, JAMES P., IEEE Fellow 1968 “For his contributions to thermal measurement and cooling of electronic equipment.”
WENDELL, EDWARD N., IRE Fellow 1947 “For his contributions to the development and production of radio systems for navigating and landing airplanes by instrument.”
WENNER, FRANK, AIEE Fellow 1926.
WERLY, BERLYN MCINTYRE, AIEE Fellow 1950.
WERNER, CALVIN J., AIEE Fellow 1950.
WEST, CHARLES P., AIEE Fellow 1946.
WEST, GIFFORD BETHEL, AIEE Fellow 1946.
WEST, HARRY R., AIEE Fellow 1951.
WETMORE, WILLIAM F., AIEE Fellow 1955 “For contributions to power system engineering of a large utility and to the development of standards for circuit breakers and rotating machinery.”
WHEELER, KIMBALL L., AIEE Fellow 1959 “For contributions to the development of a large power system and rehabilitation of power systems in Korea.”
WHEELER, LYNDE P., IRE Fellow 1928.
WHEELER, SCHUYLER SKOATS, JR., AIEE Fellow 1912.
WHELCHEL, CORNELIUS C., AIEE Fellow 1960 “For contributions to design of large steam turbines and power plants and evolution of practical nuclear generation.”
WHIPPLE, CLYDE COBURN, AIEE Fellow 1951.
WHITAKER, U.A., AIEE Fellow 1962 “For contributions to development and mass production of wire connection devices.”
WHITAKER, WILLIAM GORDON H., AIEE Fellow 1944.
WHITE, WILLIAM COMINGS, IRE Fellow 1940. AIEE Fellow 1947.
WHITE, WILLIAM CROMBIE, AIEE Fellow 1958 “For his contributions to the education of engineers.”
WHITHEAD, JOHN B., AIEE Fellow 1912.
WHITEHURST, ROLAND, AIEE Fellow 1943.
WHITING, DONALD FAIRFAX, AIEE Fellow 1930.
WHITLOW, GEORGE S., AIEE Fellow 1954 “For contributions in the development of efficient transmission systems and the applications of the heat pump.”
WHITMAN, EZRA B., AIEE Fellow 1951.
WHITMORE, HAROLD B., IEEE Fellow 1969 “For pioneering contributions and creative leadership toward improved functioning of the American patent system.”
WHITNEY, RICH D., AIEE Fellow 1925.
WICKENDEN, WILLIAM E., AIEE Fellow 1939.
WIENER, FRANCIS M., IRE Fellow 1962 “For research in electroacoustics.”
WILBRAHAM, ROSSITER W., AIEE Fellow 1945.
WILCOX, NORMON T., AIEE Fellow 1912.
WILCOX, THOMAS W., IEEE Fellow 1970 “For contributions to high-voltage circuit breakers.”
WILDER, CLIFTON WHITE, AIEE Fellow 1914.
WILDER, WILFORD D., IEEE Fellow 1966 “For contributions to the development of equipment and procedures for power control in large electric supply systems.”
WILDER, WILLARD S., AIEE Fellow 1960 “For contributions to direction of design of power plants, transmission and distribution.”
WILDMAN, LEONARD D., IRE Fellow 1915.
WILKENSON, JOHN REED, AIEE Fellow 1943.
WILKENSON, KENNETH L., AIEE Fellow 1930.
WILKESON, JEFFERSON R., IEEE Fellow 1967 “For his contributions to the techniques of electronic intelligence and electronic warfare.”
WILKINS, ARNOLD F., IRE Fellow 1958 “For his contributions to research and short wave direction finding.”
WILKINS, ROY, AIEE Fellow 1929.
WILKINSON, KENNETH L., AIEE Fellow 1930.
WILLEY, FRANK W., AIEE Fellow 1924.
WILLIAMS, ALBERT J., JR., IRE Fellow 1955, AIEE Fellow 1961 “For his contributions to the field of self-balancing recorders of electrical quantities, and for his invention, research, and development to practice of null-balance system of precise electrical measurement.”
WILLIAMS, ALLISON RIDLEY, AIEE Fellow 1935.
WILLIAMS, ARTHUR, AIEE Fellow 1913.
WILLIAMS, EARL C., AIEE Fellow 1951.
WILLIAMS, EVERARD MOTT, IRE Fellow 1954 “For his contributions to the development of military electronic equipment.” AIEE Fellow 1958 “For contributions to the theory of communication and the development of electric spark machine tools.”
WILLIAMS, F.C., IRE Fellow 1957 “For contributions to the theory of noise in vacuum tubes, and in the fields of radar and digital computers.”
WILLIAMS, SAMUEL B., AIEE Fellow 1926, IRE Fellow 1957 “For contributions to telephone switching systems and to computers.”
WILLIAMSON, R.B., AIEE Fellow 1912.
WILLICUTT, FREDERICK WEISS, AIEE Fellow 1948.
WILLIS, CLODIUN HARRIS, AIEE Fellow 1942.
WILLIS, EDWARD J., AIEE Fellow 1913.
WILLIS, FRED W., AIEE Fellow 1919.
WILLS, W.P., IEEE Fellow 1964 "For contributions to the field of instrumentation particularly recorders and controllers."
WILSON, FREMONT, AIEE Fellow 1912.
WILSON, H.S., AIEE Fellow 1913.
WILSON, J.R., IRE Fellow 1954 "For his stimulating leadership in research on electron tubes and devices, and in their development and manufacture."
WILSON, ROBERT L., AIEE Fellow 1913.
WILSON, ROBERT M., AIEE Fellow 1913.
WILSON, WILLIAM, IRE Fellow 1928.
WILTSE, STANLEY B., AIEE Fellow 1949.
WINCHESTER, ALBERT E., AIEE Fellow 1912.
WINFIELD, FREDERICK C., AIEE Fellow 1951.
WINKLER, GEORGE HOWE, AIEE Fellow 1930.
WINKLER, GERNOT M.R., IEEE Fellow 1970 "For contributions to precision frequency control and time measurement."
WINNE, HARRY A., AIEE Fellow 1945.
WINOGRAD, HAROLD, AIEE Fellow 1946.
WINTRINGHAM, W.T., IRE Fellow 1951 "For his studies of colotimetry and color television, and for his work on television interference problems."
WISE, ROGER M., IRE Fellow 1937.
WISEMAN, ROBERT J., AIEE Fellow 1927.
WISHARD, WILLIAM W., AIEE Fellow 1953 "For outstanding contributions and originality in the application of high-voltage subtransmission systems to high density load areas, and for sound engineering judgement and able leadership of an engineering organization of a large utility system."
WISNER, RAYMOND R., AIEE Fellow 1956 "For his application of electrical engineering to the design of power plants and the problem of industry."
WITHINGTON, SIDNEY, AIEE Fellow 1924.
WITTING, EDWARD G., IRE Fellow 1962 "For services and contributions to military electronics."
WOHLGEMUTH, MELVILLE J., AIEE Fellow 1937.
WOLCOTT, C.F., Jr., IRE Fellow 1957 "For contributions as an engineer and executive, and for active participation in Instute affairs."
WOLF, EDGAR FAHRNEY, AIEE Fellow 1962 "For contributions to the reliability and safety of electric utility equipment."
WOLFF, IRVING, IRE Fellow 1942 "For basic research in centimeter wave radio and for application of it to the development of navigation instruments."
WOOD, ELVIN MORLEY, AIEE Fellow 1943.
WOOD, GEORGE R., AIEE Fellow 1912.
WOOD, HENRY BLAKE, AIEE Fellow 1938.
WOOD, JAMES J., AIEE Fellow 1918.
WOOD, JOSEPH D., AIEE Fellow 1956 "For contributions to the development and application of switch-gear and its components."
WOODBRIDGE, J. LESTER, AIEE Fellow 1921.
WOODFORD, LAURANCE G., AIEE Fellow 1942.
WOODMANSEE, FAY, AIEE Fellow 1913.
WOODROW, HARRY R., AIEE Fellow 1923.
WOODS, FRANCIS LAWRENCE, AIEE Fellow 1960 "For contributions to the field of network and distribution transformer engineering."
WOODS, JOHN C., AIEE Fellow 1953 "For contributions in the field of electrical control of large turbogenerators and improvements in substation design contributing to their reliability and economy."
WOODYARD, JOHN R., IRE Fellow 1962 "For contributions to electronic engineering education."
WOOLDRIDGE, WILLIAM JOHN, AIEE Fellow 1938.
WOOLSTON, LOUIS F.B., AIEE Fellow 1929.
WOOLVERTON, ROBERT B., IRE Fellow 1915.
WOONTON, G.A., IRE Fellow 1951 "For long service as a teacher of radio engineering and for varied contributions through research in the field of electronics."
WORK, WILLIAM ROTH, AIEE Fellow 1940.
WORTH, B.G., AIEE Fellow 1912.
WRAY, J.G., AIEE Fellow 1913.
WRIGHT, ERNEST M., AIEE Fellow 1943.
WRIGHT, R.I., AIEE Fellow 1913.
WRIGHT, RALPH H., AIEE Fellow 1946.
WRIGHTLEY, GEORGE, AIEE Fellow 1953 "For instituting pioneer and revolutionary engineering changes in the textile industry resulting in the early establishment of the trend to individual motor drive."
WULFING, HARRY E., AIEE Fellow 1944.
WULFSBERG, ARTHUR H., IEEE Fellow 1969 "For contributions in the development of modern aerospace communication and radio navigation."
WUSTEN, HERBERT H., IEEE Fellow 1970 "For work in development and design of telegraph and data transmission equipment."
WYATT, FRANCIS DALE, AIEE Fellow 1949.
WYATT, KENNETH SAPWELL, AIEE Fellow 1948.
WYCKOFF, R.D., IRE Fellow 1955 "For his contributions to geophysical instrumentation, and the development of guided missiles."
WYLIE, LAURENCE, AIEE Fellow 1958 "For pioneering contributions to the design, construction and operation of an electrified railroad and its equipment."
WYMANN, FRANK T., AIEE Fellow 1921.
WYMANN, MAYNARD BROWN, AIEE Fellow 1942.
WYMANN, WALTER SCOTT, AIEE Fellow 1919.
YNKOOP, H.S., AIEE Fellow 1912.
WYNNE, FRANCIS E., AIEE Fellow 1920.

Y

YAGI, HIDETSUGU, IRE Fellow 1924.
YARDLEY, J.L.M., AIEE Fellow 1917.
YARNALL, JOSEPH H., AIEE Fellow 1946.
YASUKAWA, DAIKORO, IEEE Fellow 1966 “For his contributions in the electrical industry in both engineering and manufacturing.”
YERK, RALPH G., AIEE Fellow 1961 “For contributions to design of wood transmission, distribution and substation structures.”
YERKES, EARL P., AIEE Fellow 1940.
YOKURA, MORINOSUKE, AIEE Fellow 1921.
YORKE, GEORGE MARSHALL, AIEE Fellow 1929.
YOUNG, C. GRIFFITH, AIEE Fellow 1913.
YOUNG, HERBERT W., AIEE Fellow 1925.

YOUNG, LEO C., IRE Fellow 1943 “In recognition of his pioneer work on the causes of the vagaries of short wave propagation and for his invaluable research laboratory.” AIEE Fellow 1948.
YOUNG, OWEN D., IRE Fellow 1928.

Z

ZAHL, HAROLD A., IRE Fellow 1950 “For his early contributions to radar and for his guidance of the Army Signal Corps research program in the transition from war to peace.”
ZENNECK, JONATHAN, IRE Fellow 1914.
ZIMMERMAN, CARL P., IEEE Fellow 1967 “For his outstanding contributions to the development of high voltage power systems and equipment.”
ZOTTU, P.D., IRE Fellow 1944 “For his contributions in the field of high frequency heating, particularly in the application of dielectric heating in industry.”
ZWERLING, STANLEY, IEEE Fellow 1972 “For leadership in electronics standardization and reliability engineering.”
ZWORYKIN, VALDIMITR KOSMA, IRE Fellow 1938. AIEE Fellow 1945.
Part III
Present Fellows
A


Fellow Award “For contributions to the understanding of propagation effects on satellite communications, and for advances in solar radio astronomy”; Harry Diamond Award, IEEE, 1982. Other Awards: Exceptional Civilian Service Award, U.S. Air Force, 1969; Townsend Harris Award, City College of the City University of New York, 1970.

Fellow Award “For contributions to electric utility engineering, operation, and management.”

Fellow Award “For contributions to private branch exchange switching systems.” Other Awards: Sigma Xi; 37 U.S. patents.

Other Awards: Fellow, Instrument Society of America, 1965; Special Service Award, Western Society of Engineers, 1966.

Fellow Award “For the development of electromagnetic models of transformers, the use of digital computers for the design of power transformers, and leadership in extra-high-voltage power transmission”; First Prize, AIEE Northeast District, 1953. Other Awards: Coffin Award, General Electric, 1952; Eta Kappa Nu Recognition Award, 1953; Recognition Award, Italian Historical Society of America, 1954; International Prize Montefiore, Liege, Belgium, 1955.

Fellow Award “For research on solid-state phenomena and for contributions to graduate engineering education”; IRE Distinguished Service Award, 1963; USAB Citation of Honor, IEEE, 1979; IEEE Distinguished Service Award, 1980; Harry Diamond Memorial Award, IEEE, 1981, “For development of multistable semiconductor devices and integrated circuits and their application to military systems”; IEEE Centennial Medal, 1984. Other Awards: Sigma Xi, 1947; Sigma Pi Sigma, 1948; Scientific Research Society of America, 1949; Sigma Tau, 1955; Group Achievement Award, Navy Fleet Ballistic Missile Program, 1961; Fellow, American Association for the Advancement of Science, 1964; Fellow, Washington Academy of Sciences, 1964; Tau Beta Pi, 1967; Eta Kappa Nu, 1967; Navy Edison Award, 1971; Navy Research Publications Award, 1975; Fellow, New York Academy of Sciences, 1976; Washington Society of Engineers Award, 1981; District of Columbia Science Citation, 1982.

Fellow Award “For contributions to optical communications and nonlinear optics and for technical leadership in the development of CO2 waveguide lasers.” Other Awards: L.A. Hyland Patent Award, Hughes Aircraft Company, 1981; Fellow, Optical Society of America, 1982; Tau Beta Pi; Phi Kappa Phi.

Fellow Award “For contributions to engineering education, coding theory, pattern recognition, and computer networks”; Region 6 Achievement Award, IEEE, 1972, “For contributions to information theory and coding systems.”
Fellow Award “For contributions to the theory and practice of antennas in plasma.” Other Awards: Hatori-Hoko Prize for Research Achievement, 1971; Research Promotion Award for Scientific Measurements, 1978; Paper Award, IECE of Japan, 1981.

Fellow Award “For his technical direction of matters relating to allocation of radio frequencies.” Other Awards: Honorary Life Member, International Municipal Signal Association, 1944; Tau Beta Pi, 1949.


Fellow Award “For contributions to the design of radar antennas, and for direction of research and development of naval radar systems.” Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Navy, 1945 and 1976.

Fellow Award “For contributions to the advancement of silicon material and device technology.” Other Awards: Member, National Academy of Engineering, 1974; Principal Fellow, Texas Instruments Incorporated, 1978; Fellow, American Assn. for the Advancement of Science, 1981.

Fellow Award “For contributions in the field of electromagnetic scattering and for leadership in research and development of devices and instrumentation for military and aerospace applications”; Engineering Achievement Award, Arizona Section, 1963. “For outstanding contributions to electronics.” Other Awards: Gordon McKay Scholar, Harvard University, 1947-1948; Pre-doctoral Fellow, National Research Council, 1948-1950.

Fellow Award “For electronic techniques and principles in understanding brain organization and neural mechanisms.” Other Awards: Nuffield Foundation Dominion Fellow in Medicine, University of Oxford, 1950; Fellow, Royal Society of London and Nuffield Foundation, 1956; Judson Herrick Fellow, American Association of Anatomists, 1963; Fellow, American Academy of Arts and Sciences, 1965.

Fellow Award “For contributions toward the effective utilization of the UHF spectrum.” Other Awards: Distinguished Alumnus Award, Polytechnic Institute of Brooklyn, 1965; Fellow, American Association for the Advancement of Science, 1966; Registered Professional Engineer, New York State since 1951.

Fellow Award “For contribution to engineering education and to research in electronics.” Other Awards: Premium Award, Royal Aeronautical Society, 1955; Fellow, American Academy of Arts and Sciences, 1964.

Fellow Award “For his developments of transmission and detection devices for frequency-modulated signals and of electromechanical filter systems”; Outstanding Achievement Award, Consumer Electronics Group,
1970; Outstanding Technical Paper Award, Chicago Spring Conference, 1974; Edison Medal, IEEE, 1980; Achievement Award, IEEE Sonics and Ultrasonics Group, 1981. Other Awards: Fellow, American Association for the Advancement of Science, 1951; Inventor of the Year Award, George Washington University's Patent, Trademark and Copyright Research Institute, 1967; Member, National Academy of Engineering, 1967.


Fellow Award "For contributions to the theory and application of solid-state devices." Other Awards: Tate Award, American Institute, 1981.


Fellow Award "For contributions to planning, execution and interconnection of a nation-wide electric system." Other Awards: Societe Francaise des Electriciens; Societe des Ingenieurs Civils de France; Faraday Medal, British Institution of Electrical Engineers; Ingenieur General Honoraire des Ponts et Chaussees; President d'honneur de l'Union technique de l'Electricite; President d'honneur de l'Association Francaise de Normalisation; Past President, International Electrotechnical Commission, 1967-1970; Foreign associate member, U.S. National Academy of Engineering.


Fellow Award "For contributions to switching circuit theory and design automation."


Fellow Award "For contributions to the analysis of variable parametric networks and applications of the method to power engineering and electrodynamics."


Fellow Award "For contributions and technical leadership in the fields of nuclear electronics and charge transport in semiconductors."


IRE Fellow Award "For his contribution to electronics as a teacher and writer."


Fellow Award "For outstanding contributions to the development, application, and teaching of reliability methods for analysis of large-scale electric power systems."

Fellow Award "For outstanding technical leadership in the development of electrical insulation for cables."


Fellow Award "For innovation in plasma engineering and controlled thermonuclear fusion research." Other Awards: Fellow, American Physical Society; Listed in "Who's Who in America," "Who's Who in the World"; Weinberg Award, Oak Ridge National Laboratory; Member, MENS; Chairman, NPSS PSAC EXCOM; Vice President, NPSS; Secretary-Treasurer, APS plasma physics division; Vice President, Southern Appalachian Science Fair; President, Tennessee Inventor's Association; P.E. License, Tenn.; 6 patents; Visiting Professor, Japan, India, South Africa, Brazil.

ALFORD, ANDREW, IRE Fellow 1942. Born: August 5, 1904, Samara, Russia. Degrees: A.B., 1924, University of California; Doctor of Applied Science(Hon.), 1975, Ohio University.

Fellow Award "For contributions to the theory of radiation and the design of short-wave antennas"; Pioneer Award, 1965, "In recognition of inventions of antennas which have found wide use in radio navigation systems, including VOR and instrument landing systems. The term 'Alford Loop' has become a byword in the art. He has also made other notable technical contributions to radio navigation systems and to antennas for a variety of purposes."


Fellow Award "For contributions to the understanding of the properties of plasma." Other Awards: Nobel Prize in Physics, 1970; Franklin Medal; Lomonosov Medal.


Fellow Award "For contributions to safety and reliability of wire communications facilities in high-voltage environments"; IEEE Member, Power Systems Communications Committee and Chairman of its Wire Line Subcommittee; Member, Power System Relaying Committee and its Pilot Wire Relaying Performance WG, its Relaying Electrical Environment Subcommittee, its Relaying Channels Subcommittee and its Audio Tone WG; Member, Power System Instrumentation Committee WG Revising Standard No. 81; Member, Transmission Systems Committee of the Communications Society and Chairman of its Inductive Coordination, Interference and Protection Subcommittee; Member, Standards Board Coordinating Committee on Telecommunications; Member, Standards Board Coordinating Committee on Dispersed Storage and Generation; Past Member, IEEE Standards Board. Other Awards: Member, CIGRE and Canadian Delegate, CIGRE Study Group No. 36, Interference, Delegates to C.C.I.T.T.; Member, CCITT Study Group V on Telephone Protection, Member, Directives Editing Board; Canadian Delegate, TC 77 on EMI/EMC of Networks; Member, CSA Telecommunications Committee and CSA Committee on Electrical Equipment Connected to the Telecommunications Network, Member, Network Protection Subcommittee and the Inductive Coordination Committee; Member, Inductive Coordination Committee.


Fellow Award "For contributions to the characterization, analysis, and application of ferrimagnetic materials in microwave devices." Other Awards: Sigma Xi; Tau Beta Pi; Florida West Coast Engineer of the Year, Florida Engineering Society, 1978; Sigma Xi Outstanding Research Scholar (Florida West Coast), 1980.


Fellow Award "For contributions to the design of computer architecture for signal processing and to the synthesis of speech from text."


Fellow Award "For pioneering and outstanding achievement in the development of electric systems and equipment for aircraft."

ALMASI, GEORGE S., Fellow 1982. Degrees: B.S.E.E., Syracuse University; M.S.E.E., Ph.D.(E.E.), Massa-
chusetts Institute of Technology.

Fellow Award “For contributions to the development of magnetic bubble device technology.” Other Awards: Three IBM Outstanding Innovation and Invention Awards.


Fellow Award “For the development of low-loss millimeter waveguides and techniques of their electrical measurement.”


Fellow Award “For contributions to microwave network theory and measurements.”


Fellow Award “For contributions to the design of large-scale digital computers”; W. Wallace McDowell 1976, “For outstanding contributions to technical design and computer architecture.” Other Awards: Member, National Academy of Engineering, 1967; IBM Fellow, 1965; Distinguished Alumnus Award, South Dakota State University, 1970; DPMA Computer Sciences Man-of-the-Year Award, 1976; Distinguished Service Citation, University of Wisconsin, 1976; Michelson-Morley Award, Case Western Reserve University, 1977; Distinguished Fellow, British Computing Society, 1980; Entrepreneur of the Year, University of Southern California, 1981; Conspicuous Achievement Award, Association for Systems Management, 1982.


Fellow Award “For pioneering technical and managerial contributions in the field of charge-coupled devices.”


Fellow Award “For contributions to the establishment and development of radio and television broadcasting, the electronics industry and electronic engineering education in the United Arab Republic.”


Fellow Award “For valuable contributions to the field of basic electrical measurements, and as a director of research in this field.” Other Awards: Fellow, Instrument Society of America, 1979.


Fellow Award “For contributions to the design and application of satellite based phased array antennas.” Other Awards: Member, International Scientific Radio Union.


Fellow Award “For contributions to high-voltage fuse design and standardization.”

ANCKER-JOHNSON, BETSY, Fellow 1975. Born: April 29, 1927, St. Louis, Mo. Degrees: B.A., 1949, Wellesley College; Ph.D., 1953, Tuebingen University, Germany; Honorary Doctor of Law Degree, Bates College; Honorary Doctor of Science Degree, Polytechnic Institute of New York; Honorary Doctor of Science Degree, University of Southern California.

Fellow Award “For contributions to the understanding of plasmas in solids and to the development of governmental science policy.” Other Awards: Fellow, American Physical Society; Recipient, Three National Science Foundation Grants; Member, National Academy of Engineering; Fellowship, American Association of University Women; Horton Hollowell Fellowship; Phi Beta Kappa; Sigma Xi; Performance Excellence Award, The Boeing Company.


Fellow Award “For contributions to transistor switching circuits.” Other Awards: Fellow, American Association for the Advancement of Science; Distinguished En-
gineer Award, Pennsylvania Society of Professional Engineers, 1965; Distinguished Alumnus Award, Ohio State University, 1968.


Fellow Award “For outstanding leadership of computer research and development and personal contributions to the growth of computer technology.”


Other Awards: Charles A. Coffin Award, General Electric, 1942; Fellow, AAAS; Tau Beta Pi; Sigma Xi.


Fellow Award “For contributions to quadratic optimal control and stability theory, and for leadership in electrical engineering education.” Other Awards: Fellow, Australian Academy of Science, 1974; Fellow, Australian Academy of Technological Sciences, 1980.


Fellow Award “For contributions to optical waveguides and optical parametric amplification”; IEEE Centennial Medal, 1984.


Fellow Award “For his contributions to the improvement and simplification of wireless telegraphy”; Award, Professional Group on Broadcast and Television Receivers, 1963, “In recognition of his outstanding contribution to the progress of our Group and as an expression of our high esteem.” Other Awards: Certificate of Appreciation, War Dept., 1947.


Fellow Award “For contributions to extra-high voltage transmission line engineering and the development of high voltage instrumentation.”


Fellow Award “For contributions to the understanding of electromagnetic wave and plasma interaction.” Other Awards: Fellow, American Physical Society.


Fellow Award “For contributions in the field of holographic optical memories.”


Fellow Award “For contributions to power system engineering education and research in system planning and operation.” Other Awards: Eta Kappa Nu; Phi Kappa Phi; Pi Mu Epsilon; Sigma Xi; Faculty Citation, Iowa State University, 1979; Listed in “Who’s Who in the West,” 1980; Arizona State University Endowed Professorship, 1980; Professional Achievement Citation in Engineering, Iowa State University, 1981.


Fellow Award “For contributions to semiconductors and to engineering education.” Other Awards: First Brazilian Prize in Microelectronics, 1980.


Fellow Award 1970; “For contributions to the early development of communications and navigation technology for satellite applications.” Other Awards: Coolidge Fellowship Award, 1970; Fellow, AAAS, 1977.


Fellow Award “For adapting operations research techniques to electric utility power and operation problems.”


Fellow Award “For contributions to digital transmission systems, and to transmission objectives and standards”; Edwin Howard Armstrong Achievement Award, 1980; IEEE Communications Society Vice President Technical Affairs, 1982-1983; IEEE Communications Society Vice President, 1984.


Fellow Award “For leadership in electronic engineering in Argentina and service to the Institute of Radio
Engineers.”


Fellow Award “For contributions to antenna research, to engineering education, and for administration in university research.” Other Awards: John Simon Guggenheim Fellow, 1957.


Fellow Award “For technical, professional, and educational contributions in solid-state electronics.” Other Awards: Outstanding Service Award, Department of Electrical Engineering, Stanford University, 1983.


Fellow Award “For contributions in the field of solid-state rectifiers.” Other Awards: A. Atwater Kent Award, University of Pennsylvania, 1939.


Fellow Award “For dynamic leadership in the growth of the electronics profession”; Recognition Award, IRE, Los Angeles Section, 1956; WESCON Recognition Award, 1962; Recognition Award, Region 6, 1967. Other Awards: Contributions to TV Industry, Society of Television Engineers, 1957; Recognition for Development of Specialized Audio Support Equipment, U.S. Navy, 1971.


Fellow Award “For leadership and contributions to the art of high voltage ac and dc power transmission”; First Prize Paper, Portland Section, IEEE, 1970; Recognition Award, National Working Group, 1973. Other Awards: Order of the Big Thunder, Sweden, 1967.


Fellow Award “For contributions to the transfer of large blocks of power between large geographic areas.”


Fellow Award “For contributions to the theory and application of control systems.” Other Awards: Fellow, Econometric Society, 1979.


Fellow Award “For invention and analytical contributions in the field of signal processing.”


Awards: Transaction Paper Prize, AIEE, Dayton Section, 1937, for “The Cause and Elimination of Noise in Small Motors”; Chairman, Dayton Ohio Section, AIEE, 1948; National Rotating Machinery Committee;

APSTEIN, MAURICE, IRE Fellow 1959. Born: May 5, 1910, Bridgeport, Conn. Degrees: B.S., 1932; City College of the City University of New York; M.E.A., George Washington University; Ph.D., American University.


Fellow Award “For contribution to the development of FM, FM multiplex, and television systems.” Other Awards: Distinguished Alumnus Award, Purdue University, 1964.


Fellow Award “For contributions to microwave quantum devices.”


Fellow Award “For contributions in EHV transmission and in establishment and promulgation of standards for EHV equipment and systems”; William M. Habirshaw Award, IEEE; IEEE Centennial Medal, 1984. Other Awards: Archambault Medal, Association Can-Francaise pour l'Advancement des Sciences.


Fellow Award “For contributions to development of gas cell atomic clocks.” Other Awards: American Physical Society.

ARIMOTO, SUGURU, Fellow 1983. Born: August 3, 1936, Hiroshima City, Japan. Degrees: B.Sc., 1959, Kyoto University; Dr.E., 1967, University of Tokyo.


Fellow Award “For contributions to diversified electrical applications in industrial processes.”


Fellow Award “For his outstanding work in telecommunication development, and educational activity in South America.” Other Awards: Honor Diploma Scholarship (post-graduate courses in East Pittsburgh), Westinghouse International, 1930-1931; Scholarship, Columbia University, 1931-1932.


Fellow Award “For contributions to nuclear medical instrumentation and for innovative leadership in establishing clinical engineering in hospitals.” Other Awards: Fellow, National Science Foundation, 1950; Fulbright Fellow, 1969; Gano Dunn Medal, Cooper Union, 1979.


Fellow Award “For contributions to the field of power engineering and to national and international standards.”


Fellow Award “For leadership in systems analysis and contributions to national defense.”


Fellow Award “For significant contributions to microwave tubes, solid-state microwave devices and electron optics.” Other Awards: FRS, 1977; F.Eng., 1978.


Fellow Award “For his contributions to radar detection theory and integration of fire control-flight control systems for aircraft.”


Fellow Award “For contributions to the theory and application of nonlinear interactions at microwave and optical frequencies.” Other Awards: Fellow, American Physical Society, 1967; Fellow, Optical Society of America, 1983.

Fellow Award "For distinction as an executive of a large organization specializing in the construction, modernization, and repair of electric systems, switchgear testing facilities and lighting installations." Other Awards: Member, Institution of Electrical Engineers, U.K.; Associate, Institution of Mechanical Engineers.

ASTIN, ALLEN V., IRE Fellow 1954. Born: June 12, 1904, Salt Lake City, Utah. Degrees: A.B., 1925, University of Utah; M.Sc., 1926, Ph.D., 1928, New York University; D.Sc.(Hon.), 1953, Lehigh University; D.Sc.(Hon.), 1958, George Washington University; D.Sc.(Hon.), 1960, New York University.


Fellow Award "For leadership, organization and management of professional activities in the computer field, and for contributions to computer system design."


Fellow Award "For comprehensive contributions to stochastic control theory." Other Awards: Cullender Silver Medal, Institute of Measurement and Control, London, 1980.


Fellow Award "For contributions to computer components and missile guidance."


Fellow Award "For contributions to the theory and application of optimal control and estimation." Other Awards: Donald P. Eckman Award, American Automatic Control Council, 1964; Frederick E. Terman Award, American Society for Engineering Education, 1969; Fellow, American Association for the Advancement of Science, 1977; Education Award, American Automatic Control Council, 1980.

ATTINGER, ERNST O., Fellow 1978. Born: December 27, 1922, Zurich, Switzerland. Degrees: M.D., University of Zurich, 1947; M.S.(Biomedical Instrumentation), Drexel University, 1961; Ph.D.(Biomedical Engineering), University of Pennsylvania, 1965.

Fellow Award "For pioneering applications of electrical engineering methods to medicine." Other Awards: Board of Visitors, University of Virginia Research Prize, 1976.


Fellow Award "For his contributions to the development and application of computer techniques." Other Awards: Sigma Xi, 1942; Eta Kappa Nu; Instrument Society of America; Grand Medal, Paris, 1959; Fellow, American Association for the Advancement of Science, 1969; Alumni Citation, Drexel University, 1961; Fellow, British Computer Society, 1970; National Aca-
my of Engineering, 1974; Honorary Member, Information Processing Society of Japan, 1974; Distinguished Fellow, British Computer Society, 1975; Founder, First President and Honorary Life Member, International Federation for Information Processing; Department of Commerce Technical Advisory Board, 1978-81.


Fellow Award "For contributions to naval air-defense systems and leadership in development of command and control equipment."


Fellow Award "For contributions to the theory of microwave ferrite devices and microwave acoustics"; IRE, 1959, Microwave Prize for Paper, "The Synthesis of Symmetrical Waveguide Circulators."


Fellow Award "For his contributions to the design and improvement of underground electric distribution systems"; IEEE Edison Medal, 1968, "For his early contribution to underground transmission, for his continuing guidance in the field of electrical research and for his positive leadership in the development of the electrical utility industry." Other Awards: Member Emeritus, National Academy of Engineering, 1968; New England Award, Engineering Societies of New England, Inc., 1983.


Fellow Award "For contributions to the development of television receivers"; Outstanding Contributions Award, IEEE Consumer Electronics, 1976, "For his outstanding contribution and loyalty to the Group, particularly in the editing and promulgating of standards." Other Awards: RCA David Sarnoff Achievement Award, 1971; 50 U.S. patents.


Fellow Award "For fundamental contributions in the field of fault-tolerant computing"; Honor Roll, IEEE Computer Group, 1968. Other Awards: Tau Beta Pi; Eta Kappa Nu; Pi Mu Epsilon; Sigma Xi; RCA Fellow, Digital Computer Laboratory, University of Illinois; Gold Medal, Pan-American Congress of Mechanical and Electronic Engineering and Related Branches, for the paper, "Redundant Number Systems for Electronic Digital Computers," 1965; Apollo Achievement Award, U.S. National Aeronautics and Space Administration, 1969.


Fellow Award "For fundamental contributions to the theory of distributed parameter systems, and for outstanding leadership of spacecraft and missile programs."


Fellow Award "For achievements in electronics and automatic control systems; and for promoting progress of the IRE Professional Groups at the local and national levels"; Special Service Award, Automatic Control Group, 1968; Distinguished Member, IEEE Control Systems Society, 1983. Other Awards: Fellow, American Association for the Advancement of Science.


Fellow Award "For creative research, inspirational leadership, and sound engineering in the development and production of sophisticated electronic countermeasure systems."


Fellow Award "For his contributions in the field of electron optics." Other Awards: Fulbright Lectureship, University of Calcutta, 1959; Fellow, American Physical Society; Fellow, AAAS; Past President, American Vacuum Society.


Fellow Award "For contributions to the recording and reproducing of sound." Other Awards: Emilie Berliner Award, Audio Engineering Society; Fellow, Audio Engineering Society.


Fellow Award "For contributions to the fields of electromagnetic waves and plasmas." Other Awards: David Sarnoff Outstanding Achievement Award, RCA, 1963; Fellow, Canadian Aeronautics and Space Institute, 1966; Fellow, Royal Society of Canada, 1967; Fellow,


Fellow Award “For contributions to photovoltaics and education in advanced energy conversion.” Other Awards: Faculty Achievement Award, Arizona State University, 1976.


Fellow Award “For contributions to network theory and to the theory of piezoelectric devices.” Other Awards: Fellow, Acoustical Society of America, 1956.


Fellow Award “For contributions to the understanding of electrical and electrochemical voltage breakdown of extruded and laminar dielectric cables.” Other Awards: Member, CIGRE, 1962.


Fellow Award “For pioneering accomplishment in the application of radio engineering principles to the solution of technical problems in broadcasting.” Other Awards: Outstanding Achievement Award, University of Minnesota, 1956.


Fellow Award “For his contributions to the theory, practice, and standardization of television.”


Fellow Award “For fundamental contributions to the philosophy of systems engineering management in the communication field.”


Fellow Award “For contributions to high-voltage fuses and interrupters.”


Fellow Award “For leadership in the application of electrical engineering to clinical medicine.” Other Awards: Member, Instrument Society of America; Member, Association for the Advancement of Medical Instrumentation; Outstanding Achievement Award, University of Minnesota, 1981; Minnesota Business Hall of Fame Award, 1978; Associate Member, NASPE, 1982.


Fellow Award “For contributions to engineering education and circuit theory”; IEEE Centennial Medal, 1984. Other Awards: Annual Science Award, Armenian Students Association of America, 1963; Sword of Damocles Award, Syracuse University, 1967; Annual Peace Award, Syracuse Peace Council, 1967; Annual Civil Liberties Award, Central New York Chapter, ACLU, 1968; Fellow, American Association for the Advancement of Science, 1972.

BALAKRISHNAN, A. V., Fellow 1966.

Fellow Award “For contributions to the theory of communication.”


Fellow Award “For contributions to the planning of power generation, transmission and distribution systems”; Fortescue Fellow, AIEE, 1951-1952. Other Awards: Lamme Scholar, Westinghouse Electric 1956-1957; Outstanding Young Electrical Engineer Award, Eta Kappa Nu, 1961; Distinguished Engineering Graduate, University of Texas, 1967.


Fellow Award “For developments of integrated circuits providing high performance and precision in digital communications.”

Fellow Award “For the development of analysis techniques for power system performance during system disturbances”; Power Generation Committee, Station Design Subcommittee, IEEE Auxiliaries Systems Working Group; Prize Paper Award, IEEE Power Engineering Society, 1979; Prize Paper Award, IEEE Power Generation Committee. Other Awards: Registered Professional Engineer, Pennsylvania, Ohio.


Fellow Award “For contributions to the theory of piezoelectric crystals and frequency control.”


Fellow Award “For contributions to computer-oriented microwave and circuit practices.”


Fellow Award “For contributions to the advancement of network design through the use of computers.”


Other Awards: Professional Achievement Citation in Engineering, Iowa State University, 1968; Anson Marston Medal, Iowa State University, 1973.


Fellow Award “For contributions to the theory, understanding, and development of charge-coupled devices.” Other Awards: Naval Research Laboratory Research Publication Award, 1975; Dept. of Defense Citation, 1979; Senior Executive Service, 1979.


Fellow Award “For contributions and leadership in microwave, medical and digital electronics.”


Fellow Award “For contributions to detection theory as applied to optical communications.”


Fellow Award “For contributions to satellite communications.” Other Awards: Fellow, American Institute of International Education, N.Y.C., 1948; City of Columbus, Ohio; Prize, Institute of International Communications, Genoa, Italy, 1975.


Fellow Award “For his contribution to circuit breakers, particularly in the areas of dynamics of mechanical systems and protection.” Other Awards: Charles P. Steinmetz Award, General Electric Co., 1973; Member, National Academy of Engineering, 1980.


Fellow Award “For contributions to research, teaching, and international cooperation in the field of magnetics.” Other Awards: Alexander von Humboldt Senior American Scientist Award, 1975.
gie-Mellon University.
Fellow Award “For contributions to high-voltage sys-
tems.”

BARLOW, HAROLD M., IRE Fellow 1956. Born: No-

dember 15, 1899, London, England. Degrees: B.Sc., 1921, Ph.D., 1924, University of Lon-

don; D.Sc., 1971, Heriot Watt University, Edinburgh; D.Eng,
1973, Sheffield University, England.
Fellow Award “For contributions to engineering edu-
cation, telecommunication, and high-frequency tech-
niques.” Other Awards: Kelvin Premium, 1930; Flem-
ing Premium, Institution of Electrical Engineers, U.K.,
1952; Extra Premiums, Institution of Electrical En-
gineers, U.K., 1954, 1957; Fellow, Royal Society, Lon-
don, 1958; Foreign Member, Polish Academy of
Sciences, 1966; Faraday Medal, Institution of Electrical
Engineers, U.K., 1967; Delligner Gold Medal of the
International Union of Radio Science, Ottawa, 1969;
Member, Institute of Electronics and Communication
Engineers of Japan, 1973; Sir Harold Hartley Medal,
Institute of Measurement and Control, 1973; Founder
Member, Fellowship of Engineering, Council of Engi-
eering Institutions, London, S.W.1; Foreign Associate,

BARNES, EARL C., AIEE Fellow 1961. Born: May 20,
1918, Ravenna, Ohio. Degrees: B.S.E.E., 1940, Ohio
University; M.S.E.E., 1949, Case Institute of Technol-
ogy.
Fellow Award “For contributions to the design and
engineering development of electric motors.”

BARNES, FRANK S., Fellow 1970. Born: July 31,
1932, Pasadena, Calif. Degrees: B.S.E.E., 1954,
Princeton University; M.S.E.E., 1955, E.E., 1956,
Ph.D., 1958, Stanford University.
Fellow Award “For leadership in engineering educa-
tion, and for outstanding contributions to laser tech-
nology and the design of xenon-krypton flashlamps.”
Other Awards: Curtis McGraw Research Award, Ameri-
can Society for Engineering Education, 1965; Fellow,
American Association for the Advancement of Science,
1976; Robert L. Stearns Award, University of Colora-
do, 1980.

BARNES, HOWARD C., Fellow 1965. Born: May 28,
1912, Terre Haute, Ind. Degrees: B.S.E.E., 1934, Doc-
tor of Engineering(Hon.), 1977, Rose-Hulman Institute
of Technology.
Fellow Award “For contributions to the protection
and control of power systems”; William M. Habershaw
Award (co-recipient), 1979; President, IEEE Power En-
gineering Society, 1971-72. Other Awards: National
Academy of Engineering, 1974; Meritorious Service
Award, 1975; Power-Life Award, 1977; Fellow, Ameri-
can Association for the Advancement of Science, 1980; Attwood Associate, CIGRE, 1982.

BARNES, JAMES A., Fellow 1978. Born: December 7,
1933. Degrees: B.S., 1956, Ph.D., 1966, University
of Colorado; M.S., 1958, Stanford University; M.B.A.,
1979, University of Denver.
Fellow Award “For contributions to and leadership in
measurements of time and frequency and the pro-
mulgation of standards.” Other Awards: Gold Medal,
U.S. Dept. of Commerce.

BARNES, THOMAS D., AIEE Fellow 1962. Born: March
2, 1904, Ainsworth, Iowa. Degrees: Certificate, 1926,
Bliss Electrical School.
Fellow Award “For contributions to the electric me-
tering art”; Chief U.S. delegate to the International
Electrotechnical Commission, representing IEEE,
NEMA, EEl, Budapest, Hungary, 1970. Other Awards:
Gold Medal Award, Bliss Electrical School, 1926.

BARNETT, HOWARD G., AIEE Fellow 1951. Born:
January 20, 1908, Lantha, Mo. Degrees: B.Sc., 1931,
M.Sc., 1934, Oregon State University.

BARON, SHELDON, Fellow 1982. Born: May 13,
1934, Brooklyn, New York. Degrees: B.S., 1955,
Brooklyn College; M.A., 1961, William and Mary Col-
lege; Ph.D.(Applied Math.), 1966, Harvard University.
Fellow Award “For leadership in and contributions to
the application of control theory to manual control
and the modeling of human operator response”; Ad-
ministration Committee, IEEE Systems, Man, and Cy-
bernetics Society, 1971-1973; Secretary-Treasurer,
IEEE Control Systems Society, 1982-present; Program
Committee, IEEE Conf. on Decision Control, 1972;
Program Chairman, IEEE Conf. on Systems, Man, and Cy-
bernetics, 1973. Member, American Institute of
Aeronautics and Astronautics; President, Harvard So-
ciety of Engineers and Scientists, 1976-1978; Sci-
cient Advisory Group, US Army Missile Command,
1975-1977; Editorial Advisory Board, Journal of Cy-
bernetics and Information Sciences, 1976-1982; Mem-
ber, National Academy of Sciences, National Research
Council Working Group on Simulation, 1982-1983;
Chairman, National Academy of Sciences; National Re-
search Council, Working Group on Human Perform-
ance Modeling, 1983-present.

BARROW, BRUCE B., Fellow 1970. Born: April 12,
1929, Mahoning Township, Pa. Degrees: B.S.E.E.,
1950, M.S.E.E., 1950, Carnegie-Mellon University;
E.E., 1956, Massachusetts Institute of Technology; Dr.
of Technical Science, 1962, Delft Technological Uni-
versity; Advanced Management Program, 1970, Har-
vard Business School.
Fellow Award “For contributions to the field of stand-
ardization and to communication theory and practice.”
Other Awards: Fellow, American Association for the Ad-

Fellow Award “For contributions to the theory of stochastic systems and of multitarget tracking.”


Fellow Award “For contributions to the transmission of mono-chrome and color television.” Other Awards: Sigma Xi, 1924; Certificate of Appreciation, Radio-Electronics-Television Manufacturers Association, 1954.


Fellow Award “For contributions to the field of dielectric and corona loss mechanisms in electrical insulating systems.” Other Awards: American Society for Testing and Materials, Committee on Electrical Insulation.


Fellow Award “For contributions to the development of optical recording media and systems.” Other Awards: RCA Laboratories Achievement Award, 1970, 1975, 1979; Society of Information Display (SID) Best Paper Award, 1979.


Fellow Award “For contributions to precision tracking radar and radar systems engineering”; M. Barry Carlton Award, IRE-PGML, for Paper “The Future of Pulse Radar for Missile and Space Range Instrumentation.” Other Awards: David Sarnoff Outstanding Achievement Award in Engineering, RCA, 1958.


Fellow Award “For contributions to radio engineering, including inventions in Class-B amplification.” Other Awards: Distinguished Alumni Award, University of Arkansas, 1947; Engineering Hall of Fame, University of Arkansas, 1963.


Fellow Award “For contributions to the field of rotating machine theory and electronic drive dynamics.” Other Awards: Fellow, Institution of Electrical Engineers, London; Sigma Xi.


Fellow Award “For contributions to the application of computers to the information-handling needs of the medical community.” Other Awards: Celotex Fellow in Acoustics, 1948; Armstrong Cork Fellow in Acoustics, 1949; Fellow, Acoustical Society of America, 1950; Outstanding Young Electrical Engineer Award, Eta Kappa Nu, 1956; Fellow, New York Academy of Science, 1961; Fellow, American Academy of Arts and Sciences, 1963; Member, National Academy of Engineering, 1974; Assistant Secretary of Commerce for Science and Technology, 1977-1981.


Fellow Award “For contributions to the field of electromagnetic theory and to engineering education.”


Fellow Award “For contributions to multiperson decision-making and deterministic and stochastic dynamic game theory.” Other Awards: TUBITAK (Scientific and Technical Research Council of Turkey) Young Scientist Award in Applied Mathematics, 1976; Sedat Simavi Foundation Award in Mathematical Sciences (Turkey), 1979.

BASS, MICHAEL, Fellow 1981. Born: October 24, 1939, Bronx, NY. Degrees: B.S., 1960, Carnegie Mel-
Fellow Award "For contributions to quantum electronics related to laser material interactions and optical properties of matter." Other Awards: Distinguished Researcher Award, U.S.C. School of Engineering, 1979; Fellow, Optical Society of America, 1978.


Fellow Award "For the development of methods for extending the thermal operating capabilities of electrical power apparatus."


Fellow Award "For contributions to the design and development of sonar equipment." Other Awards: Fellow, Acoustical Society of America, 1949; Distinguished Service Citation, Acoustical Society of America, 1972; Fellow, American Association for the Advancement of Science.


Fellow Award "For contributions to the design and development of very large turbine-driven generators"; Nikola Tesla Award, 1979. Other Awards: National Academy of Engineering, 1980.


Fellow Award "For significant contributions to the understanding of magnetic recording materials and devices"; Distinguished Lecturer, IEEE Magnetics Society, 1980; IEEE Centennial Medal, 1984. Other Awards: American Physical Society; Sigma Xi; 15 Patents; IBM Patent Award (5th level), 1976.


Fellow Award "For contributions in the field of ionospheric scatter propagation."


Fellow Award "For creative contributions to electromagnetic imaging and its applications." Other Awards: Fellow, Royal Society of New Zealand, 1976; E. R. Cooper Memorial Prize, Royal Society of New Zealand, 1980; Mechaels Memorial Prize, University of Otago, 1980; Visiting Member, Institution of Biomedical Engineers (Australia), 1982; President, Australasian College of Physical Scientists in Medicine, 1981-83.


Other Awards: Sigma Tau, 1924; Phi Beta Kappa, 1933; Tau Beta Pi, 1956; Eta Kappa Nu, 1957.


Fellow Award "For contributions to the mechanical development and design of large rotating machines"; First Paper Prize, AIEE, Power Division, 1951, for "Improved Cooling of Turbine Generator Windings"; Lamme Medal, 1966, "For his significant contributions to the design of large generators." Other Awards: Certificate of Commendation, U.S. Dept. of Navy; Fellow, American Society of Mechanical Engineers; Rene A. Baudy Patent Award, Westinghouse Electric Corp., 1982; Rene Baudry Award, est. by the Westinghouse Electric Steam Generator Division, 1982.


Fellow Award "For accomplishments in unification of worldwide vehicular radio frequency interference standards, and innovations in the technology of electromagnetic compatibility"; Director, Michigan Section, AIEE, 1953-1955; Director, Southeast Michigan Section, IEEE, 1965-1967; Prize Paper Award, IEEE Electromagnetic Compatibility Group, 1973. Other Awards: Tau Beta Pi, 1941; Registered Electrical and Mechanical Engineer, Michigan, 1945; Award of Merit, American Association for State and Local History, 1962; President, Engineering Society of Detroit; Distinguished Alumni Award, Wayne State University, 1970; Award for Outstanding Contributions, Society of Automotive Engineers, 1971, 1984; Distinguished Service Award, Automobile Manufacturers Association, 1971; Fellow, Engineering Society of Detroit, 1974; Ford Community Service Award, 1975; Technical Advisor to the U.S. National Committee, International Electrotechnical Commission, 1964 to present; Chairman, Electromagnetic Radiation Subcommittee, Society of Automotive Engineers; U.S. Representative to International Special Committee on Radio Interference Subcommittee D; Member, Committee C-63 American National Standards Institute; Advisor, Canadian Standards Association.


Fellow Award "For his contributions to the design and application of railway control systems"; Elmer A. Sperry Award, 1971. Other Awards: Eta Kappa Nu, 1919; Tau Beta Pi, 1920; Sigma Xi, 1935; Fellow, Institute Railway Signal Engineers, Great Britain; Lamme Medal, Ohio State University, 1978; Who's Who in En-
engineering; Who's Who in the World; Who's Who in America; American Men of Science.


Fellow Award “For pioneering the singularity expansion method and electromagnetic topology in electromagnetic theory, and for development of EMP simulation and electromagnetic sensors”; Distinguished Lecturer, IEEE Antennas and Propagation Society, 1977-78. Other Awards: Director and President, SUMMA Foundation; President, Electromagnetics Society; Membership, Commissions Band E, U.S. National Committee (USNC) of International Union of Radio Science (URSI); Tau Beta Pi, 1959; Honeywell Award, Best Undergraduate in Engineering, 1962; Sigma Xi, 1962; Air Force Research and Development Award, 1970.


Fellow Award “For contributions to the planning and development of large utility systems.” Other Awards: Engineer of the Year, Pennsylvania Society of Professional Engineers, 1965.

BAXANDALL, FRANK M., AIEE Fellow 1962. Born: July 23, 1900, Fall River, Wis. Degrees: Ph.B., 1923, Ripon College; B.S., 1924, University of Wisconsin.

Fellow Award “For contributions to the use of electricity in the reduction of magnesium and chlorine.” Other Awards: Life Member, Michigan Society of Professional Engineers, 1967; Life Member, National Society of Professional Engineers, 1970.


Fellow Award “For his contributions as a teacher in the field of radio communications and his service in the coordination of communications security.” Other Awards: Member of the Order of the British Empire, 1946.


Fellow Award “For contributions to education and research in the fields of microwave theory and techniques.”


Fellow Award “For his leadership and numerous technical contributions in the fields of microwave tube design, thin film technology, and engineering education.” Other Awards: Eta Kappa Nu Award, 1957; Outstanding Achievement Award, RCA Laboratories, 1956; Exceptional Civilian Service Awards, U.S. Air Force, 1979, 1981.


Fellow Award “For contributions to the development or magnetic storage devices and solid-state techniques for data processing.” Other Awards: Eta Kappa Nu, 1946; Tau Beta Pi, 1946; Sigma Xi, 1949.


Fellow Award “For contributions to the understanding of microwave scattering from random media”; John T. Bolljahn Memorial Award, IEEE, 1962; Certificate of Achievement, IEEE, 1967. Other Awards: Sigma Xi; Tau Beta Pi; Phi Kappa Phi.


Fellow Award “For contribution to the development of cores and magnetic materials for distribution transformer.”


Fellow Award “For his outstanding contributions to metropolitan power engineering.” Other Awards: Fellow, American Society of Mechanical Engineers, 1965.


Fellow Award “For his contributions to microwave antennas and transmission lines.” Other Awards: Sigma Xi; Tau Beta Pi.


Fellow Award “For contributions to the development of the thermionic valve.” Other Awards: Fellow, Corpus Christi College, Cambridge, 1961; Fellow, University College, London, 1979.

BECKEN, EUGENE D., Fellow 1971. Born: April 29, 1911, Thief River Falls, Minn. Degrees: B.S.E.E., 1932, University of North Dakota; M.S.E.E., 1933, University of Minnesota; M.S., 1952, Massachusetts Institute of Technology.

Fellow Award “For contributions to management of engineering and to the use of computers in international communications.” Other Awards: Sloan Fellow, Massachusetts Institute of Technology, 1951; DeForest Audion Gold Medal, Veteran Wireless Operators Association, 1975; Sioux Award for Distinguished Service and Outstanding Achievements, University of North Dakota, 1975; Fellow, Radio Club of America, 1976;
Lobdell Distinguished Service Award, Massachusetts Institute of Technology, 1979; Sigma Tau, 1932; Sigma Xi, 1982.


Fellow Award “For contributions to the application of electrical techniques to medicine and biology, to advances in electric heating and electric measurement, and for public service;” First Paper Prize, AIEE, Section, 1958. Other Awards: Phi Beta Kappa, 1938; Tau Beta Pi, 1938; Outstanding Electrical Engineer Award, ENGINEERS' WEEK, 1956; ANSI Board of Directors, 1981-83.


Fellow Award “For contributions to the theory of electromagnetic scattering, and to engineering education.”


Fellow Award “For contributions in application of electronic technology to the development of frequency shift keying techniques for data transmission and remote circuit breaker tripping.” Other Awards: Sigma Xi; Theta Tau, 1939; Eta Kappa Nu, 1940; Tau Beta Pi, 1940.

BECKWITH, STERLING, AIEE Fellow 1949. Born: 1905, Carthage, Mo. Degrees: A.B., 1927, Stanford University; M.S., 1931, University of Pittsburgh; Ph.D., 1933, California Institute of Technology.

Awards: Lamme Medal, AIEE, 1958, “in recognition of his contributions to the arts and science of design and application of rotating electric machines.” Other Awards: Sigma Xi, 1932; Tau Beta Pi, 1946; Eta Kappa Nu, 1947.

BEDFORD, ALDA V., IRE Fellow 1950. Born: January 6, 1904, Winters, Tex. Degrees: B.S., 1925, University of Texas; M.S., 1929, Union College.

Fellow Award “For his many contributions to sound recording and to present-day television”; Vladimir K. Zworykin Award, IRE, 1954, “For his contributions to the principle of mixed highs and its application to color television.” Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940; Research Award, Radio Corporation of America, 1949; Incentive Awards, Radio Corporation of America, 1950, 1951; David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1967.


Fellow Award “For contributions to the fields of nonlinear circuit analysis and communication systems.” Other Awards: Fairbanks-Morse Award, 1947, 1948; Airborne Instruments Award, 1949-1950.


Fellow Award “For contributions in graph theory applications to networks and systems.” Other Awards: U.S. Army Commendation, Bikini Atoll, 1946; Eta Kappa Nu; Sigma Xi, 1963; ASA Kabakjian Award, 1976; NAVELEX Research Chair, Naval Postgraduate School, 1980-1981.


Fellow Award “For leadership in improving the design and performance of high-speed circuit breaker technology”; Switchgear Committee Award, IEEE, 1980; IEEE Centennial Medal, 1984.


Fellow Award “For his numerous advances in circuits and systems leading to improved radio broadcasting, particularly in the receiver field.” Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940; Fellow, Society of Motion Picture and Television Engineers; Distinguished Alumni Award, Gettysburg College; Licensed Professional Engineer, New Jersey; 80 U.S. Patents; Member, National Television Systems Center.


Fellow Award “For contributions to controlled phased array radars.”


Fellow Award “In recognition of his contributions to the field of magnetic recording.” Other Awards: Presidential Certificate of Merit, 1948; Emile Berliner Award, Audio Engineering Society, 1956; John H. Potts Award, Audio Engineering Society, 1960; Fellow, Acoustical Society of America.
   Fellow Award “For contributions in developing economical nuclear power and the fast breeder reactors.” Other Awards: National Academy of Engineering, 1980.


   Fellow Award “For contributions to the application of power station electric auxiliaries and to the education and training of operating personnel.”

   Fellow Award “For contributions in the areas of hybrid computation, man-machine systems, and biomedical engineering.” Other Awards: Tau Beta Pi; Eta Kappa Nu; Pi Kappa Delta; Sigma Xi; National Lecturer, Sigma Xi, 1976-1977; Charter Member, Biomedical Engineering Society.

   Fellow Award “For contributions to the application of modern control theory to industrial processes.”

BELEVITCH, VITOLD, IRE Fellow 1961. Born: March 2, 1921, Helsinki, Finland. Degrees: E.E., M.E., 1942, D.A.Sc., 1945, University of Louvain, Belgium; Doctorate(Hon.), 1975, Technical University of Munich, Germany; Doctorate(Hon.), 1978, Polytechnic Lausanne, Switzerland.
   Fellow Award “For contributions to the general theory of lumped networks”; IEEE Centennial Medal, 1984.

   Fellow Award “For contributions to the design of time-sharing computer systems, and for education in the understanding of computer structures.” Other Awards: Mellon Institute Award, Carnegie-Mellon University, 1973; McDowell Award, 1975; National Academy of Engineering, 1977; Eckert-Mauchly Award, 1982.

   Fellow Award “For pioneering in the development of UHF television tuners.”

BELL, JOHN W., IRE Fellow 1953.
   Fellow Award “For outstanding contributions to the design and development of military radar and cathode-ray direction-finding equipment in Canada.”

   Fellow Award “For contributions to infrared photography.” Other Awards: Member, American Physical Society.


   Fellow Award “For contributions to statistical communication theory, particularly in the analysis of time-varying channels.”

   Fellow Award “For pioneering in weapons systems, analog computers and controls for instrumentation.
and simulation, and leadership in engineering management." Other Awards: Tau Beta Pi; Fellow, Brooklyn Engineers' Club; Distinguished Public Service Award, U.S. Navy.


Fellow Award “For contributions to microwave solid-state amplifiers and to microwave tubes”; Microwave Application Award, IEE Microwave Theory and Techniques Society, 1980. Other Awards: Outstanding Performance Award, RCA, 1963; Laboratories Achievement Award, RCA, 1967; Best Paper Award, DOD/AOC Technical Symposium, 1980.


Fellow Award “For contributions to the organization and direction of industrial research.” Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics, 1962.


Fellow Award “For his teaching and contributions to the engineering literature in the field of industrial electronics.” Other Awards: Guest Professor and Group Leader, Bengal Engrg. College on A.I.D. program, 1954-1956; 1961-1963; Benjamin Smith Reynolds Teaching Award, 1969.


Fellow Award “For innovation in the field of compound semiconductor technology and devices, especially for work on heterostructure bipolar transistors.” Other Awards: Gauss Medal, Braunschweigische Wissenschaftliche Gesellschaft, 1984.


Fellow Award “For contributions to electronics for the blind.” Other Awards: Presidential Citation, U.S. Dept. of Labor, 1951; Handicapped Pennsylvanian of the Year, 1969; Professor Emeritus, Haverford College.


Fellow Award “For contributions to time domain analysis of electromagnetic radiators.”

BENNETT, RALPH D., AIEE Fellow 1935, IRE Fellow 1952. Born: June 30, 1900, Williamson, N.Y. Degrees: B.S., 1921, M.S., 1923, Union College; Ph.D., 1925, University of Chicago; Sc.D.(Hon.), 1945, Union College.

IRE Fellow Award “For his contributions to the administration of research in Government service and to the measurement art as physicist, engineer, and educator.” Awards: Chairman, Washington Section, AIEE, 1948-1949; Patron, Washington Section, IEEE, 1967. Other Awards: Charles A. Coffin Fellow, University of Chicago, 1923-1925; Sigma Xi; National Research Fellow, Princeton 1926-7, California Institute of Technology, 1927-8; Fellow, American Physical Society, 1924; Officer of the British Empire, 1946; Distinguished Civilian Service Award, U.S. Dept. of the Navy, 1950; Meritorious Public Service Award, City of San Francisco, 1976; Distinguished Public Service Award, U.S. Dept. of the Navy, 1977.


Fellow Award “For contributions to the design of missile guidance and control systems, and for his technical leadership.”


Fellow Award “For contributions to the realization and understanding of gas lasers”; Morris N. Liebmann Award, IEEE, 1965, “For basic contributions to the theoretical understanding and experimental realization of oscillators at optical frequencies.” Other Awards: Fellow, American Physical Society; Fellow, Optical Society of America; Sloan Foundation Fellow, 1963; Guggenheim Foundation Fellow, 1967; Sigma Xi; Charles Baldwin Sawyer Chair in Engineering and Applied Science, Yale University, 1973; Voted one of “Ten Best Teachers at Yale University,” Yale Student Course Critique, 1974, 1975, 1976; Western Electric Fund Award, American Society of Engineering Educators for Outstanding Teaching, 1977; Outstanding Patent Award, Research and Development Council of New Jersey, 1977; Master of Silliman College, Yale University, 1981.


Fellow Award “For contributions to the design of transformers and calculations of performance, especially in the fields of impulse voltage distribution.” Other Awards: Order of Merit, Westinghouse Electric, 1945.

BENSON, FRANK A., Fellow 1976. Born: November 21, 1921, Grange-over-Sands, Cumbria, United King-

Fellow Award “For advances in knowledge of guided waves and ionized gases.”


Fellow Award “For his contributions in research, teaching and administration in the fields of acoustics and speech communication.” Other Awards: Silver Commemorative Medal, Groupement des Acousticiens de Langue Francaise, 1966; Biennial Award, Acoustical Society of America, 1944; Presidential Certificate of Merit, 1948; Wallace Clement Sabine Award, Acoustical Society of America, 1961; Gold Medal Award, Audio Engineering Society, 1971; Gold Medal Award, Acoustical Society of America, 1975; Abe Lincoln Award honoring Broadcasters, Radio and Television Commission, 1976; Member, American Academy of Arts and Sciences; National Academy of Engineering; Distinguished Community Service Award, Greater Boston Chamber of Commerce, 1980; Distinguished Service Award, Massachusetts Broadcasters Association, 1980.


Awards: Chairman, Pittsburgh Section, IEEE. Other Awards: Tau Beta Pi; Sigma Xi; Special Outstanding Patent Awards, Westinghouse Electric, 1941, 1954.


BERG, DANIEL, Fellow 1974. Born: June 1, 1929, New York, N.Y. Degrees: B.S., 1950, City College of The City University of New York; M.S., 1951, Ph.D. 1953, Yale University.

Fellow Award “For contributions to the science and the art of electrical insulation.” Other Awards: Belden Memorial, 1949; Fellow, AAAS, 1975; National Academy of Engineering, 1976; Wilbur Cross Medal, Yale University, 1983; Fellow, American Institute of Chemists, 1979.


Fellow Award “For contributions to system control theory and its practical application, and for teaching.”


Fellow Award “For contributions in the field of VHF, UHF and microwave radio system analysis, development and design.”


Fellow Award “For leadership in the advancement of Optoelectronics and the technology of light-emitting diodes.”


Fellow Award “For contributions to metal-oxide-semiconductor interface physics and devices.” Other Awards: nine scholarships; Gold Medal, Association of Professional Engineers of Ontario.


Fellow Award “For leadership and contributions to space communication and aerospace electronic systems development.”


Fellow Award “For contributions to advanced data


Fellow Award “For development and characterization of new piezoelectric materials that have had major impact on transducer and wave filter technology.” Other Awards: Fellow, Acoustical Society of America.


Fellow Award “For contributions to solid-state power converter technology”; Achievement Award, Region Six, IEEE, 1979; Engineer of the Year Award, South Bay Harbor Section, IEEE, 1979-1980; Excellence Citation for Accomplishments as 1981-1982 Region 6 Awards Chairman. Other Awards: Fellow, Institute for the Advancement of Engineering; Meritorious Service to Engineering Award, National Society of Professional Engineers; Chairman Award, California Society of Professional Engineers; Registered Professional Engineer, Control Systems, California.


Fellow Award “For contributions to digital image processing technique of earth observation sensor data and applications to operational systems.” Other Awards: Medal for Exceptional Scientific Achievement, NASA, 1974; Outstanding Contribution Award, IBM, 1974; Orbiting Astronomical Observatory Group Achievement Award, NASA, 1972.


Fellow Award “For contributions to the development of electric systems for aircraft and support equipment.” Other Awards: Chairman, AIEE Committees; Author of eight Technical Papers, Electrical and Radio Systems.

BERTRAM, JOHN E., Fellow 1984.

Fellow Award “For technical and managerial leadership in the development and manufacturing of advanced data processors.”

BERTRAM, SIDNEY, Fellow 1967. Born: July 7, 1913, Winnipeg, Manitoba, Canada. Degrees: A.A., 1932, Los Angeles City College; B.S.(with honor), 1938, California Institute of Technology; M.S., 1941, Ph.D., 1951, Ohio State University.

Fellow Award “For contributions to sonar and to stereomapping and map compilation systems.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1947; Fairchild Award, American Society of Photogrammetry, 1969.


Fellow Award “For contributions to optimization, data communication networks, and distributed control.”


Fellow Award “For research, management, and teaching in the electrical power and electronics fields.” Other Awards: Officer, French Legion of Honor; Silver Gilt Medal, French Military Transmissions.


Fellow Award “For pioneering leadership in the field of electric power distribution.”


Fellow Award “For contributions to stochastic process theory and its engineering applications.” Other Awards: Tau Beta Pi (Eminent Engineer), 1981.


Fellow Award “For contributions to ultrasonic propagation in fluids”; Ad Com, IEEE Sonics and Ultrasomics Group, 1964-67. Other Awards: Distinguished Service Citation, Acoustical Society of America, 1978; Gold Medal, Acoustical Society of America, 1984; Member, Sigma Xi; Fellow, American Physical Society, Acoustical Society of America.


Fellow Award “For contributions to the research and development of high-energy lasers and new laser systems.”


Fellow Award “For contributions to the technology of electric transmission towers and for achievements in the field of electric power transmission.”


Fellow Award “For outstanding contributions in the field of optoelectronics.”


Fellow Award “For contributions to the development, design and standardization of high power broadcasting transmitters.”


Fellow Award “For contributions to infrared technology for remote sensing, viewing, and guiding.” Other Awards: Fellow, Optical Society of America; Fellow, Society for Information Display; Fellow, Society of Photo-Optical Instrumentation Engineers.


Fellow Award “For contributions to theory and education in circuits and systems.”


Fellow Award “For contributions to the applications of thermodynamics and to the development and design of large turbogenerators.” Other Awards: Former Member of the Board, Societe Francaise d'Energie Nucleaire; Honorary Professor, Ecole Nationale Superieure d'Aeronautique, 1973; Former Member of the Board, Ecole Centrale des Arts et Manufactures Paris, and Ecole Superieure d'Electricite, Paris; Former Member of the Board, Societe des Ingenieurs et Scientifiques de France; and former President of its Section; Electrical and Electronic Industries (Section Electricite).


Fellow Award “For contributions to the continuing education of engineers”; Meritorious Service Award, IEEE Education Society, 1979; Fellow, American Society for Engineering Education, 1982; Outstanding Service Award, IEEE Region 3, 1982. Other Awards: Dis-
tinguished Young Man of the Year, Chamber of Commerce, 1960; Silver Beaver Award, Boy Scouts of America, 1961; Distinguished Service Award, Continuing-Engineering Studies Division, American Society for Engineering Education, 1976; Distinguished Service Award, American Society for Engineering Education, 1977; Outstanding Service Award, ASEE-Southeastern Section, 1982.


Fellow Award “For development of digital computer applications to the planning, design, reliability, and protection of bulk power systems.” Other Awards: Young Engineer of the Year, Massachusetts Society of Professional Engineers, 1960.


Fellow Award “For contributions to development and education in power system reliability evaluation.” Other Awards: Sir George Nelson Award, Engineering Institute of Canada, 1965, 1967; Ross Medal, Engineering Institute of Canada, 1972; Fellow, Royal Society of Canada, 1980; Fellow, Engineering Institute of Canada, 1981.


Fellow Award “For contributions to network theory”; Volta Fellow, AIEE, academic year 1954-55. Other Awards: Bonaveria Award, Academy of Science of Torino, Italy, 1958; Vallauri Award, Salone Internazionale della Tecnica, 1960; Panzarasa Award, Associazione Eletrotecnica Italiana, 1960.


Fellow Award “For outstanding contributions and ingenuity in the development of overhead distribution and contact wire systems as used by electrified railroads, open-cut mining operations, street railways and trolley coach systems”; First Paper Prize, AIEE, General Applications Group, 1948, for “Are the Overhead Distribution Costs Retarding Railroad Electrification?”


Fellow Award “For contributions to research on traveling-wave tubes.” Other Awards: Miller Professor, University of California at Berkeley, 1963-1964; National Science Foundation Grantee, U.S.-Japan Cooperative Science Program, 1966; Fellow, American Physical Society; Founding Chairman, Energy and Resources Graduate Group, University of California at Berkeley, 1972-1974; Fellow, American Association for the Advancement of Science; Senior Research Fellow, University of Reading, England, 1976; Visiting Chevron Energy Professor, California Institute of Technology, 1982; Research Associate, Institute of Plasma Physics, Nagoya University, Japan, 1981-1982; 24 patents; 60 articles.


Fellow Award “For educational leadership, and for technical contributions in the analysis of nonlinear magnetic devices”; Canadian District Prize, AIEE, (With Hausen and Slenon), 1958 Prize Paper Award, IEEE Industry Applications Society, 1979. Other Awards: Pleyel Award for Research, 1951; Senior Research Fellowship, Canadian National Research Council, 1966; Sons of Martha Medal, Association of Professional Engineers, 1968; Certificate of Award, American Society of Mechanical Engineers, 1972; Senior Research Fellowship, Japan Society for Promotion of Science, 1979.


Fellow Award “For contributions to knowledge and techniques related to the design of man-machine systems.” Other Awards: Naval Ordnance Development Award; Meritorious Civilian Service Award.


Fellow Award “For contributions to the understanding of the interaction of electromagnetic radiation with the gaseous constituents of planetary atmospheres.” Other Awards: Fellow, American Physical Society.


Fellow Award “For outstanding technical contributions to the Loran System, nuclear weapons and Apollo reliability, as well as for his inspirational leadership in encouraging personnel technical growth and promoting communication and education.” Other Awards: U.S. Navy Citation, 1942; Boy Scout Silver Beaver Award, 1953; Associate Fellow, AIAA, 1967.

Fellow Award “For contributions to computer-assisted instruction systems and to the introduction of devices such as plasma display panels used in these systems.” Other Awards: Industrial Research 100 Award, 1966; Vladimir K. Zworykin Award, National Academy of Engineering, 1973; National Academy of Engineering, 1974; Bobby C. Connolly Memorial Award, Miami Valley Computer Association, 1973; DPMA Computer Science Man of the Year Award, 1975; Chester F. Carlson Award, American Society for Engineering Education, 1981; Lincoln Academy, 1982; SID Recognition Award, 1979; Fellow, AAAS, 1983.


Fellow Award “For contribution to automatic voltage regulated power supply.” Other Awards: Fellow, American Association for the Advancement of Science, 1954.


Fellow Award “For contributions to computer architecture, particularly for demonstrations of the distinction among the architecture, implementation, and realization of computing systems.” Other Awards: De Groot Award, 1979; Member, Royal Netherlands Academy of Science, 1982.


Fellow Award “For contributions to statistical communication theory and to information theory”; Prize Paper Award for Communication Theory, IEEE Communications Society, 1976. Other Awards: Ordnance Development Award, U.S. Navy, 1945; Fulbright Lecturer, Madrid, 1964-1965; Fellow, American Association for the Advancement of Science, 1970; Fellow, Institution of Electrical Engineers, 1974; Member, New York Academy of Sciences, 1979; Commissions C and E, U.S. National Committe of Union Radioscientifique Internationale, 1958; Sigma Xi, 1943.


IRE Fellow Award “For his work on negative feedback amplifier and for his application of pulse techniques to radio-communication systems”; First Paper Prize, AIEE, 1934, for “Stabilized Feedback Amplifiers”; AIEE, 1941, “For his work on negative feedback amplifiers”; Lamme Medal, AIEE, 1957, “For his many outstanding contributions to telecommunications and allied electronic arts, especially the invention of the negative feedback amplifier and the successful development and application of the negative feedback amplification principle.” Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940; John Price Wetherill Medal, Franklin Institute, 1941; Certificate of Appreciation, War Dept., 1946; Research Corporation Scientific Award, 1952; John H. Potts Memorial Award, Audio Engineering Society, 1959; Fellow, AAAS, 1954; Tau Beta Pi, 1920; Sigma Xi, 1921; Medal, Engineers Club of Philadelphia, 1961; Wisdom Award of Honor, Wisdom Society, 1969; Wisdom Hall of Fame, 1970; American Institute of Aeronautics and Astronautics, 1970; Award, Franklin Institute, 1971; Award, New York Academy of Sciences, 1971; Award, New Jersey Academy of Science, 1971; International Platform Association, 1972; Award, Creativity Recognition, 1972; Award, Intercontinental Who’s Who in Community Service, 1973; Award, Intercontinental Biographical Association, 1973; Award, American Bicentennial Research Institute, 1974; Award, American Bicentennial Research Institute, 1974; National Board of Sponsors of the Institute for American Strategy, 1974; Award, International Institute of Community Service, 1975; Award, World-Wide Academy of Scholars, 1975; Founder, Center for International Security Studies, 1977; Charter Member, Coalition for Peace Through Strength, 1978; American Biographical Institute, 1979; National Inventors Hall of Fame, 1981; Robert H. Goddard Award, Worcester Polytechnic Institute, 1981.


Fellow Award “For contributions to circuit theory and data processing.”

Fellow Award "For leadership in developing technology for advanced antennas and electromagnetic sensor systems.” Other Awards: Air Force Meritorious Civilian Service Award, 1963; Presidential Citation, 1964.


Fellow Award "For contributions to electrical engineering education”; IEEE Centennial Medal, 1984. Other Awards: Distinguished Service Award, Electrical Engineering Alumni Association, University of Illinois, 1979; Executive of the Year Award, New River Valley Chapter, National Secretaries Association, 1979; Outstanding Service Award, Southeastern Center for Electrical Education, Inc., 1980.


Fellow Award "For the development of passive surveillance systems and for contributions to information theory and error control codes”; Outstanding Paper Award, IEEE Information Theory Group, 1974; Board of Governors, IEEE Information Theory Group, 1978-1984; President, IEEE Information Theory Group, 1982. Other Awards: IBM Fellow, 1980; Courtesy Professor of Electrical Engineering, Cornell University.


Other Awards: Charles A. Coffin Foundation Award, 1931; Sigma Tau, Lambda Chapter, University of Kansas, 1950.


Fellow Award "For leadership in military electronics and communications.” Other Awards: Honorary Life Member, Armed Forces Communications Electronics Association, 1953; Meritorious Service Award, Armed Forces Communications Electronics Association, 1962; Silver Star, Distinguished Flying Cross; Air Medal with Oak Leaf Cluster; Distinguished Service Medals with Oak Leaf Cluster, 1959, 1965; Joint Service Commendation Medal, 1965; Distinguished Intelligence Medal, 1965.


Fellow Award “For contributions to the theory and practice of radar range-performance analysis.” Other Awards: Applied Science Award, Naval Research Laboratory Chapter, Research Society of America, 1963.


Fellow Award “For contributions in the computer field and in military computer and information systems.” Other Awards: Palmer C. Ricketts Award, Rensselaer Polytechnic Institute, 1935; Navy Commendation Ribbon, Navy Unit Citation, Two Commendation Letters, U.S. Navy; Sigma Xi; 79 U.S., Foreign Patents; Tau Beta Pi Eminent Engineer, Citadel Military College, 1982; Licensed Prof. Engineer.


Fellow Award “For improvement in designs and application of aluminum in underground power systems.”


Fellow Award "For contributions in stochastic control and stability theory and in education.”


Fellow Award “For contributions to the design of solid-state circuits and their application to communication systems”; Browder J. Thompson Award, IRE, 1959. Other Awards: National Academy of Engineering, 1979; Distinguished Alumnus Citation, Polytechnic Institute of New York, 1980.


Fellow Award “For contributions in the field of high-energy particle accelerators”; Merit Award, IEEE Nuclear and Plasma Sciences Society. Other Awards: Fellow, American Physical Society; Fellow, New York Academy of Sciences; Fellow, American Association for the Advancement of Science.


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Fellow Award "For technical and managerial contributions to computer component technology and production"; Outstanding Award, Mid-Hudson Valley Section, IEEE. Other Awards: Member, National Academy of Engineering, 1980; Honorary Member, SME, 1983.


Fellow Award "For fundamental contributions to masers and lasers"; Morris N. Liebmann Award, IRE, 1959, "For important fundamental contributions to the maser"; IEEE Medal of Honor, 1983. Other Awards: Oliver E. Buckley Prize, American Physical Society, 1958; National Academy of Sciences, 1960; Stuart Ballantine Medal, Franklin Institute, 1961; National Medal of Science, presented by the President of the U.S.A., 1974; Lorentz Medal, Royal Dutch Academy of Sciences, 1978; Frederick Ives Medal, Optical Society of America, 1979; Nobel Prize for Physics, Royal Swedish Academy of Sciences, 1981.


Fellow Award "For contributions to the development and design of microwave and millimeter-wave tubes." Other Awards: Sigma Xi, 1941; Fellow, American Association for the Advancement of Science, 1964.


Fellow Award "For leadership in and contributions to the development of high-speed electronic and optoelectronic devices using III-V compounds."


Fellow Award "For fundamental contributions to the abstract theory of computational complexity." Other Awards: Sloan Foundation Fellowship, 1972-73; U.C. Berkeley Distinguished Teaching Award, 1977; Fellow, AAAS, 1982.


Fellow Award "For his contributions to electrical engineering as an educator, administrator and author"; Meritorious Service Award, IEEE Education Society, 1978. Other Awards: American Men of Science, 1960; Anson Marston Distinguished Professor, 1964; Faculty Citation, 1971; Fellow, Illuminating Engineering Society, 1976; Listed in "Who's Who in the World," 1976; Marston Medal, Iowa State University, 1980.


Fellow Award "For contributions to fundamental magnetic memory and logic devices"; W.R.G. Baker Award (co-recipient), IEEE, 1971; Morris N. Liebmann Award (co-recipient), IEEE, 1975, "For the concept and development of single-walled magnetic domains (magnetic bubbles), and for recognition of their importance to memory technology"; Distinguished Speakers Program, IEEE Magnetics Society, 1979. Other Awards: Distinguished Engineering Alumnus, Purdue University, 1968; Stuart Ballantine Medal, Franklin Institute, 1973; National Academy of Engineering, 1975; Valdemar Poulsen Gold Medal, Danish Academy of Technical Sciences, 1976; Annual Technology Achievement Award, Electronics Magazine, 1979; Achievement Award, Industrial Research Institute, 1980; American Institute of Physics Prize, 1980.


Awards: National Paper Prize, AIEE, 1944; National Paper Prize, IEEE, Power Division, 1965; Four Paper Prizes, Philadelphia Section; William M. Habirshaw Award, IEEE, 1973, "For his studies and evaluation of the performance of EHV transmission facilities under varying conditions and for his contributions to studies and analysis of system behavior." Other Awards: Charles A. Coffin Awards, General Electric, 1937, 1940; Outstanding Young Electrical Engineer, Honorar-
ble Mention, Eta Kappa Nu, 1936; Director of Cooperative Course in Electrical Engineering, Massachusetts Institute of Technology, 1947-1960: Eta Kappa Nu; Sigma Xi; Tau Beta Pi; CIGRE; 25 Year Citation, Science and Arts Committee, Franklin Institute, 1967.


Fellow Award “For contributions to and technical leadership in optical communication technology and for developments of mechanical frequency filters.” Other Awards: NTG Prize, German Communications Society, 1962.


Fellow Award “For contributions to the application of network theory to invulnerable communication nets.”


Other Awards: Member, NEMA.


Fellow Award “For contributions to bio-medical engineering education.” Other Awards: Member, American Society for Engineering Education; Member, National Society of Professional Engineers; Member, American Psychological Society; Eta Kappa Nu; Sigma Xi; Phi Kappa Phi; Pi Mu Epsilon; Phi Eta Sigma; United States Air Force Gold Ring Academic Achievement Award, 1944; National Science Foundation Senior Postdoctoral Fellow Award, 1958-59; Mark L. Morris Animal Foundation Research Director Award, 1961; Albrecht Naeter Professor Chair, Oklahoma State University, 1966-1971; Certificate of Appreciation, American Society for Engineering Education, 1970; 35 U.S. Patents, 1957-1984; Member, National Society of Professional Engineers; American Psychological Society; Eta Kappa Nu; Sigma Xi; Phi Kappa Phi; Pi Mu Epsilon.


Fellow Award “For contribution to microwave transmission line theory.” Other Awards: Fellow, Sweden-American Foundation, 1951; Member, New York Academy of Sciences, 1961; Member, Scientific Research Society of America, 1958-64; Member, Engineering Society of Gothenburg, 1967.


Fellow Award “For the development of novel semiconductor devices and leadership in large-scale integrated circuit design.”


Fellow Award “For research and development of basic mechanical connecting techniques and insulating materials for communications and electrical distribution.” Other Awards: Sigma Tau, 1946; Sigma Xi, 1956; Carlton Society, 1966; Bollmeier’s Fellow Award.


Fellow Award “For his contributions to the development of communication and navigation apparatus and systems.” Other Awards: Fellow, American Association for the Advancement of Science, 1940.


Fellow Award “For contributions to the development of satellite systems for military communications.” Other Awards: Sigma Xi, 1950.


Fellow Award “For contributions to the field of mag-
netic devices and computer memories.” Other Awards: Scientific Research Society of America (RESA); Tau Beta Pi; Eta Kappa Nu; Pi Mu Epsilon; Sigma Tau.


Other Awards: Tau Beta Pi.


Fellow Award “For contributions as an educator and research investigator in the field of electronics.” Other Awards: Eta Kappa Nu; Phi Beta Kappa; Tau Beta Pi; Sigma Xi; Distinguished Teaching Award, Electrical Engineering Dept., Ohio State University, 1964, 1969, 1972; University Alumni Award, 1970.


Fellow Award “For special work on solid-state techniques and their applications.”


Fellow Award “For the development of techniques for the analysis and optimal design of time-varying and nonlinear guidance and control systems”; Browder J. Thompson Memorial Prize Award, IRE, 1953.


Fellow Award “For the development of Fourier transform modal methods for analysis of phased-array antennas”; Special Recognition Paper Award, IEEE Group on Antennas and Propagation, 1968.


Fellow Award “For applications of electronic techniques to geophysical exploration.” Other Awards: Honorary Member, Society of Exploration Geophysicists, 1959; Honorary Member, Tulsa Geophysical Society, 1965; Professional Achievement Award, University of Chicago Alumni Association, 1975.


Fellow Award “For contributions to loudspeaker design, two-state amplifier-modulators, and nonlinear systems.” Other Awards: Baker Memorial Award, Massachusetts Institute of Technology, 1963-64; Western Electric Fund Award, N.E. Section, American Society for Engineering Education, 1965; Member, Audio Engineering Society; Sigma Xi; Tau Beta Pi; Eta Kappa Nu.

Fellow Award “For contributions to the advancement of frequency-modulated communication systems.” Other Awards: Armstrong Medal, Radio Club of America, 1959.


Fellow Award “For contributions to railway safety and operating efficiency through electronic communications.” Other Awards: James Scholar, Columbia University, 1916.

Fellow Award “For leadership in the operation of large power system interconnections.”

Fellow Award “For contributions to relay protection of electric power systems”; Chairman, IEEE Pacific Coast Relays Sub-Committee IEEE, 1954-1961; Chairman, Portland Section, IEEE, 1964. Other Awards: Registered Professional Engineer, Oregon; Tau Beta Pi; Sigma Tau; Phi Kappa Phi.

Fellow Award “For contributions to railway safety and operating efficiency through electronic communications.” Other Awards: James Scholar, Columbia University, 1916.

Fellow Award “For leadership in the operation of large power system interconnections.”

Fellow Award “For contributions to relay protection of electric power systems”; Chairman, IEEE Pacific Coast Relays Sub-Committee IEEE, 1954-1961; Chairman, Portland Section, IEEE, 1964. Other Awards: Registered Professional Engineer, Oregon; Tau Beta Pi; Sigma Tau; Phi Kappa Phi.

Fellow Award “For contributions to the development, testing, application, and standardization of insulation systems for rotating apparatus.”

BOUGHTON, W. V., AIEE Fellow 1948. Born: March 6, 1900, Buffalo, N.Y. Degrees: 1919, Tennessee Military Institute; 1919-1921, Univ. of So. Calif.

Fellow Award “For contributions to frequency division multiplex and FM data and telegraph transmission.” Other Awards: F.E. d’Humy Award, Western Union, 1957.

Fellow Award “For leadership in the establishment and management of the Research Institute of Hydro-Quebec”; Award, Montreal Section, IEEE, 1943; Prize, IEEE, 1944; General McNaughton Award, Region 7, 1983. Other Awards: Prize of the Corporation of Professional Engineers of Quebec, 1943; Prize, Engineering Institute of Canada, 1943; Sigma Xi, 1947; Scientific Prize, Province of Quebec, 1969; Fellow, Engineering Institute of Canada; Fellow, Institut Canadien des Ingenieurs, 1973; Officer, Order du Canada, 1975; Fellow, The Royal Society of Canada, 1976; Canadian Research Manager Association Award, 1983; University of Illinois Electrical Engineering Alumni Award, 1983.

Fellow Award “For contributions to design and diagnosis procedures leading to increased reliability of computer systems.”

Fellow Award “For contributions to the theory and application of magnetic thin films and magnetic amplifiers and to electrical engineering education”; Prize Paper, AIEE, 8th District. Other Awards: NSF Science Faculty Fellowship, 1960-61; Honorary Research Associate, University College, London; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; ODK; Beta Gamma Sigma; Fellow,
American Association for the Advancement of Science.


Fellow Award “For contributions to the field of hydrodynamic energy conversion devices.” Other Awards: Fellow, Acoustical Society of America, 1961; Associate Member, Institute of Noise Control Engineers, 1972; Rochester Patent Law Association Inventors’ Award, 1973; Member, Society for Exploration Geophysicists, 1976; Member, Audio Engineering Society, 1978.


Fellow Award “For contributions to and management of solid-state optical, magnetic, and semiconductor research and development.”


Fellow Award “For contributions to aeronomy and the physics of the ionosphere.” Other Awards: National Academy of Engineering, 1971; Fellow, American Geophysical Union; Fellow, American Astronomical Society; Fellow, American Association for the Advancement of Science.


Fellow Award “For his contributions in the field of micro-wave techniques, spectroscopic methods and standards, and for his development of means to avoid the effect of ion bombardment on cathode-ray tube screens.”

BOWLES, EDWARD L., AIEE Fellow 1933, IRE Fellow 1947. Born: December 9, 1897, Westphalia, Mo. Degrees: B.S., 1920, Washington University; M.S., 1922, Massachusetts Institute of Technology; D.Sc.(Hon.), 1945, Norwich University.

IRE Fellow Award “For his activities in making possible the maximum practical use of advanced radio equipment in military operations and for his work in the educational field.” Other Awards: Distinguished Service Medal, 1945; Honorary Commander of the Order of the British Empire; Presidential Medal of Merit, 1948; Distinguished Alumni Citation, Washington University, 1955.


Fellow Award “For contributions to ionospheric physics, and use of incoherent scatter for the study of the ionosphere and exosphere.”


Fellow Award “For contributions to theory and practice in nonlinear optical phenomena”; IEEE Awards Board.


Fellow Award “For engineering and managerial contributions to communications and information handling systems.”


Fellow Award “For achievement in expanding power-converter technology and the development of high-power semiconductor devices.”


Fellow Award “For contributions to communications and navigation systems featuring all solid-state, high power, and optimal spectrum use, and to early FM broadcast technology.”


Fellow Award “For scientific contributions, inventions, and technical leadership in semiconductor electronics”; Morris N. Liebmann Award (with G.E. Smith), IEEE, 1974, “For the invention of the charge-coupled device (CCD) and leadership in the field of metal oxide semiconductor (MOS) device physics.” Other Awards: Fellow, N.R.C., 1948; Stuart Ballantine Award, Franklin Institute, 1973; Fellow, American Physical Society, 1974; Member, National Academy of Engineering, 1974.


Fellow Award “For contributions to radio astronomy.” Other Awards: Duddell Premium, Institution of Electrical Engineers, London, 1951, 1952; Pollock Memorial Lecturer, University of Sydney, Australia.


Fellow Award “For contributions in power distribution systems engineering.”


Fellow Award “For contributions to communication transmission systems and techniques.”


Fellow Award “In recognition of his technical and original analytical methods in the fields of frequency modulation detection”; Outstanding Engineer of the Year Award, IRE, Philadelphia Section, 1962, “For his services to the United States Government and for his many contributions to electronic communications.” Other Awards; Certificate of Commendation, U.S. Dept. of Navy, 1947; Honorary Citation, University of Pennsylvania, 1955.


Other Awards: Sigma Tau, 1926; Tau Beta Pi, 1927; Eta Kappa Nu, 1952; Life Member, National Society of Professional Engineers, 1969; Life Member, Oklahoma Society of Professional Engineers, 1966; Member, Engineering Club of Oklahoma City.


Fellow Award “For contributions to the development and of use of aircraft approach and landing”; Guest Editor, IRE Transactions on Aeronautical and Navigational Electronics Special Issue on Instrument Approach and Landing, June 1959; Guest Editor, IEEE Proceedings Special Issue on Global Navigation, October 1983. Other Awards: War Department Medal of Freedom, 1947; Air Transport Association Citation, Radio Technical Commission for Aeronautics, 1969.


IRE Fellow Award “For contributions to the technical literature, to the teaching profession, and to the art of electronic computation”; Philadelphia Section Award, 1968, “For his contributions, stimulation and leadership in behalf of the Philadelphia Section IEEE and welfare of the engineering fraternity in the Delaware Valley”; Founders Medal, IEEE, 1975, “For leadership of great value to the profession.” Other Awards: Ordnance Department Award, 1946; Honeywell Engineering and Science Medal, 1969; Organized and was in charge of ENIAC Project; University Professor of Engineering and Professor of History of Technology (Honorary Title), University of Pennsylvania, 1969.


Fellow Award “For basic research contributions in the field of electric insulation.” Other Awards: Fellow, Washington Academy of Sciences, 1966; Navy Meritorious Civilian Service Award, 1978; Citation, Congressional Record (House), City of New Carrollton, Maryland, 1979.


Other Awards: American Society for Testing Materials; Standards Engineers Citation, 1963; Honorary Member, International Association of Electrical Inspectors, 1963; A.S.A. Citation, 1963; Honorary Member, National Fire Protection Association, 1964; N.F.P.A. Distinguished Service Award.


Fellow Award “For contributions to planning, development and application of air navigation systems and techniques”; Annual Paper Prize, IRE, Dayton Section, 1957. Other Awards: Citation, Radio Technical Commission for Aeronautics, 1948; Special Service Award, FAA, 1967.


Fellow Award “For pioneering work in the theory of nonlinear networks, stability theory, and sparse matrix techniques”; Best Paper Award, IEEE Circuits and Systems Society, 1971. Other Awards: Fellow, American Association for the Advancement of Science; IBM Out-
standing Invention Award, 1970; IBM Outstanding Innovation Award, 1982.


Fellow Award “For his contribution to the field of missile guidance”; First Paper Prize, AIEEE, 1945, for “Constant speed drives for aircraft alternators.” Other Awards: Award, Mayor’s Committee on Municipal Finance (City of San Diego), 1971; Citation, Joint Atomic Forces in the South Pacific, 1963.


Fellow Award “For contributions to the theory and concepts of adaptive arrays.”


Fellow Award “For contributions to engineering education.”


Fellow Award “For leadership in antenna engineering, and for contributions to the theory of propagation in anisotropic waveguides.”


Fellow Award “For applications of systems techniques to HVDC systems.”


Fellow Award “For contributions to electron dynamics and ion propulsion.”


Fellow Award “For contributions to precision tracking radar and component reliability.”


Fellow Award “For contributions to the theory and development of gas lasers, and for studies of space-change instabilities in diodes.” Other Awards: Sherman Fairchild Distinguished Scholar, California Institute of Technology, 1974-75; Fellow, Optical Society of America, 1976; Member, National Academy of Engineering, 1977; Eta Kappa Nu; Tau Beta Pi; Sigma Xi; Phi Beta Kappa, National Academy of Sciences, 1981.


Fellow Award “For contributions to the development of a trans-continental communications system in Canada.”


Fellow Award “For his contributions to the design of radio transmitters, and his leadership in the establishment of industry standards”; Director, Region 2, IRE, 1962. Other Awards: Certificate of Appreciation, Of-
fice of Scientific Research and Development, 1945; Naval Ordinance Development Award, 1946; Certificate of Commendation, 1947; Bureau of Ships, Navy Department; Chairman, Transmitter Section, Radio-Electronics, Television MFGRS. ASSN., 1946-1953.


Fellow Award “For contributions to the development of communications satellite systems”; USAB Citation of Honor, 1979; EASCON Founder Award, 1980. Other Awards: Commendation Medal, U.S. Army, 1958; Apollo Achievement Award, NASA, 1969.


Fellow Award “For contributions to the particle accelerator field.”


Fellow Award “For contributions to the development of integrated circuits for signal processing.”


Fellow Award “For technical contributions and leadership in government electronics research.”


Fellow Award “For his contributions to antenna systems research and development.”


Fellow Award “For leadership in the design of computers which significantly extends their capability in scientific, commercial and military applications”; McDowell Award for Outstanding Contributions to the Computer Art, IEEE Computer Group, 1970; Computer Pioneer Award, IEEE Computer Society, 1982. Other Awards: Computer Sciences Man-of-the-Year Award, Data Processing Management Association, 1970; Guggenheim Fellowship, 1975; Member, National Academy of Engineering; Fellow, American Academy of Arts and Sciences; Member, U.S. Defense Science Board; Kenan Professor and Chairman, Computer Science Dept., University of North Carolina, Chapel Hill.

sity.


Other Awards: Sigma Xi; Sigma Tau.

BROTHERS, JAMES T., IRE Fellow 1959. Born: April 30, 1908, New York, N.Y.

Fellow Award "For contributions and leadership in the field of electronic components." Other Awards: Fellow, American Society for Testing and Materials; Radio Fall Meeting Plaque, E.I.A., 1964.


Fellow Award "For leadership in the development of digital-computer components and the design and operation of large-scale information processing systems." Other Awards: Certificate for Exceptional Service, Naval Ordnance Development, 1946.


Fellow Award "For contributions to testing and performance of power system components."


IRE Fellow Award "For studies and publications in the field of radio antennas"; Edison Medal, 1967, "For a meritorious career distinguished by significant engineering contributions to antenna development, electromagnetic propagation, the broadcast industry, the art of radio frequency heating, and color television." Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940; Certificate of Appreciation, War Dept., 1945; Fellow, American Association for the Advancement of Science, 1958; Distinguished Service Citation, University of Wisconsin, 1962; National Academy of Engineering, 1965; Citation, Fourth International Television Symposium, 1965; Eminent Member,Eta Kappa Nu, 1967; DeForest Audion Award, V.W.O.A., 1968; Fellow, Royal Television Society, 1970; Shoenberg Memorial Lecture, Royal Institution, 1972; Marconi Centenary Lecture, AAAS, 1974; Silver Beaver and Silver Antelope, Boy Scouts of America; David Sarnoff Award for Outstanding Achievement in Radio and Television, University of Arizona, 1980.


Fellow Award "For contributions to the application of computers in the electric utility industry." Other Awards: Outstanding Achievement Award, University of Minnesota, 1974; Fellow, Institute of Electrical Engineers, London, 1975.

BROWN, J. E., IRE Fellow 1949. Born: September 11, 1902, Greenport, N.Y.

Fellow Award "For his contributions in the field of broadcast receiver design"; Award, IEEE, 1969, "For contributions to consumer electronics." Other Awards: Award, National Association of Broadcasters, 1968.


Fellow Award "For contributions to biomedical engineering theory and practice." Other Awards: National Academy of Engineering, 1945; Gerard Swope Research Award, 1947-1948; Fulbright Fellow, 1967; Research Award, Sigma Xi, 1968; Special Team Award, NASA, 1978.


Fellow Award "For achievements in research and teaching of electrical and electronic engineering, especially in the fields of microwaves and electronic devices." Other Awards: Radio and Telecommunications


Fellow Award “For contributions in the areas of statistical communication theory and underwater acoustics.”


Fellow Award “For contributions to the control, protection, design, and performance analysis of gas, hydro, and steam turbine generators”; Prize Paper Award, IEEE Power Engineering Society, 1977.


Fellow Award “For his initiative in direction and engineering development of a statewide electric power system.”


Fellow Award “For contributions in the field of microwave tubes.” Other Awards: Naval Ordnance Development Award, 1945; Presidential Certificate of Commendation, 1947; Citation for Meritorious Civilian Service, Department of Defense, 1968; Professional Achievement Citation, Iowa State Univ., 1972; Fellow, International Microwave Power Institute, 1979.


Fellow Award “For contributions to the field of magnetism, especially micromagnetics, and to engineering education”; IEEE Centennial Medal, 1984. Other Awards: Fellow, American Physical Society, 1938; Fellow, American Association for the Advancement of Science, 1940; Fellow, New York Academy of Sciences, 1959; Meritorious Civilian Service Award, U.S. Navy, 1945; Fulbright Scholar, 1962; A. Cressy Morrison Award, New York Academy of Sciences, 1967; Honorary Life Member, Magnetics Society, 1974.


Fellow Award “For contributions to linear systems analysis, random processes, and fine resolution radar.”

BROWNE, THOMAS E., JR., AIEE Fellow 1958. Born: June 30, 1908, Murfreesboro, N.C. Degrees: B.S., 1928, North Carolina State University; M.S., 1933, University of Pittsburgh; Ph.D., 1936, California Institute of Technology.

Fellow Award “For research contributions to rapid arc quenching for high voltage circuit interrupters”; Dedication of Special Issue on Arc Plasmas, IEEE Transactions on Plasma Science, 1980.


Fellow Award “For contributions to the development of equipment and techniques used in high voltage impulse testing.”


Fellow Award “For contributions to military electronic systems and components and to electro-optical devices.”


Iowa State University.
Fellow Award “For advancing single-sideband radio communications.” Other Awards: Engineer of the Year Award, Preston Trail Chapter of Texas Society of Professional Engineers (TSPE), 1975; Engineer of the Year Award, Rockwell International, 1982.


Fellow Award “For contributions to optical measurement technology leading to advances in semiconductor microolithography.”

Fellow Award “For outstanding engineering proficiency, leadership, and administrative attainments”; Engineer of the Year Award, AIEE, Spokane Chapter, 1961. Other Awards: Achievement Award, Delta Tau Delta, 1966; Honorary Life Member, American Gas Association; Honorary Chief, Flat Head Indians, 1968; Honorary Life Member, Spokane Indian Tribes; “Who’s Who in America,” 1968-1971; Member, National Society of Professional Engineers; Listed in “International Registry of Who’s Who” (Geneva, Switzerland).

Fellow Award “For contributions to the theory and design of active circuits.” Other Awards: Western Electric Fund Award, Pacific Northwest, American Society for Engineering Education, 1978.

BRYANS, H.B., AIEE Fellow 1918.

Fellow Award “For contributions to the engineering of microwave tubes and circuits.” Other Awards: Distinguished Alumnus Award, University of Illinois, College of Engineering, 1980.

Fellow Award “For broad contributions to the field of electronic computers.”

Fellow Award “For contributions to gaseous and solid-state plasma physics and laser applications.” Other Awards: Fellow, American Association for the Advancement of Science; Fellow, American Academy of Arts and Sciences; Fellow, American Physical Society; Member, National Academy of Engineering; Member, National Academy of Sciences; Secretary of Defense Medal for Outstanding Public Service, 1977; Secretary of Energy Award for Exceptional Public Service, 1981.

Fellow Award “For leadership in the development of semiconductor electronics and early development of solid-state systems for oil explorations.” Other Awards: Distinguished Engineers Award, Texas Tech University, 1972; Member, National Academy of Engineering, 1974.


Fellow Award “For contributions to high-power, high-frequency transistor technology and innovations in the field of integrated circuits.” Other Awards: Eta Kappa Nu, 1949; Tau Beta Pi, 1949; Distinguished Flying Cross, U.S. Navy; Air Medal, U.S. Navy.

Fellow Award “For his contributions to the field of radio propagation”; Morris N. Liebmann Award, IRE, 1956, “For his contributions to the knowledge of tropospheric transmission beyond the horizon and to the application of the principles of such transmission to practical communications systems”; Achievement

BURGESS, JOHN S., Fellow 1966. Born: May 1, 1918, Milwaukee, Wis. Degrees: B.S., 1940, St. Lawrence University; M.S., 1942, University of Notre Dame; Ph.D., 1949, Ohio State University.

Fellow Award “For contributions and leadership in electronics research and development and engineering education.” Other Awards: duPont Fellow, Ohio State University, 1948; St. Lawrence University Alumni Citation, 1968; Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1965, 1971, 1980.


Fellow Award “For contributions to superconductive computer memories and to color television.” Other Awards: Sigma Xi; David Sarnoff Outstanding Achievement Award.


Fellow Award “For his contributions in the field of power cable engineering and soil thermal resistivity research.” Other Awards: Sigma Xi, 1928; Tau Beta Pi, 1960.


Fellow Award “For contributions to semiconductor technology for wide-band transmission systems and radio astronomy.” Other Awards: Fellow, American Physical Society, 1975; Fellow, AAAS, 1976; Fellow, Optical Society of America, 1979; David Richardson Medal, Optical Society of America, 1982; Distinguished Technical Staff Award, Bell Laboratories, 1982.


Fellow Award “For contributions to signal processing and electrical engineering education”; Senior Paper Award, IEEE Acoustics, Speech, and Signal Processing Society, 1975. Other Awards: Alexander Von Humboldt Foundation Senior Award, 1975; Prize for Excellence in Teaching, Rice University; Senior Fulbright Fellow, 1979; Humboldt Reinviation Award, 1982.

BUSH, RICHARD M., AIEE Fellow 1946. Born: September 28, 1907, Jalapa, Vera Cruz, Mexico. Degrees: M.S.E.E., Private Instructor.


Fellow Award “For contributions to sequential detection theory, radar techniques, and statistical communication theory.”


Fellow Award “For contributions to aperture theory and to numerical techniques for solving electromagnetic boundary value problems.” Other Awards: Outstanding Engineering Teacher Award, University of Mississippi, 1977-78; Western Electric Fund Award, ASEE, 1974; Best EMP Paper Award, 1975-78; Sigma Xi; Tau Beta Pi; Eta Kappa Nu.


Fellow Award “For pioneering work on microwave ferrites and ferrite devices”; Distinguished Service Award, IEEE Microwave Theory and Techniques Society, 1980; Certificate of Recognition, IEEE Microwave Theory and Techniques Society, 1981.


Fellow Award “For contributions to power systems analysis in synchronous stability and fault calculations.”

BYLOFF, ROBERT CONRAD, Fellow 1978. Born: April 6, 1928. Degrees: B.S.(E.E.), 1952, University of Cali-
C


Fellow Award “For development of new technology for induction heating of seam-welded high-pressure pipelines.”


Fellow Award “For contributions to advancement of microwave technology, particularly in the application of microwave ferrites”; Annual Award, IRE, Phoenix Section, 1961, “For outstanding contributions to electronics.” Other Awards: Certificate of Achievement, U.S. Dept. of the Army, 1956.


Fellow Award “For contributions to design of small motors and improved cooling and performance of large generators.” Other Awards: Tau Beta Pi, 1928; Phi Kappa Phi, 1929; Sigma Xi, 1930; Fellow, American Society of Mechanical Engineers, 1964.


Fellow Award “For leadership in the use of digital computers as an aid in circuit design.”


Fellow Award “For contributions to the design, protection, and operation of high-voltage ac and dc power transmission systems.” Other Awards: Past International Secretary, CIGRE Study Comm. of Transmission Systems; Eta Kappa Nu; Who’s Who in Engineering, 1980.

CALVERLEY, THOMAS E., Fellow 1984.

Fellow Award “For technical leadership in the development and implementation of high voltage dc transmission systems.”

CAMPANELLA, SAMUEL JOSEPH, Fellow 1978. Degrees: B.S.E.E., Ph.D., Catholic University of America; M.S.E.E., University of Maryland.

Fellow Award “For contributions to signal processing and satellite communications.” Other Awards: Fellow, American Association for the Advancement of Science; Sigma Xi; Phi Eta Sigma; American Institute of Aeronautics and Astronautics.


Fellow Award “For leadership in research and standardization in the field of ionizing radiation effects on electrical insulation.” Other Awards: Fellow, American Institute of Chemists, 1980; Research Publication Award, Naval Research Laboratory, 1982.


Fellow Award “For contributions in the field of electric power distribution engineering.”


IRE Fellow Award “In recognition of his contributions to the field of magnetic recording”; AIEE Fellow Award “For contributions to the science and art of magnetic recording”; Achievement Award, IRE, Professional Group on Audio, 1958, “For contributions to audio technology as documented in publications of the IRE”; Consumer Electronics Award, Broadcast and Television Receivers Group, 1964, “For outstanding contribution to consumer electronics”; IEEE Professional Group on Broadcast & Television Receivers, Papers Award, 1964, “For outstanding paper published in the TRANSACTIONS.” Other Awards: JOURNAL SMPTE Paper Award, Society of Motion Picture and Television Engineers, 1947; Alumni Distinguished Service Award, Illinois Institute of Technology, 1948; HKN Young Engineers Award, 1948; Fellow, Acoustical Society of America, 1951; John Scott Medal, Franklin Institute, 1955; Citation, Indiana Technical College, 1958; Fellow, American Association for the Advancement of Science, 1961; Product Award, INDUSTRIAL RESEARCH MAGAZINE, 1966; John S. Potts (Gold Medal) Memorial Award, Audio Engineering Society, 1969; Honorary Member, AES, 1970; Fellow, SMPTE, 1971; Merit Award, Chicago Technical Societies Council, 1973; Member, National Academy of Engineering, 1976; IIT Alumni Medal, 1978; Washington Award,


**CANDY, JAMES C., Fellow 1976.** Born: September 27, 1929, Crickhowell, South Wales, United Kingdom. Degrees: B.Sc., 1951, Ph.D., 1955, University of North Wales.

Fellow Award “For contributions to high-speed digital coders and video picture processing.”

**CANNFIELD, WRIGHT, AIEE Fellow 1962.** Born: April 11, 1907, Yale, Okla. Degrees: B.S., 1929, Oklahoma State University.

Fellow Award “For contribution to a major electrical utility system through management of design, construction, and operation.” Other Awards: Engineer of the Year Award, Tulsa Chapter, Oklahoma Society of Professional Engineers, 1972.


Fellow Award “For important contributions in the application of advanced electrical systems to all phases of refined petroleum product pipeline operations.”

**CANTWELL, JOHN L., AIEE Fellow 1957.** Born: September 3, 1906, Wilmington, N.C. Degrees: B.S.E.E., 1927, University of North Carolina; M.S.E.E., 1929, Massachusetts Institute of Technology.

Fellow Award “For his contributions to functional testing and the evaluation of transformers and transformer insulating materials”; Best Paper Award, Pittsfield Section, AIEE, 1936. Other Awards: Managerial Award, General Electric Company, 1963.


Fellow Award “For contributions in statistical techniques to electronics and geophysics in high-resolution spectral analysis and nonparametric detection.” Other Awards: Eta Kappa Nu, 1952; Tau Beta Pi, 1953; Sigma Xi, 1955; Elected Member, Sigma Xi, 1976; Fellow, American Association for the Advancement of Science, 1976.


Fellow Award “For development and implementation of wide-band radio links and for contributions to space communication.” Other Awards: Premio Internazionale delle Comunicazioni, 1971; Premio Nazionale G. Marconi, 1974; Premio migliore pubblicazione AEI, 1978; Medaglia d’oro per i bene meriti della cultura, della scuola e dell’arte, 1972; 9th Marconi International Fellowship, 1983.


Fellow Award “For contributions to stable, secured operations of an extra high voltage continental interconnected system”; Paper Prize, AIEE, 1960, for “Two examples of industrial research in France relating to the transmission of electrical energy.”


Fellow Award “For advances in microwave network synthesis.” Other Awards: Outstanding Achievement Award, Air Force Systems Command, 1965; Senior Postdoctoral Fellow, National Science Foundation, 1964-1965; NATO Fellowship, University of Genoa (summer), 1975; Visiting Scientist, Centre National D’Etudes des Telecommunications, 1979-1980; Visiting Professor, MIT, 1972-73; Visiting Professor, Tianjiu University (China), summer 1982; Preston Lewis Professor of Engineering, Cornell University.


**CARLSON, WENDELL L., IRE Fellow 1949.** Born: January 1, 1897, Jamestown, N.Y. Degrees: Bliss Electric School, 1918.

Fellow Award “In recognition of his contributions over many years to the development of radio receivers and their components.” Other Awards: Charles A. Coffin Award, General Electric, 1925; Modern Pioneer Award.


Fellow Award “For contributions to the technology, international standardization, and reliability of air transport avionics.”

Fellow Award “For pioneering work in the fields of
radars and information processing.” Other Awards:
Grand Prix de l'Electronique General Ferrie, 1969;
CARR, PAUL H., Fellow 1979. Born: May 12, 1935,
Boston, Mass. Degrees: B.S., 1957, M.S., 1961, Mas-
sachusetts Institute of Technology; Ph.D., 1966, Bran-
deis University.
Fellow Award “For contributions to microwave
acoustics and their use as signal-processing com-
ponents.” Other Awards: Marcus D. O'Day Memorial
Award, 1967; Guenter Loeser Memorial Award, 1973;
Air Force Systems Command Outstanding Technical
Achievement of the Quarter Award, 1976.
CARRARA, GIANGUIDO, Fellow 1972. Born: February
23, 1930, Brescia, Italy. Degrees: D.E.E., 1953, Poly-
technical Institute of Milano.
Fellow Award “For contribution to the analysis of
the behavior of dielectric systems and advancements to
the science of insulation coordination in high-voltage
networks, particularly under transient disturbances.”
CARREL, ROBERT L., Fellow 1973. Born: February 8,
1933, Fort Wayne, Ind. Degrees: B.S.E.E., 1955, Pur-
due University; M.S.E.E., 1958, Ph.D., 1961, Universi-
ty of Illinois.
Fellow Award “For contributions to antenna research
and development”; Member, Board of Directors, M-IDCON
Convention Director, MIDCON Conference, 1982.
Other Awards: Eta Kappa Nu; Tau Beta Pi; Sigma Xi;
Member, Armed Forces Communications and Elec-
tronics Association; Member, Association of Old Crows;
Member, Board of Directors, Southern Methodist Uni-
versity Foundation for Science and Engineering; Found-
er and Executive Vice President, Electrospace Systems,
Incorporated.
CARROLL, THOMAS J., IRE Fellow 1962. Born: April
26, 1912, Pittsburgh, Pa. Degrees: A.B., 1932, Uni-
versity of Pittsburgh; Ph.D., 1936, Yale University.
Fellow Award “For contributions to the understand-
ing of tropospheric propagation.”
CARSON, VICTOR S., IRE Fellow 1955. Born: June 29,
1908, Pocatello, Idaho. Degrees: B.S., 1938, Oregon
State University; Eng., 1940, Ph.D., 1946, Stanford
University.
Fellow Award “For his contributions to the develop-
ment and analysis of long-range aeronautical electronic
navigation systems.”
CARTER, GEOFFREY W., Fellow 1969. Born: May 21,
Fellow Award “For contributions to the application
of electromagnetic theory and mathematics to elec-
trical engineering design and analysis, and for particular
success in electrical engineering education.” Other
Awards: Fellow, IEE, 1947.
CARTER, GORDON K., AIEE Fellow 1961. Born: May
13, 1912, Richmond, Va. Degrees: B.S.E., 1934, E.E.,
1935, University of Virginia.
Fellow Award “For contributions to the development
of advanced engineering computational methods in
diversified fields”; First Paper Prize, AIEE, Power Divi-
Other Awards: Mac Wade Award, 1952.
CARTER, WILLIAM C., Fellow 1975. Born: January 16,
1917, Waterville, Me. Degrees: B.A., 1938, Colby Col-
lege; Ph.D., 1947, Harvard University.
Fellow Award “For contributions to fault-tolerant
computing”; Computer Society Honor Roll, 1974, “For
his efforts as Guest Editor of the IEEE Transactions on
Computers and for his contributions to the Interna-
tional Symposia on Fault Tolerant Computing”; Com-
puter Society Distinguished Visitor, 1972, 1973; Com-
puter Society Certificate of Appreciation for “Contribu-
tions to the Technical Committee on Fault Tolerant
Computing,” 1982. Other Awards: Rhodes Scholar-
ship, 1938; Phi Beta Kappa, 1938; Sigma Xi, 1941;
NASA Certificate of Recognition, 1972, 1973; IBM 6th
Level Invention Achievement Award, 1983; Who's
Who, 1982, 1983; NASA Advisory Committee on
CARVILLE, T. ELLSWORTH M., AIEE Fellow 1947.
Born: October 20, 1903, Leeds, Me. Degrees: B.S.,
1924, E.E., 1933, University of Maine.
CASABONA, ANTHONY M., Fellow 1968. Born: June
16, 1920, New York, N.Y. Degrees: B.S.E.E., 1941,
School of Technology, City College of The City Uni-
versity of New York.
Fellow Award “For his pioneering technical and
managerial contributions to navigation and instrument
landing systems.” Other Awards: Eta Kappa Nu, 1941;
Tau Beta Pi, 1941.
CASASENT, DAVID P., Fellow 1979. Born: December
8, 1942, Washington, D.C. Degrees: B.S.E.E., 1964,
M.S.E.E., 1965, Ph.D. (E.E.), 1969, University of Illi-
nois.
Fellow Award “For theoretical and engineering con-
tributions to coherent optical data processing,” Barry
Carlton Outstanding Paper Award, IEEE Aerospace and
Electronic Systems Society, 1976; Special Recognition
Award, IEEE Electron Devices Society, Pittsburgh
Chapter. Other Awards: Fellow, Society of Photo-
Optical Instrumentation Engineers, 1977; Service Cit-
ation, Society of Photo-Optical Instrumentation Engi-
neers, 1976, 1978; Outstanding Paper Award, Ameri-
can Institute of Aeronautics and Astronautics, 1979;
Fellow, Optical Society of America, 1980; George
Westinghouse Chair, Carnegie Mellon University,
1981; Governor, Society of Photo-Optical Engineers,
1983.


Fellow Award “For leadership in the design and development of large-scale computers, and for contributions to systems architecture.”


Fellow Award “For contributions to III-V compounds in understanding emission based on the basic optical and impurity behavior.”


Fellow Award “For technical contributions and leadership in computer semiconductor technologies”; IEEE Mid-Hudson Section Technical Contribution Award, 1982.


Fellow Award “For contributions to the development of high voltage electrical systems.”


Fellow Award “For contributions to the analysis of the transient behavior of electric power systems.”


Fellow Award “For technical contributions and leadership in development of microwave integrated circuits and high-power transistors.” Other Awards: IR-100 Award, 1969; RCA Laboratories Outstanding Achievement Award, 1967, 1970.


Fellow Award “For contributions to engineering and management in the economic application of technology to telecommunications networks.”


Fellow Award “For his contributions to television theory and circuitry.”


Fellow Award “For contributions to applications of matrix algebra to network theory.”


Fellow Award “For contributions to protection and metering of high-voltage power systems utilizing both solid-state and electromechanical components.”


Fellow Award “For contributions to advanced marine instrument and control systems.” Other Awards: Capt. Joseph H. Linnard Prize, Society of Naval Architects and Marine Engineers, 1956.


Fellow Award “In recognition of his engineering and administrative achievements in directing design and construction in one of the nation’s large power systems.” Other Awards: 75th Anniversary Award, American Society of Mechanical Engineers, Southern California Section, 1955; Engineer of the Year Award, Los Angeles Engineering Societies, 1962; Philip Sprague Award, Instrument Society of America, 1963; President, American Society of Civil Engineers, 1964-1965; Member, National Academy of Engineering, 1964; Golden Beavers Award, 1969; Rickey Award,


Fellow Award “For his contributions to transmission and relay systems and frequency modulation.”


IRE Fellow Award “For leadership in electrical engineering education”, Philadelphia Section Award, IEEE, 1973, “For his long standing service to the IEEE on local and national levels, his leadership in the development of international standards, and his service to the Delaware Valley Community through his outstanding and progressive leadership in engineering education.” Other Awards: Army-Navy E, 1947; Philadelphia Engineer of the Year Award, 1966; Member, National Academy of Engineering, 1970; D. Robert Yarnall Award, University of Pennsylvania Engineering Alumni Society, 1971; Allan R. Cullimore Award, Newark College of Engineering, 1973.


Fellow Award “For his contributions to the development of high power broadcast transmitters and military electronic equipment.”


Fellow Award “For contributions to the application of graph theory to networks and leadership in engineering education.” Other Awards: President's Outstanding Teacher Award 1979, University of Santa Clara; Honorary Professor, 1980, University of Hong Kong; Honorary Professor, 1982, Anhuii University, Hefei, China; California Senate Commendation (Resolution #527) for contributions in E.E. and in community, 1972; Special Chair, National Taiwan University, 1973; Honorary Consultant, National Science Council, Taiwan, 1981; Tamkang Chair, Tamkang University, Taiwan, 1981; Electrical Engineering Distinguished Alumnus Award, University of Illinois, 1983.


Fellow Award “For his contributions to radar development, and to the application of electronics to biophysics”, Morlock Award, IRE, Professional Group on Biomedical Electronics, 1961, Other Awards: Paul Lewis Award, 1950; Presidential Certificate of Merit, 1950; Harvey Lecturer, 1954; Phillips Lecturer, 1956, 1965; Pepper Lecturer, 1957; Genootschaps Medaille, Dutch Academy of Science, 1965; Kellin Lecturer, British Biochemical Society, 1966; Harrison Howe Award, American Biochemistry Congress, 1981; Member, Royal Academy of Arts and Sciences, Upsala; Leopoldina Academy, Halle; Bavarian Academy of Sciences; American Philosophical Society; Explorer's Club. Chemical Society, 1966; Franklin Medal, Franklin Institute, 1966; Overseas Fellow, Churchill College, Cambridge University, 1966; Pennsylvania Award for Excellence (Life Sciences), 1968; Philadelphia Section Award & Nichols Award, New York Section, American Chemical Society, 1969, 1970; Heineken Medal, Netherlands Academy of Science and Letters, 1970; Redfearn Lecturer, 1970; Gairdner Award, 1972; Festschrift Symposium, Stockholm, 1973; Semmelweis Medal, Budapest, 1974; Foreign Associate, Argentine National Academy of Science, 1975; Foreign Member, Max-Planck-Gesellschaft zur Forderung der Wissenschaften, Germany, 1975; Presidential Lecturer, University of Pennsylvania, 1975; 35th Richtmer Memorial Lecture of Association of Asphalt Paving Technologists, 1976; 2nd. Julius Jackson Memorial Lecture, Wayne State University, Sigma Xi, 1976; ISCO Award, 1976; DaCosta Oration, Philadelphia County Medical College, 1976; Philip Morris Lecturer, 1978; Honorary Vice President, International Union of Pure and Applied Biophysics, 1979; Rudolf-Lemberg Memorial Lecture Series, Australia, 1979; Invited Ple- nary Lecturer, Society of General Physiologists, International Congress of Physiological Sciences, Budapest, 1980; Invited Lecturer, First European Bioenergetics Congress, Urbino, 1980; Hastings Lecture, Scripps Clinic and Research Foundation, 1980; Invited Lecturer, Gordon Conference on Energy Coupling Mech-


Fellow Award “For contributions in fault-tolerant computing and design automation.”

CHANG, SHERDON S. L., IRE Fellow 1962. Born: January 20, 1920, Peking, China. Degrees: B.S., 1942, National Southwest Associated University, China; M.S., 1944, National Tsing Hua University, China; Ph.D., 1947, Purdue University.

Fellow Award “For contributions to information theory and to control systems theory.”


Fellow Award “For contributions to optoelectronics and integrated optics.” Other Awards: Distinguished Professional Achievement Award, University of Michigan, 1978; Fellow, Optical Society of America, 1982.


Fellow Award “For contributions to the measurement and reduction of radio frequency interference and to the formulation of standards, rules and regulations in this field.”


Fellow Award “For contributions to the advancement of the theory and application of magnetism.”


Fellow Award “For his engineering achievements in the planning of a large interconnected power system.”


Fellow Award “For contributions to the understanding of corona phenomena associated with high-voltage power transmission lines.”


Fellow Award “For leadership in the development and application of communications satellite systems.” Other Awards: Fellow, American Institute of Aeronautics and Astronautics; Member, National Academy of Engineering, Member, International Academy of Astronautics; Distinguished Service Medal, Department of Defense, 1963; Lloyd V. Berkner Space Utilization Award, American Astronautical Society, 1967; Guglielmo Marconi International Award, 1974; Theodore Von Karman Award, American Institute of Aeronautics and Astronautics, 1977; Goddard Astronautics Award, American Institute of Aeronautics and Astronautics, 1978.


Fellow Award “For contributions to nuclear instrumentation and measurement techniques.”


Fellow Award “For contributions to the understanding of spontaneous fission of uranium, and for electronics education.” Other Awards: Sir John Woodburn Gold Medal, Indian Association for the Cultivation of Science, 1948; Sir Charles Elliot Medal & Prize, Royal Asiatic Society, 1951; Prof M.N. Saha Memorial Gold Medal, Asiatic Society, 1981; Fellow, Indian National Science Academy, 1955; Fellow and Ex-President, Indian Physical Society, 1935-; Post-Doctoral Research Fellow, National Research Council, Ottawa, Canada, 1949-51; Royal Society Bursary, Davy-Faraday Laboratory U.K., 1958-59; Visiting Professor Technical University, Munich, Germany, 1964-65; Professor Emeritus, Jadavpur University, Calcutta, 1978.


Fellow Award “For contributions to power system communication and applications of electronics to industry.” Other Awards: Outstanding Young Electrical Engineer Award, Eta Kappa Nu, 1949; Order of Merit, Westinghouse Electric, 1963; Computer Sciences Man of the Year, Data Processing Management Association, 1972.


Fellow Award “For contributions to the integration of computer technology into power plant design and for leadership in the development of industry standards”; IEEE Standards Medallion Award, 1978; IEEE Power Generation Committee Outstanding Service Award, 1982.
CHEN, DI, Fellow 1975. Born: March 15, 1929, Chekiang, China. Degrees: B.S., 1953, National Taiwan University; M.S., 1956, University of Minnesota; Ph.D., 1959, Stanford University.

Fellow Award “For contributions to magnetooptic materials and their application in data storage.” Other Awards: Honeywell H.W. Sweatt Engineers and Scientists Award, 1971; Honeywell Fellow, 1979.


Fellow Award “For significant contributions to plasma diagnostics, and to the understanding of plasma instabilities and anomalous transport phenomena.”


CHEN, KAO, Fellow 1983. Born: March 21, 1919, Shanghai, China. Degrees: B.S.E.E., 1942, Jiao Tong University, China; M.S.E.E., 1948, Harvard University; Completed advanced graduate studies at Polytechnic Institute of Brooklyn, 1952.


Fellow Award “For contributions to electromagnetics and plasmas.” Other Awards: Distinguished Faculty Award, Michigan State University, 1976; Fellow, American Association for the Advancement of Science, 1977; Excellent Achievement Award, Taiwanese-American Foundation, 1983; Member, Sigma Xi; Member, Phi Kappa Phi; Member, Tau Beta Pi; Member, Commission A.B.C., International Union of Radio Science.

CHEN, MO-SHING, Fellow 1978. Born: August 20, 1931, China. Degrees: B.S., 1954, National Taiwan University; M.S., 1958, Ph.D., 1962 (all in Electrical Engineering), University of Texas at Austin.

Fellow Award “For contributions to education and research in power system engineering.” Other Awards: Exxon Award, 1974; Outstanding Research Award, University of Texas at Arlington, 1975; First Power Engineering Educator Award, Edison Electric Institute, 1976; Western Electric Fund Award, American Society for Engineering Education, 1977; Distinguished Honorary Alumnus Award, University of Texas at Arlington, 1979; U.S.A. Achievement Award, Chinese Institute of Engineers, 1979.


Fellow Award “For contributions to computer organization and multicomputer systems”; IEEE Computer Society Honor Roll, 1978. Other Awards: Outstanding Contribution Award, IBM, 1964, 1971; Invention Achievement Award, IBM, 1973, 1974, 1975, 1977; Phi Lambda Upsilon; Sigma Pi Sigma; Sigma Xi; Phi Beta Kappa.


Fellow Award “For contributions to graph and network theory.” Other Awards: University Fellow, University of Illinois, 1961; C. T. Loo Fellow, China Institute of America, 1962; Lester R. Ford Award, Mathematical Association of America, 1967; Research Institute Fellow Award, Ohio University, 1972; Outstanding Educators of America Award, 1973; Baker Fund Award, Ohio University, 1974; Excellence in Teaching Award, College of Engineering, Ohio University, 1975; Fellow Award, American Association for the Advancement of Science, 1978; Distinguished Professor Award, Ohio University, 1978; Baker Research Award, Ohio University, 1978.


Fellow Award “For contributions in the fields of network theory and switching circuits, and for vigorous leadership in engineering education.” Other Awards: Sigma Xi, 1954; Florida Blue Key Outstanding Faculty Award, 1960; Outstanding Publication Award, Chia Hsin Cement Co. Cultural Fund, 1964; Sigma Tau, 1965; Eta Kappa Nu, 1967; Tau Beta Pi, 1966; Teacher-Scholar Award, University of Florida, 1971; Epsilon
Lambda Chi, 1974; Phi Tau Phi, 1976; Omicron Delta Kappa, 1977; Phi Kappa Phi, 1981.


Fellow Award “For contributions to engineering education and antenna theory”; Best Paper Prize, Syracuse Section, 1961, 1964, 1965, 1966, 1969, 1970, 1980; European Distinguished Lecturer, IEEE Antennas and Propagation Society, 1975-1976. Other Awards: Charles Storrow Scholar, Harvard University, 1944-1945; Gordon McKay Scholar, Harvard University, 1945-1946; Best Original Paper Award, National Electronics Conference, 1960; Fellow, John Simon Guggenheim Foundation, 1960-1961; Research Award, Sigma Xi, Syracuse Chapter, 1962; Annual Achievement Award, Chinese Institute of Engineers, 1962; Fellow, Institution of Electrical Engineers, U.K., 75; Distinguished Service Award, Phi Tau Phi Scholastic Honor Society of America, 1975;Eta Kappa Nu; Sigma Xi, Phi Tau Phi; Distinguished Engineer, LI Institution of Science and Technology; Centennial Professor, Syracuse University, 1970; Chancellor’s Citation for Exceptional Academic Achievement, Syracuse University, 1980; U.S. Representative, Institution of Electrical Engineers, U.K., 1980-83.


Fellow Award “For developments in high-resolution tunable infrared and far-infrared sources for remote sensing of the atmosphere and for inspection of high-voltage cable insulation.” Other Awards: NSF Faculty Fellow Award, 1960; Am. Optical Society Fellow Award, 1976; United Technologies Award, 1982.


Fellow Award “For contributions and technical leadership in gas laser technology.”


Fellow Award “For contributions to the theory and design of control systems”; First Paper Prize, AIEE, Industry Group, 1948. Other Awards: Fellow, AAAS, 1972; Fellow, ISA, 1974; Member, National Academy of Engineering, 1974; Case Centennial Scholar, 1980; Honda Prize, 1981.


Fellow Award “For contributions to computer science education and research in statistical pattern recognition.” Other Awards: Program Director of Intelligent Systems, Computer Science Section, National Science Foundation, 1982-83.


Fellow Award “For contributions to electroencephalography”; William J. Morlock Award, IEEE Group on Biomedical Engineering. Other Awards: Distinguished Faculty Award, University of Florida, 1970; Western Electric Award, American Society for Engineering Education, Southeastern Section, 1971-1972; Award for Research, American Society for Engineering Education, Southeastern Section, 1972-1973; Award for Outstanding Service, University of Florida College of Engineering, 1974-1975; George Westinghouse Award, American Society for Engineering Education, 1975.


Other Awards: Order of Merit, Westinghouse Electric, 1944; Outstanding Service Commendation, U.S. Dept. of Navy, Bureau of Ships, 1948; Tau Beta Pi; Vice President, Westinghouse Electric Corporation.


IRE Fellow Award “For his contributions to improved broadcasting”; AIEE Fellow Award “For his contributions to the development of measuring and monitoring equipment in the audio and video broadcasting fields.” Other Awards: Presidential Certificate of Merit, 1949; John H. Potts Award, Audio Engineering Society, 1950; Fellow, Audio Engineering Society; Fellow, Acoustical Society of America; Fellow, Society of Motion Picture and Television Engineers; Engineering Achievement Award, National Association of Broadcasters.


Fellow Award “For contributions to high-frequency and microwave measurements.” Other Awards: Western Electric ASEE Teaching Award, 1967.

Fellow Award "For contributions to engineering education through the writing of innovative engineering textbooks." Other Awards: Eta Kappa Nu, 1952; Sigma Xi, 1956; Tau Beta Pi, 1960.


Fellow Award "For his technical contribution in the field of microwave electron tubes, and his outstanding leadership in electron and optical device development." Other Awards: Member, Science Council of Canada; Chairman, Board of Governors of Ontario Research Foundation.


Fellow Award "For his contributions to radio and television engineering, and for his meritorious work on many important institute and industry technical committees." Other Awards: National Geographical Society; Fellow, Radio Club of America.


Fellow Award "For pioneering work in the development of molecular beam epitaxy and its applications to microwave and optoelectronic devices"; Morris N. Liebmann Memorial Award, 1982. Other Awards: Electronics Division Award, Electrochemical Society, 1977; American Physical Society International Prize for New Materials, 1982; Distinguished Technical Staff Award, Bell Laboratories, 1982.


Fellow Award "For contributions to computerized tomography and its application to positron emission, X-ray transmission, and nuclear magnetic resonance tomography." Other Awards: Distinguished Scientist Award, International Workshop on Physics and Engineering in Medical Imaging, 1982, Asilomar, California.

CHODOROW, MARVIN, IRE Fellow 1954. Born: July 16, 1913, Buffalo, N.Y. Degrees: B.A., 1934, University of Buffalo; Ph.D., 1939, Massachusetts Institute of Technology; L.L.D.(Hon.), 1972, University of Glasgow.

Fellow Award "For his contributions to the theory and design of klystron tubes"; W.R.G. Baker Award, IRE, 1962, for "A high-efficiency klystron with distributed interaction"; Lamme Medal, IEEE, 1982. Other Awards: Member, National Academy of Engineering, 1967; Member, National Academy of Sciences, 1971; American Academy of Arts and Sciences, 1972.


Fellow Award "For contributions to pattern recognition."


Fellow Award "For outstanding contributions to solid-state electronics." Other Awards: Outstanding Paper Award, I.S.S.C.C., 1960.


Fellow Award "In recognition of his contributions in the field of cathode-ray devices." Other Awards: Fellow, Radio Club of America.


Fellow Award "For contributions to professional communication in electrical and electronics technology"; IEEE Executive Committee Commendation, 1979; IEEE Directors' Commendation, 1980; IEEE Directors' Commendation, 1982. Other Awards: Commendation for Outstanding Accomplishment, Council of Engineering and Scientific Society Executives, 1977; Recipient, Citation and Medal for the Advancement of Culture, Flanders Academy of Arts, Science, and Literature, 1980.


Fellow Award "For contributions to dual-polarization radio transmission, and to propagation of radio and light waves in precipitation." Other Awards: Distinguished Technical Staff Award, Bell Laboratories, 1983; Sigma Xi; Pi Mu Epsilon.


Fellow Award "For contributions to multiplexing techniques of and file allocation in computers"; Distinguished Visitor, IEEE, 1973-74; Associate Editor, IEEE
Transactions on Computers, 1977-1982; Assoc. Editor, Journal of Computer Network; Assoc. Editor, Journal of Electrical Engineering and Computer Science; Meritorious Service Award, IEEE, 1982. Other Awards: National Lecturer, Association for Computing Machinery, 1972-73; Tau Beta Pi; Eta Kappa Nu; Phi Tau Phi; Sigma Xi.


Fellow Award “For development of innovative experimental techniques in semiconductor material and device physics”; W.R.G. Baker Prize Award, IEEE, 1967.


Awards: Edison Medal, IEEE, 1965, “For his achievements in the power industry, including the development of nuclear power; for his services to his country and to international understanding, including the application of electric power to economic growth among all nations; and for his broad contributions to the profession of engineering”; John Fritz Medal, IEEE, ASME, ASCE, AICE, AIMPE, 1966, “For vision and accomplishment in the field of energy conversion and distribution; for skilful leadership in corporate and professional management; for civic awareness and personal contribution within his home community; for distinguished public service on an international scale.” Other Awards: Fellow, American Institute of Management, 1952; George Westinghouse Gold Medal, American Society of Mechanical Engineers, 1954; Henry Gantt Gold Medal, American Society of Mechanical Engineers, American Management Association, 1955; Washington Award, Western Society of Engineers, 1957; George W. Goethals Award, Society of American Military Engineers, 1958; Award of Merit, American Institute of Consulting Engineers, 1960; Hoover Medal, American Society of Mechanical Engineers, 1962; William Metcalf Award, Engineers Society of Western Pennsylvania, 1963; Award, National Society of Professional Engineers, 1963; Honorary Member, American Society of Mechanical Engineers, 1966; Distinguished Service Member, Engineering Society of Detroit, 1969; Eminent Member, Eta Kappa Nu, 1972; Fellow, Society of American Military Engineers, 1973; Fellow, Engineering Society of Detroit, 1974; Horace H. Rackham Humanitarian Award, Engineering Society of Detroit, 1976; Centennial Award, American Society of Mechanical Engineers, 1980; Distinguished Service Award, Society of American Military Engineers, 1980.


Fellow Award “For leadership and contributions in transmission line design, dc links, and power system operation and planning”; IEEE Centennial Medal, 1984. Other Awards: Medaille Blondel, 1971.


Fellow Award “For contribution to color television display systems.”


Fellow Award “For contributions to ionospheric research and engineering education”; Community Service Award, Utah Section, IEEE; IEEE Centennial Medal, 1984. Other Awards: Distinguished Service Award, Utah State University Alumni Association, 1980.


Fellow Award “For contributions in the fields of television receiver design, computer circuits, and advances in electronic data processing.” Other Awards: Member, Association for Computing Machinery; Member, Research Society of America.

Fellow Award "For technical leadership of space programs." Other Awards: Medal for Outstanding Leadership, NASA, 1966; Medal for Distinguished Service, NASA, 1969; Fellow, American Astronautical Society, 1970; Collier Trophy (coreipient), 1974; Fellow, American Institute of Aeronautics and Astronautics, 1976.


Fellow Award "For contributions and technical leadership in the development of high-energy laser technology"; IEEE Centennial Medal, 1984. Other Awards: Secretary of Defense Meritorious Service Medal; OSD Certificate for Outstanding Performance.


Fellow Award "For outstanding work in electronic countermeasures." Other Awards: Certificate of Commendation, U.S. Dept. of Navy.


Fellow Award "For contributions to engineering education and the practical application of control theory." Other Awards: Science Faculty Fellowship, National Science Foundation, 1966-68.


Fellow Award "For contributions to military electronics." Other Awards: Certificate of Merit, Office of Scientific Research and Development, 1945; Certificate of Commendation, U.S. Dept. of Navy, 1947; Associate Fellow, American Institute of Aeronautics and Astronautics; Silver Certificate, Acoustical Society of America, 1966; Governor's Citation, State of Maryland, 1969.


Other Awards: American Society of Mechanical Engineers; Sigma Xi.


Fellow Award "For his contributions to the design of lightning protection equipment for electric power systems, and the development of guides for application to transmission lines and substations"; IEEE Centennial Medal, 1984. Other Awards: Service Award, National Fire Protection Association, 1966.


Fellow Award "For contributions to airborne microwave system design." Other Awards: Radio Section Premium, John Hopkinson Premium, Institution of Electrical Engineers, U.K.


Fellow Award "For his contributions to microwave spectroscopy and electronic identification systems." Other Awards: Presidential Certificate of Merit, 1946; Distinguished Civilian Service Award, U.S. Navy, 1969.


Fellow Award "For his research in the application of instrumentation to petroleum exploration and produc-
tion.” Other Awards: Environmental Conservation Distinguished Service Award, AIMME, 1974; National Academy of Engineering, 1976.

CLINGERMAN, B.H., AIEE Fellow 1944.


Fellow Award “For contributions to switching theory and leadership in engineering research and education.” Other Awards: Fellow, American Association for the Advancement of Science, 1980.


Fellow Award “For contributions in millimeter-wave radio astronomy, and developments in aerospace technology.” Other Awards: Tau Beta Pi, 1943; Phi Kappa Phi, 1943; Sigma Xi, 1957; Outstanding Performance Award, U.S. Naval Research Laboratory, 1959; Exceptional Performance Award, Goddard Space Flight Center, 1971.


Fellow Award “For contributions to the advancement of electric techniques, resulting in practical industrial and control systems.” Other Awards: Charles A. Coffin Award, General Electric, 1942; Outstanding Community Service Award, Elfin Society (General Electric), 1978; 50 patents.


Fellow Award “For contributions to the advancement of the factors encountered in designing large transformers, and to the advanced technical education of young engineers.”


IRE Fellow Award “For his contributions to the welfare of the Institute and the engineering profession”; IEEE Communication Systems Group’s Achievement Award for “Leadership in the integration of wire and radio media,” 1963; The Haraden Pratt Award, 1978.


Fellow Award “For pioneering achievement on computers and storage devices and sustained service to the profession in this field.” Other Awards: Valuable Invention Citation, American Patent Law Association and Minnesota Patent Law Association, 1962.


Fellow Award “For leadership in research, development, and implementation of light guides for optical communications and lasers for use as a tool in materials processing.”


Fellow Award “For significant contributions to the application of electron tubes and semiconductor devices in radio and television receivers.” Other Awards: Award of Merit, Radio Corporation of America, 1957.


Fellow Award “For contributions to millimeter wave technology, low-noise microwave integrated circuitry, electromagnetic surface wave excitation, and transmission.” Other Awards: Eta Kappa Nu; Phi Beta Pi; Sigma Xi.


Fellow Award “For his contribution to the art of load and frequency control of large power systems”; Lamme Medal, IEEE, 1968, “For meritorious achievement in the field of automatic control of power generation and frequency for interconnected electric power systems”;

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Fellow Award “For contributions to the theory and design of microwave components”; Microwave Prize, IEEE Microwave Theory and Techniques Society, 1964, “For many significant contributions to the field of endeavor of the IEEE GMMT in numerous published papers”; Lamme Medal, IEEE, 1974, “For outstanding contributions to the theory and practice of microwave component design”; Career Award, IEEE Microwave Theory and Techniques Society, 1980. Other Awards: Annual Award, Yale Engineering Association, 1954.


Fellow Award “For contributions to the planning of reliable interconnected high-voltage transmission systems.”


Fellow Award “For contributions to planning and execution of power transmission and distribution”; Chairman, Wichita Section, IEEE, 1940; Chairman, East Carolina Subsection, IEEE; Chairman, North Carolina Section, IEEE, 1963. Other Awards: Phi Kappa Phi, Kansas State University, 1929; Faculty Scholarship Gold Medal, Kansas State University, 1929.


Fellow Award “For contributions to high-power circuit breaker technology.”


Fellow Award “For contributions to surface acoustic wave resonator filters, long delay lines, and monolithic acoustoelectric signal processing devices”; Best Paper Award, IEEE Sonics and Ultrasonics Society, 1979. Other Awards: 15 Patents; Phi Beta Kappa; Tau Beta Pi; Pi Mu Epsilon; Sigma Pi Sigma.


Fellow Award “For contributions to millimeter and submillimeter waves.” Other Awards: Meritorious Civilian Award, A.A.F., 1946; Fellow, Optical Society of America; American Physical Society; Alumni Achievement Medal, Susquehanna University, 1980; Sigma Xi; Pi Mu Epsilon; Eta Kappa Nu.


Fellow Award “For contribution to microwave engineering and to education.” Other Awards: Junior Technical Achievement Award, Cleveland Technical Societies Council, 1964.


Fellow Award “For his contributions to the art of transmitter design and precision remote tuning systems, and for his farsighted engineering direction”; Armstrong Achievement Award, IEEE, 1979. Other Awards: Distinguished Service Award, U.S. Dept. of Navy, 1962; Distinguished Service Award, Iowa Broadcasters Association, 1966; Distinguished Service Award, University of Iowa, 1967; National Academy of Engineering, 1968; Outstanding Achievement Award, American Electronics Industries, 1977; Armstrong Medal, Radio Club of America, 1977; Quadrato della Radio Association, Guglielmo Marconi Foundation, 1978; David Sarnoff Award, Armed Forces Communications and Electronics Association, 1979; Medal of Honor; Electronic Industries Association, 1980.


Fellow Award “For contributions to the field of magnetic and surface acoustic wave delay line technology, and to engineering education.” Other Awards: Bulgin Premium, Institute of Electronics and Radio Engineers,


Fellow Award “For contributions to solid-state optics; in particular, optics and lasers.”


Fellow Award “For developments in magnetic storage and magnetic microwave devices.”


Awards: Lamme Medal, AIEE, 1961, “For meritorious achievements in the design of electrical machinery; more specifically, for analyses of synchronous machine characteristics leading to improved designs and for exceptional contributions to the application and control of machines used in electric power systems.” Other Awards: Charles A. Coffin Award, General Electric, 1942; Fellow, American Society of Mechanical Engineers, 1957; Engineer of the Year Award, Schenectady Professional Engineers Society, 1963; Steinmetz Award, General Electric, 1973; Fellow, American Association for the Advancement of Science; Member, National Society of Professional Engineers; National Academy of Engineering, 1978; Professional Engineer, New York and Florida; Founding Member, Association for Computing Machinery; Member, Conference Internationale des Grands Reseaux Electriques.


Other Awards: Fellow, American Association for the Advancement of Science.


Fellow Award “For technical leadership in the understanding and characterization of transient nuclear radiation effects on insulators.”


Fellow Award “For contributions to the design, planning, and operational functions of integrated power systems by the creation and use of new concepts in computer applications.”


Fellow Award “For contributions to semiconductor theory, particularly transport in both low and high electric fields.” Other Awards: National Academy of Engineering, 1980.


Fellow Award “For contributions to signal processing theory and radar design.” Other Awards: Sigma Xi, 1960.


Fellow Award “For pioneering in the development and use of microwave klystrons.” Other Awards: Epsilon Chi, 1930; Sigma Xi, 1931.

Fellow Award “For contributions to the understanding of high-voltage compressed gas breakdown and the development of new higher voltage compressed gas transmission line systems.”

Fellow Award “For contributions in high-speed data transmission and processing for military command-control, and for application of communication satellites to provide worldwide military communications.”

Fellow Award “For his contributions to facsimile transmission methods.” Other Awards: Certificate of Appreciation, War Dept., 1946; Marconi Medal, Veteran Wireless Operators Association, 1956; Scroll, Air Transport Association, 1965; 1982 Nevada Inventor of the Year Appreciation Award, Nevada Innovation & Technology Council.

Fellow Award “For development of the fast Fourier transform.”


Fellow Award “For studies in the correlation of speech units from the physical, physiological, psychological and phonetic aspects”; Pioneer in Speech Communication (IEEE), 1972, “For his discoveries and leadership in fundamental and applied research on speech analysis-synthesis and speech perception.” Other Awards: Sigma Xi; Fellow, Acoustical Society of America; Honors of the Association, ASHA; President’s Certificate of Merit, 1948; Fellow, Calhoun College, 1971; Warren Medal, Society of Experimental Psychology, 1975; Silver Medal in Speech Communication, Acoustical Society of America, 1975; Fletcher-Stevens Award, Brigham Young University, 1977.

Fellow Award “For contributions to electrical engineering education, and research in communication theory.”

Fellow Award “For contributions to antenna development, microwave integrated circuit development, and the application of microwave techniques to aircraft landing systems.”

Fellow Award “For contributions to radiotelephony”; IEEE Committee on Information and Computer Policy; Past Chairman IEEE Vehicular Technology Society, Chicago Section; President, IEEE Vehicular Technology Society; IEEE Centennial Medal, 1984. Other Awards: Fellow, Radio Club of America; Advisory Board, U. of Ill., Chicago and Champaign; President’s Council, Illinois Institute of Technology.


Fellow Award “For contributions to improving the reliability and maintainability of electronic systems and components.” Other Awards: P. K. McElroy Award for


Fellow Award “For contributions to the development of multiple-access computer systems”; W. W. McDowell Award, IEEE Computer Group, 1966, “For his pioneering work in organizing and spearheading the early development of the first practical large-scale time-sharing computer system, and for his tireless efforts in providing direction for the entire time-sharing concept”; Harry Goode Memorial Award, American Federation of Information Processing Societies, 1980; The Computer Pioneer Award, IEEE Computer Society, 1982.


Fellow Award “For leadership in the engineering of a large utility communication network.”

CORRINGTON, MURLAN S., IRE Fellow 1954. Born: May 26, 1913, Bristol, S.D. Degrees: B.S., 1934, South Dakota School of Mines and Technology; M.Sc., 1936, Ohio State University.


Fellow Award “For contributions to development and manufacture of industrial control devices.”


Fellow Award “For leadership in electronic systems concepts and technology.” Other Awards: Sigma Xi Thesis Award, 1951; Distinguished Civilian Service Award, U.S. Navy, 1958; ASNE Gold Medal Award, 1968; Dept. of Defense Distinguished Civilian Service Award, 1974.


Fellow Award “For leadership in the development of primary frequency standards and two-way time transfer techniques via geostationary satellites.” Other Awards: Fellow, Royal Society of Canada, 1974; President, Canadian Association of Physicists, 1980; D.S.C. 1945.


Fellow Award “For contributions to communications theory and techniques.”


Fellow Award “For outstanding contributions to the development and standardization of nuclear instruments”; Award, IEEE, 1972, “For outstanding achievement through standards”; IEEE Harry Diamond Memorial Award, 1975, “For outstanding achievements in nuclear radiation measurement techniques and related instrumentation standardization”; Merit Award, IEEE Nuclear and Plasma Sciences Society, 1975, “In recognition of outstanding contributions to the field of nuclear science.” Other Awards: Meritori-


Fellow Award “For contributions to the understanding of radio propagation effects in mobile telephone and satellite communications systems.” Other Awards: Prize Guglielmo Marconi, 1983; Sigma Xi; Sigma Tau; Eta Kappa Nu; Pi Mu Epsilon.


Fellow Award “For technical leadership in underwater research and development.” Other Awards: Gold Medal, ASNE, 1979; Fellow, ASA, 1975.


Other Awards: Sigma Xi, 1927; James D. Donovan Personal Achievement Award, American Public Power Association (APPA), 1969.


Fellow Award “In recognition of his leadership in the design of radio and television receivers.” Other Awards: Naval Ordnance Award, 1945; Certificate of Commendation, U.S. Dept. of Navy, 1947.


Fellow Award “For his contributions to microwave atmospheric refractometry.” Other Awards: National Academy of Engineering, 1980.


Membership Chairman, Washington DC Section, AIEE, 1943-44; Section Chairman, Madison Wisconsin Section, AIEE, 1948-49; Chairman, Great Lakes Dis-
trict Meeting, Madison, Wisconsin, 1951. Other Awards: Fellow, American Society of Civil Engineers, 1950; Eta Kappa Nu, 1958; Registered Professional Engineer, 1932-82.


Fellow Award "For pioneering research in the field of computer techniques, particularly in the areas of all-magnetic digital logic and neuristor logic," IRE Award, 1962, "For pioneering research in the field of computer techniques." Other Awards: IR-100 Award, INDUSTRIAL RESEARCH magazine, 1974, 1976; Award for Scientific Achievement, NASA, 1970.


Fellow Award "For contributions to satellite communications."


Fellow Award "For contributions to microwave tube development." Other Awards: Tau Beta Pi; Honorary Member, Cal Alpha, University of California at Berkeley, 1965.


Fellow Award "In recognition of his contributions in the field of high-frequency and microwave propagation."


Fellow Award "For contributions to the understanding of wave and instability phenomena in plasmas." Other Awards: Fellow, Institute of Physics, 1964; Fellow, Institution of Electrical Engineers, 1965; Fellow, American Physical Society, 1965; Fellow, AAAS, 1971; Fellow, Institute of Mathematics and Its Applications, 1978.


Fellow Award: "For contributions to the theory and practice of high-voltage impulse measurement and to the development of standards"; IEEE Power Group Award, 1971; Morris E. Leeds Award, IEEE, 1981.


Other Awards: Sigma Xi, 1939.


Fellow Award "For contributions in the field of measurement and prediction of atmospheric radio noise, and their applications to the evaluation of telecommunications systems."

CRIPPEN, REID P., AIEE Fellow 1938. Born: June 10, 1897, Tarpon Springs, Fla. Degrees: B.S., 1921 (summa cum laude), M.S., 1924, University of California at Berkeley. Other Awards: Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award "For significant contributions to the theory, analysis, and design of microwave filters, directional couplers, and equalizers"; Microwave Applications Award, IEEE Microwave Theory and Techniques Society, 1973.

CRITZAS, DEMOSTHENES J., Fellow 1963. Born: July 30, 1892, Smyrna, Turkey. Degrees: B.S.E.E., 1918, Cooper Union Institute of Science and Art; E.E., 1922, M.S., 1936, Polytechnic Institute of Brooklyn.


Fellow Award "For contributions to medical practice through electronic applications and to teaching in this area of relationship."


Fellow Award "For leadership in the field of ferroelectric materials, and for the development of electrolitric devices and composite piezoelectric transducers." Other Awards: Leeds University Scholar, ICI Fel-
lowship; American Ceramic Society Electronics Division, Award Outstanding Paper, 1957-1967; The Pennsylvania State University, University Scholars Medal, 1981.


Fellow Award “For contributions to charge transport and charge storage in semiconductors and metal-semiconductor systems.” Other Awards: Alexander Von Humboldt U.S. Senior Scientist Award, 1974.


Fellow Award “For leadership in the development of silicon diode arrays and contributions to camera tubes, storage tubes, and intensifiers.”


Fellow Award “For contributions to computing techniques, switching theory, machine-aided design, and the development of large software systems.” Other Awards: College of Engineering Distinguished Alumnus, Ohio State University, 1970; Outstanding Civilian Service Medal, U.S. Army, 1975.


Fellow Award “For significant contributions in circuit theory and the sensitivity analysis of control systems.” Other Awards: Curtis W. McGraw Research Award, American Society for Engineering Education, 1972; Member, National Academy of Engineering, 1980; Founding Member, Phil-American Academy of Science and Engineering, 1980; Halliburton Engineering Education Leadership Award, 1981; Most Outstanding Filipino in the Midwest, USA, in Technology, 1981; Most Outstanding Engineer and Scientist, Philippine Engineers and Scientists Organization, 1982.


Other Awards: Engineer of the Year Award, Upper East Tennessee Society of Professional Engineers, 1963; Outstanding Achievement Award, Tennessee Society of Professional Engineers, 1967; Member, American Society of Mechanical Engineers; Public Service Award, American Society of Mechanical Engineers, Region IV, 1972; Distinguished Service Award, Southern Zone NCEE, 1976; Award for Dedicated Service, Tennessee Society of Professional Engineers, 1976; Life Member, National Society of Professional Engineers; Life Member, Tennessee Society of Professional Engineers; Order of the Engineer, 1971; Tennessee State Board of Architectural and Engineering Examiners, 1963-1975.


Fellow Award “For outstanding contributions to microwave tube research and to education.” Other Awards: Phi Beta Kappa; Nation’s Outstanding Young Electrical Engineer, 1958, Eta Kappa Nu; National Academy of Engineering, 1971; Fellow, IEE; Fellow, AIAA; Defense Distinguished Public Service Medal; NASA Distinguished Service Medal; National Intelligence Distinguished Service Medal; French Legion of Honor; Distinguished Engineering Alumnus of University of California, Berkeley Award of 1982.

State College; B.S.E.E., 1940, University of Tennessee. 
Fellow Award “For contributions to the design of electrical systems for aluminum rolling mills.”


Fellow Award “For the development of remotely controlled electronic reconnaissance systems”; IEEE Centennial Medal, 1984. Other Awards: Sigma Xi; Eta Kappa Nu; Tau Beta Pi; Board of Directors, Association of Old Crows, 1976-7; Best Paper Presentation Award, DoD/AOC Symposium, 1977; Bell Telephone Laboratories Fellowship in Electrical Communication.


Fellow Award “For contributions to radio and radar technology.” Other Awards: Award ofMerit, Radio Corporation of America, 1954; Silver Beaver Award, Boy Scouts of America, 1968; Gerard B. Lambert Award, 1970; Paul Harris Fellow of Rotary, International, 1974; Fellow, Rider College, 1971.


Fellow Award “For contributions to the design of atomic frequency standards and to the theory and measurement of frequency stability.”


Fellow Award “For contributions to airborne radar and optical data-processing.” Other Awards: Fellow, Optical Society of America, 1973.


Fellow Award “For scientific contributions in the fields of acoustics and microwave techniques.” Other Awards: Commander of the Royal Order of St. Olav, 1952; Prize of Per Kures Fund, 1968.

DAHLKE, WALTER E., Fellow 1967. Born: August 24, 1910, Berlin, West Germany. Degrees: Dr.Phil., 1936, University of Berlin, Dr.Habil., 1939, University of Jena, East Germany; Prof.(Hon.), 1961, Technische Hochschule Karlsruhe, Germany.

Fellow Award “For contributions to the theory of noisy networks and the improvements in the understanding of microwave devices and networks.”


Fellow Award “For achievements and leadership in basic research on the thermal evaluation of insulation, corona detection and measurement, and the influence of corona discharges on electrical insulation”; Distinguished Technical Achievement Award, IEEE Electrical Insulation Society, 1978. Other Awards: Order of Merit.


Fellow Award "For contributions to the development of electrical equipment for operation in the rigorous environment encountered by modern aircraft."


Fellow Award "For contributions to the understanding of the peripheral auditory system." Other Awards: Beltone Award, Beltone Institute for Hearing Research, 1977; Guggenheim Fellowship, 1977-1978.


Fellow Award "For contributions in the field of microwave oscillators and power amplifiers." Other Awards: Certificate of Distinction, Polytechnic Institute of Brooklyn, 1957; Fellow, American Association for the Advancement of Science, 1978; School of Electrical Engineering, Cornell University Award for "Excellence in Teaching", 1977.


Fellow Award "For contribution to the development and application of digital computer programs for the steady-state and transient analysis of large interconnected electric power systems."


Fellow Award "For pioneer work on radar signals reflected from the moon and contributions to radio communications." Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Army, 1958; Exceptional Civilian Service Award, U.S. Dept. of Army, 1965.


Fellow Award "For innovative concepts and leadership in the beneficial uses of nonionizing electromagnetic energy and its potential dangers."


Fellow Award "For conception and development of solder-dipped printed wiring for military and commercial use, and for his pioneering work in microminiaturization." Other Awards: Secretary of the Army Award, 1957; Meritorious Civilian Service Award, U.S. Army, 1957.


Other Awards: Eta Kappa Nu, 1951; Life Member, National Society of Professional Engineers, 1964; Life Member, Oklahoma Society of Professional Engineers, 1964.

DARLING, SIDNEY, IRE Fellow 1957. Born: July 18, 1906, Pittsburgh, Pa. Degrees: B.S., 1928, Har-
ward University, B.S., 1929, Massachusetts Institute of Technology; Ph.D., 1940, Columbia University.


Fellow Award "For contributions to the engineering analysis of lightning effects on electric power transmission systems." Other Awards: Institution Award, Institution of Engineers, Australia, 1962, 1969; Electrical Engineering Prize, Institution of Engineers, Australia, 1966, 1968, 1975; Fellow, Institution of Engineers, Australia, 1968; Professor (Personal Chair), University of Queensland, 1980; Fellow, Australian Academy of Technological Sciences, 1982.


Fellow Award "For contributions to military and civil telephone communications." Other Awards: Eta Kappa Nu.


Fellow Award "For leadership in industrial research and advanced development." Other Awards: National Academy of Engineering; Presidential Citation, 1946; La Croix Medal, 1963.


Fellow Award "For his contributions to statistical methods in communications systems"; Pioneer Award, IEEE, 1981. Other Awards: Fellow, American Association for the Advancement of Science, 1958; Certificate of Commendation, U.S. Dept. of Navy, 1960; Member, National Academy of Engineering, 1975; Fellow, American Academy of Arts and Sciences, 1977.


Fellow Award "For contributions to telegraph and data transmission systems."


Fellow Award "For contributions to the understanding and exploitation of speech and hearing in communication." Other Awards: Eta Kappa Nu, 1954; Fellow, Audio Engineering Society; G.W. McCarthy-ANAK Award, 1958; Fellow, Acoustical Society of America, 1959; Outstanding Young Man of the Year, New Jersey Junior Chamber of Commerce Award, 1959; Fellow, American Academy of Arts and Sciences, 1966; National Academy of Engineering, 1966; President's Award of Merit, ASME, 1971; Harold Pender Award, Moore School, University of Pennsylvania, 1972; North Carolina Award, 1972; Member, National Academy of Sciences; Fellow, Acoustical Society of America; Society of Research Administrators Award, 1980; New Jersey Science/Technology Medal, 1982; Industrial Research Institute Medal, 1983.


Fellow Award "For his contributions to radio and radar techniques, and his outstanding performance as teacher and author of textbooks on telecommunications." Other Awards: Prix Jean S. Bares, 1932; Medaille d'honneur des Transmission, 1976; Member, Academie de Marine, 1976.


Fellow Award "For contributions to international standardization of measurement methods and specifications for radio equipment."


Fellow Award "For contributions to the use of pipeline structures in computer architecture"; Computer Society Honor Roll. Other Awards: Listing in American Men of Science; Who's Who in Technology.


Fellow Award "For contributions to and leadership in advancing the technology of aircraft navigation and electronic equipment." Other Awards: Instrument So-
ciety of America; Sigma Xi, 1929.


Fellow Award “For contributions to understanding of the ionospheric propagation of radio waves and to experimental studies of the structure and physics of the ionosphere.”


Fellow Award “For leadership of industrial and university solid-state electronics research”; Fellow Committee, 1983. Other Awards: Fellow, Australian Academy of Technological Sciences, 1975; Fellow, Australian Academy of Science, 1976; Officer In The General Division, Order of Australia, 1978.


Fellow Award “For contributions to the architecture and development of a large fault-tolerant computer system for air traffic control.”


Fellow Award “For his contributions in the development of computer components and circuits and pioneering work in integrated circuits.” Other Awards: Outstanding Electrical Engineer Award,Eta Kappa Nu, 1965; Outstanding Paper Presentation, International Solid State Circuits Conference, 1965; Outstanding Invention Achievement Award, IBM, 1965, 1969; Outstanding Contribution Award, IBM, 1965; Third Level Invention Achievement Award, IBM, 1970; Carnegie Mellon Outstanding Contribution to Engineering and Management Alumni Association Award, 1978; Eta Kappa Nu; Tau Beta Pi; Sigma Xi.


Fellow Award “For his contributions to the development of electronic aerial navigation systems”; Harry Diamond Award, 1968, “For his outstanding contributions in the conception and development of innovations in military electronics.” Other Awards: Sigma Xi; Fellow, American Optical Society; Fellow, American Association for the Advancement of Science; Man of the Year Award, Air Force Association, 1970; Distinguished Alumnus Award, Polytechnic Institute of Brooklyn, 1972, Citation of Honor, Air Force Association, 1969; George W. Goddard Award; Contributor, Encyclopaedia Britannica.


Fellow Award “For contributions to measurement techniques in medical electronics.” Other Awards: Life Member, Order of Engineers of Quebec, 1980; Emeritus Member, Biomedical Engineering Society, 1982.


Fellow Award “For contributions to communication engineering in the development of young engineers.” Other Awards: Outstanding Service Award, National Society of Professional Engineers, Georgia, 1966.


Fellow Award “For contributions to the technology of semiconductor, ferrite, and ferroelectric devices.”


1977; Consulting Engineer, Association of Professional Engineers of the Province of Ontario, 1979-present (P.Eng.).


Fellow Award "For contributions to data compression in communications"; Prize Paper Award, IEEE Information Theory Group, 1976 (coauthor R. M. Gray). Other Awards: Honorable Mention, Outstanding Young Electrical Engineer in the U.S., Eta Kappa Nu, 1968.


Fellow Award "For contributions to engineering education and research in control systems." Other Awards: Outstanding Engineer, Affiliate Societies of Dayton, Ohio, 1961.


AIEE Fellow Award "For contributions to literature in the field of communications, particularly television"; IRE Fellow Award "For contributions in the field of radio and television receivers." Other Awards: Certificate of Commendation, U.S. Dept. of Navy, Bureau of Ships, 1947.


Fellow Award "For leadership in engineering and management of the nation's radio frequency spectrum." Other Awards: Distinguished Civilian Service Award, Dept. of the Navy, 1965; Outstanding Performance Award, Executive Office of the President, 1970; Distinguished Service Award, Executive Office of the President, 1975.


Other Awards: Eta Kappa Nu; Tau Beta Pi.


Fellow Award "For contributions to radio wave propagation theory and systems"; Best Paper Prize, 1963. Other Awards: Commendation Ribbon for Meritorious Service, Secretary of Navy, 1946; Fellow, American Association for the Advancement of Science, 1959; Annual Alumni Award, Catholic University of America, 1966.


Fellow Award "For contributions to network synthesis, system theory, and electrical engineering education." Other Awards: Jesse H. Jones Award for Achievement, Texas, 1952; Outstanding Educators of America, 1972.


Fellow Award "For advancing infrared and millimeter wave instrumentation through the application of the metal-oxide-metal detector"; Chairman Emeritus, Professional Program Committee SOUTHCON/84; Chairman, Professional Program Committee SOUTHCON/83; Vice Chairman, Professional Program Committee SOUTHCON/84 and SOUTHCON/82; Member, Technical Program Committee and Session Chairman, 1982 IEEE MTT-S International Microwave Symposium, Dallas, TX. Other Awards: Central Florida Engineer-of-the-Year Award, 1970; Author-of-the-Year Award, Martin Marietta Corporation, 1967; Sigma Xi; Registered Professional Engineer, State of Georgia; Session Chairman, Solar Power Satellite Symposium, Toulouse, France, 1980; Executive Secretary, International Conference on Submillimeter Waves, 1974, 1976; Member, Program Committee, International Microwave Symposium.
Symposium, 1974.


Fellow Award “For contributions to nonlinear system theory and to the application of spline functions to signal processing theory”; First Prize, IEEE Student Branch Best Paper Competition, MIT, 1950. Other Awards: Citation of Merit for Outstanding Service, Portuguese Government; Member, AAAS; Member, Society for Industrial and Applied Mathematics;Eta Kappa Nu; Research Fellowship Award, Mathematics Research Center, University of Wisconsin, 1972-1973; Research Grants: National Science Foundation, Air Force Office of Scientific Research, NASA, Office of Naval Research, Advanced Research Projects Agency; Listed in: “Who’s Who in the Southwest,” “American Men of Science.”


Fellow Award “For basic contributions to broadband FM systems, high speed PCM systems and radar.”


Fellow Award “For leadership in the development of telecommunication systems in Italy.” Other Awards: Member, Italian Electrotechnical Association; Member, Federation of Telecommunication Engineers of the European Community; Honorary Academic Member and Scientific Adviser, SIIFI-UNUPE-C-AITRI; Member, “Quadrato Della Radio.”


Fellow Award “For contributions to the theory of magnetic devices and to the teaching of electromagnetic field theory.”


Fellow Award “For contributions to solid-state microwave power sources”; David Sarnoff Award, 1975, “For contribution to and leadership in the development of the impact avalanche and transit time (IMPATT) device.” Other Awards: Ohio State University Fellow, 1955-1956; Pi Mu Epsilon; Sigma Xi; Sigma Pi Sigma; Stuart Ballantine Medal, The Franklin Institute, 1975.


Other Awards: International Communications Award, 1966; Commandeur du Merite National, France; Officier du Merite Postal, France; Officier de la Legion d'Honneur, France; Commandeur du Merite National, Italy.


Fellow Award “For contributions in the fields of electric generation transmission.” Other Awards: American Society of Civil Engineers; Society of American Military Engineers; American Nuclear Society; American Geophysical Union; “Oregon Engineer of the Year.”


Fellow Award “For development of new methods of simulation of power plant and power system dynamic phenomena and their application to practical problems in system design and operation”; AIEE Prize Paper Award, Schenectady Section, 1959. Other Awards: Ralph Cordiner Award, General Electric, 1963.


Fellow Award "For pioneering in loudspeaker production, and contributions to engineering manage-
ment.” Other Awards: Western Electronic Manufacturers Association.


Fellow Award “For contributions to transmission line and substation technology and the development of safety standards”; IEEE Transmission and Distribution Distinguished Service Award, 1978, MSPE Engineer of the Year Award, Jackson Chapter, 1979. Affiliations; American Society of Civil Engineers; National Society of Professional Engineers, State Vice President, Michigan Society of Professional Engineers, 1980-84; President-Elect, M.S.P.E., 1984; U.S. State Dept. HVdc Technical Exchange Team to Russia, 1975; IEEE PES Technical Delegation of Power Engineers to People’s Republic of China, 1978; U.S. Dept of Energy/Italy, Joint UHV Program Executive Committee, 1980-85; China Association for Science and Technology/National Rural Electric Cooperation Association (NRECA) Team to improve agricultural production in China by more efficient use of electricity, 1982; USA Representative on CIGRE S/C 23-Substations since 1976; Chairman, IEEE Substations Committee; Chairman, T&D Committee Standards Subcommittee; Secretary, PES Technical Council; Chairman S/C5 ANSI-C2 Committee on the National Electrical Safety Code.


Fellow Award “For contributions to the long-range planning and expansion of communications systems.”


Fellow Award “For advances in the state of the art of MOSFET devices and circuits”; Cledo Brunetti Award, IEEE, 1982. Other Awards: IBM Fellow, 1979.


Fellow Award “For contributions to the understanding of virtual memory systems and to the development of the working set concept.” Other Awards: Best Paper, Association for Computing Machinery, 1968; Princeton Engineering Faculty Award, 1971; Best Paper, American Federation Information Processing Society, 1972; Recognition of Service Award, Association for Computing Machinery, 1974.


Fellow Award “For contributions to the design of memory systems research, and educational contributions in the computer field.” Other Awards: Member, Association for Computing Machinery; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For contributions and leadership in the field of aeronautical navigation.” Other Awards: Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1950.


Fellow Award “For demonstration of the data transmission capacity of an optical transmission system, and for contributions to ferromagnetic parametric amplifiers.” Other Awards: Fellow, National Science Foundation, 1953; Fellow, National Electronics Conference, 1957.


Fellow Award “For contributions in the design of gaseous discharge devices and the development of electronic digital systems.” Other Awards: Tau Beta Pi Fellowship, 1936-1937; Eta Kappa Nu, Outstanding Young Electrical Engineer, Honorable Mention, 1945; Distinguished Alumnus Awards, Electrical Engineering Alumni Association, University of Illinois, 1974.


Fellow Award “For leadership in the early implementation and teaching of reliability engineering.” Other Awards: Fellow, American Society for Quality Control, 1967.


Fellow Award “For contributions to the art of nuclear reactor control and to the development of nuclear and high energy physics instrumentation”; Award, IRE, 1945, “In grateful appreciation of the financial support given to radio and electronics the creation of a headquarters building for The Institute of Radio Engineers, Inc.” Other Awards: Fellow, A.A.A.S., 1968.


Fellow Award “For contributions to design of substations, transmission, and distribution facilities for a power system expanding rapidly to meet exceptional load growth.”


Fellow Award “For development of models of the nervous system and prosthetic devices.” Other Awards: Fellow, Society for Information Display, 1967.


Fellow Award “For technical leadership in biomedical engineering.” Other Awards: Annual Award, Association for the Advancement of Medical Instrumentation Foundation, 1975.


Fellow Award “For contributions to network theory, especially the synthesis of scattering matrices.” Other Awards: KVIV, 1967; ONR Postdoctoral Fellow, 1971; Eta Kappa Nu, 1980.


Fellow Award “For his achievements in the field of radio broadcast engineering and for his demonstration of radar reflections from the moon.” Other Awards: Engineering Achievement Award, National Association of Broadcasters, 1964; Distinguished Alumnus, Vanderbilt University Engineering School, 1974.


Fellow Award “For contributions to the development of networks for communication systems.”


Fellow Award “For contributions to the development of signal processing technology for radar and communications.” Other Awards: Air Force Decoration for Exceptional Civilian Service.


Other Awards: Life Member, America Association for the Advancement of Science; Fellow, American Academy of Arts and Sciences; Leonardo da Vinci Medal, Society of the History of Technology, 1974; Smithsonian


Fellow Award “For contributions to the development and design of detection and control systems.” Other Awards: Canadian Decoration and Clasps, 1953, 1963, 1974; Centennial Medal, 1967; Decorated Member, Order of Canada, 1972; Award, Public Servants Invention Act, Canada, 1973; Fellow, Engineering Institute of Canada, 1975; Engineering Medal, Association of Professional Engineers of Ontario, 1976; Julian C. Smith Medal, Engineering Institute of Canada, 1977; Queen’s Silver Jubilee Medal, 1977; Governor-General’s Commemorative Medal, 1978; Professor Emeritus, McMaster University, 1980; Merit Award, Association of Professional Engineers of Newfoundland, 1982.


Fellow Award “For contributions to the field of low-noise microwave mixers and parametric amplifiers.”


Fellow Award “For advances in the radar field particularly in antennas for airborne high resolution radars, and the correlation air navigator.”

DICKIESON, ALTON C., AIEE Fellow 1959. Born: August 16, 1905, New York, N.Y.

Fellow Award “For contributions to long distance multi-channel communication and to underwater guidance systems”; IEEE Communication Technology Group, 1971 Achievement Award, “For outstanding contributions to terrestrial and satellite telephone system transmission and to air defense communication and detection system development”; Mervin J. Kelly Award, 1975, “For meritorious achievement in the field of telecommunications.” Other Awards: Naval Ordnance Development Award, 1945; Gen. H.H. Arnold Award, Air Force Association, 1962; Gen. Hoyt S. Vandenberg Award, Air Society, 1963; Associate Fellow, AIAA; Member, National Academy of Engineering, 1970; Distinguished Public Service Award, U.S. Navy, 1973.


Fellow Award “For contributions to industrial power system design.”


Fellow Award “For leadership in the application of engineering science to biomedical research and development and the delivery of health care.”


Fellow Award “For contributions to optoelectronic devices for optical fiber transmission systems.” Other Awards: Fellow, American Physical Society, 1976; Member: Tau Beta Pi, Sigma Xi.


Fellow Award “For contributions to power system protection.” Other Awards: Meritorious Service Award, U.S. Dept. of Interior, 1965; Distinguished Service Award, U.S. Dept. of the Interior, 1974.


Fellow Award “For contributions to power system protection and the development of shielding and grounding standards for EHV control circuits.” Other Awards: Meritorious Service Award, Dept. of Interior, 1976.


Fellow Award “For his application of mathematics to network design and military problems.”


Fellow Award “For contributions to phased array radar theory and to multidimensional detection of radar targets.” Other Awards: Tau Beta Pi.


Fellow Award “For contributions in the analysis and development of electronic systems.” Other Awards: Naval Ordnance Development Award, 1945.

Fellow Award "For contribution to semiconductor device and process research"; President, IEEE Electron Devices Society, 1982, 1983.


Fellow Award "For contributions to semiconductor devices, especially insulated gate field-effect transistors, and to the development of ion implantation processes." Other Awards: Lawrence A. Hyland Patent Award, Hughes Aircraft, 1970.


Fellow Award "For contribution toward the optimization of transformer design through the use of computers and standardized components."

DINGMAN, JAMES E., AIEE Fellow 1954. Born: August 19, 1901, Baltimore, Md. Degrees: B.S. 1921, University of Maryland; D.Eng.(Hon.), 1960, University of Maryland.

Fellow Award "For contributions in both technical work and in leadership of engineering groups in the field of communication."


Fellow Award "For contributions to digital magnetic techniques, and for leadership in the development of data processing systems." Other Awards: Tau Beta Pi, Eta Kappa Nu, Sigma Tau, 1949; Engineers Club of Philadelphia Award, 1950.


Fellow Award "For contributions to the theory and realization of acoustooptical modulators."

DOBA, STEPHEN, JR., IRE Fellow 1960. Born: May 27, 1907, New York, N.Y.

Fellow Award "For contributions in the field of television signal transmission."


Fellow Award "For technical contributions and leadership in the development of microwave tubes." Other Awards: Slosson Scholar, Univ. of Kansas, 1940-41; RCA Research Award, 1953; RCA Inventor Award, 1974; Sigma Xi; Sigma Pi Sigma; Pi Mu Epsilon; Member, American Society for Quality Control.

Fellow Award “For contributions and leadership in
the development of radio navigational aids”; Pioneer
Award, IEEE Aerospace and Electronic Systems Soci-
ey, 1980. Other Awards: Outstanding Patent Award,
N.J. Council of Research and Development, 1967;
Volare Award, Airline Avionics Institute, 1967; Inven-
tor of the Year Award, N.Y. Patent Law Association,
1982.

DOEHLER, OSKAR F., Fellow 1973. Born: 1913,
Schwarzenbek, Germany. Degrees: Ph.D., 1938, Uni-
versity of Hamburg, Germany.

Fellow Award “For contributions and technical lead-
ership in the field of high-power microwave tubes,
and especially crossed-field devices.” Other Awards: Silver
Medal, Syndicat General de la Construction Technique,
France, 1968; Certificate of Achievement, Association
of Old Crows, AOC National Convention, Anaheim, Cali-
ifornia, 1970.

DOELZ, MELVIN L., IRE Fellow 1961. Born: December
30, 1918, Minneapolis, Minn. Degrees: B.E.E., 1941,
University of Minnesota; M.S., 1948, State University of
Iowa.

Fellow Award “For contributions to mechanical ra-
dio-frequency filter development and predicted-wave
digital data communication.”

DOEPPNER, THOMAS W., Fellow 1979. Born: May 22,
1920, Berlin, Germany. Degrees: B.S.E.E., Kansas
State University; M.S.E.E., University of California at
Berkeley.

Fellow Award “For leadership in advancing elec-
tromagnetic compatibility in the design, development, and
operation of military telecommunication systems”; Pat-
tron Award, Washington, DC Section, IEEE, 1983; IEEE
Centennial Medal, 1984. Other Awards: Bronze Star
Medal, 1966; Medal of Honor, First Class, Republic of
Vietnam, 1966; Legion of Merit, with Oak Leaf Cluster,
1969, 1973; Listed in “Who’s Who in Engineering,

10, 1911, Vienna, Austria. Degrees: Dipl.-Ing., 1934,
Dr.techn., 1936, TH Wien; Habilitation, 1948, TH
Stuttgart.

Fellow Award “For contributions to microwave elec-
tronics and to education.” Other Awards: Member,
Rheinisch-Westfaelische Akademie der Wissen-
schaften, 1969; Member, Oesterreichische Akademie der
Wissenschaften, 1971; VDE Ehrenring, 1972; W. Exner
Medaille, 1975.

DOHERTY, WILLIAM H., IRE Fellow 1944. Born: Au-
gust 21, 1907, Cambridge, Mass. Degrees: S.B.,
1927, S.M., 1928, Harvard University; Sc.D.(Hon.),
1950, Catholic University of America.

Fellow Award “For his contributions to the design of
radio transmitters”; Morris N. Liebmann Award, IRE,
1937, “For his improvement in the efficiency of radio-
frequency power amplifiers.” Other Awards: Naval Or-
dnance Development Award, 1945; Fellow Award,
American Association for the Advancement of Science,
1978; Tau Beta Pi; Sigma Xi.

DOME, ROBERT B., IRE Fellow 1948. Born: October
12, 1905, Tell City, Ind. Degrees: B.S.(in E.E.), 1926,
Purdue University; M.S.(in E.E.), 1929, Union Universi-
yty.

Fellow Award “For his many contributions to the
profession and for his accomplishments in the training
of young engineers”; Morris Liebmann Award, IRE,
1951, “For many technical contributions to the profes-
sion, but notably his contributions to the inter-carrier
sound system of television reception, wide-band phase-
shift networks and various simplifying innovations in
FM receiver circuits.” Other Awards: Sigma Xi, 1926;
Charles A. Coffin Award, General Electric, 1936, 1947.

DOMMEL, HERMANN W., Fellow 1979. Born: Decem-
ber 13, 1933, Hennenbach, West Germany. Degrees:
Dipl. Ing., 1959, Dr. Ing., 1962, Technical University,
Munich, Germany.

Fellow Award: “For contributions to the development
and application of digital computer programs for the
analysis of complex electric systems network prob-
lems.”

DONALDSON, MERLE R., Fellow 1970. Born: April 7,
1920, Silverdale, Kans. Degrees: B.E.E., 1946,
M.S.E.E., 1947, Ph.D., 1959, Georgia Institute of
Technology.

Fellow Award “For contributions to cyclotron in-
strumentation, and RF high-voltage measurements.”
Other Awards: Florida West Coast Engineer-of-the-Year
Award, 1966.

DONALDSON, W. LYLE, Fellow 1969. Born: May 1,

Fellow Award “For contributions to nondestructive
testing and evaluation of materials.” Other Awards:
Distinguished Engineer, Texas Tech University, 1969;
Fellow, American Society of Nondestructive Testing,
1975.

DOPAZO, JORGE F., Fellow 1977. Born: April 2, 1921,
Havana, Cuba. Degrees: M.S.E.E., 1950, University of
Havana.

Fellow Award “For contributions to computer meth-
ods for analysis, real-time monitoring, and economic
operation of power systems”; Prize Paper Award, Pow-
er Engineering Society, 1981. Other Awards: Member,
Sigma Xi.

DORATO, PETER, Fellow 1977. Born: December 17,
1932, New York, N.Y. Degrees: B.E.E., 1956, City Col-
lege of the City University of New York; M.S.E.E., 1957,
Columbia University; D.E.E., 1961, Polytechnic Insti-
tute of Brooklyn.

Fellow Award “For contributions to sensitivity anal-

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ysis and design in automatic control systems."


Fellow Award "For leadership in engineering education, and for contributions to control theory." Other Awards: American Council on Engineering Fellow in Academic Administration, 1968; Clarkson College Alumni Award, 1979.


Fellow Award "For contributions to the design and technology of high-frequency and microwave power sources."


Fellow Award "For contributions to the design of antennas, particularly for aircraft."


Fellow Award "For the management of engineering projects associated with integrated nationwide telecommunications." Other Awards: Karl Taylor Compton Prize, Massachusetts Institute of Technology, 1955.


Fellow Award "For achievements in power conversion equipment"; AIEE Certificate, Philadelphia Section, 1962. Other Awards: 45 U.S. patents and foreign patents.


Fellow Award "For contributions to the theory and teaching of plasma science and physical electronics"; Special Award by Southwestern IEEE Conference and Exhibition, 1967, "For outstanding service as program chairman"; IEEE Centennial Medal, 1984. Other Awards: Teaching Excellence Award, University of Texas Students' Assn., 1962, 1963; Fellow, American Physical Society, 1967; Outstanding Graduate Adviser Award, University of Texas Graduate Engineering Council, 1971; Professional Achievement Citation in Engineering, College of Engineering, Iowa State University, 1975; Distinguished Adviser Award, Student Engineering Council, University of Texas, 1977; Teaching Achievement Award, Student Engineering Council, University of Texas, 1977.


Fellow Award "For contributions to dc transmission technology and the application of low-cost, high-voltage cables."


Fellow Award "For outstanding contributions to the teaching and understanding of electronics through the organization of educational material and the stimulation of students and others of critical thought"; Education Medal, 1963, "For his outstanding contributions to teaching, to educational theory, and to research, and his inspiring leadership in faculty development." Other Awards: Outstanding Achievement Award, University of Minnesota, 1961; Distinguished Faculty Achievement Award, University of Michigan, 1962; Fellow, Engineering Society of Detroit, 1975; Fellow, American Association for the Advancement of Science, 1980.


Fellow Award "For his contributions in the application of electrical engineering to the field of nuclear reactors."


Fellow Award "For contributions to development of the thermal converter, particularly for demand metering, totalization and load control."


Fellow Award "For leadership in research and development of electronic materials and devices"; National Chairman, IRE Prof. Group Military Electronics, 1962. Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Army, 1965; President, Ft. Monmouth Chapter, Armed Forces Communications and Electronics Association, 1967; Trustee Emeritus, Monmouth College; Board of Directors, Assn. of U.S. Army; Board of Directors Award, National Aerospace & Electronics Systems, 1975.


Fellow Award "For contributions to the development
of advanced magnetic memories**; Distinguished Lecturer, IEEE Magnetics Society, 1982-1983.


Fellow Award "For contributions to the development of semiconductor devices"; Director, Region 8, IEEE, 1983-84.


Fellow Award "For contributions to electrical engineering education." Other Awards: American Society for Engineering Education; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Distinguished Service Award and Medal, Ohio State University, 1974.


Fellow Award "For his contributions to the development of adaptive servomechanism systems." Other Awards: Faculty Fellow, National Science Foundation, 1964-1965.

Fellow Award "For contributions to the understanding of electronic properties of semiconductors, semimetals, and metals, to electrical engineering education, and to the enhancement of women's opportunities in engineering education." Other Awards: Fellow, American Physical Society; Hall of Fame, Hunter College, 1972; Alumnae Medal, Radcliffe College, 1973; National Academy of Engineering, 1974; American Academy of Arts and Sciences, 1974; Corresponding Member, Brazilian Academy of Science, 1976; Achievement Award, Society of Women Engineers, 1977.

Fellow Award "For advances in digital signal processing architecture leading to improvements in the agility and versatility of electronic warfare systems"; Best Paper Award, NAECON, 1982. Other Awards: Plaques and Certificates of Appreciation, for talks on B-1B Defensive Avionics System, Association of Old Crows chapters.

Fellow Award "For contributions to the design of electrical machinery, to the control of electric motors, and for leadership in design, analysis, and management." Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1962.

DU BOSE, MCNEELY, AIEE Fellow 1943.

Fellow Award "For contributions to the theory and applications of pattern recognition."

Fellow Award "For enduring contributions to power engineering education"; Second Prize Paper Award, Southwest Region, AIEE, 1959. Other Awards: Convair General Dynamics Award for Excellence in Engineering Teaching, 1958; Student Association Teaching Excellence Award, University of Texas, 1961; Student Engineering Council Teaching Award, 1977.


Fellow Award "For contributions to spectroscopy and gaseous electronics, and for leadership in electronic research."

Fellow Award "For contributions to frequency-independent antennas"; Best Paper Prize, IRE, Professional Group on Antennas and Propagation, 1958.

Fellow Award "For contributions to nonlinear circuit theory, transaxial tomography, and industrial leadership."


Fellow Award "For leadership in the development and improvement of communications." Other Awards: Distinguished Service Cross, Episcopal Diocese of Long Island, 1964; Alumni Citation, Washington University, 1969.

Fellow Award “For contributions to and technical leadership in the development of communications satellite antennas.”


Fellow Award “For contributions in the planning and design of electric power systems.”


Fellow Award “For contributions to semiconductor research and transistor production techniques.” Other Awards: Fellow, American Physical Society, 1957.


Fellow Award “For contributions to the development of electrical standards.”


Fellow Award “For contributions to the development of telecommunications policy.”


Fellow Award “For contributions to the understanding of the interaction of ultrasonic waves with living tissue.” Other Awards: Fellow, Acoustical Society of America, 1963; Special Research Fellowship, National Institutes of Health, 1968; American Cancer Society-Eleanor Roosevelt-International Cancer Fellowship, 1975 and 1982; Fellow, American Institute of Ultrasound in Medicine, 1979; Fellow, Institute of Acoustics, United Kingdom, 1980; Fulbright Scholar 1982/83; National Academy of Engineering, 1982; Japan Society for Promotion of Science Fellowship, 1982.


Fellow Award “For his contributions to the field of sound recording, and his effective organization of engineering effort.” Other Awards: Commendation, U.S. Dept. of Navy.


Fellow Award “For contribution to the electrical industry as engineer, author, administrator and educator.” Other Awards: Brevet des Palmes d’Academie, France, 1948; Professor Emeritus, Laval University, Quebec, 1948; Honorary Director, Hydro-Quebec Institute of Research, Quebec (IREQ), 1976.


Fellow Award “For contributions to power generation and conservation of natural resources.”


Fellow Award “For contributions to the conceptual design and analysis of space communications systems”; USAB Citation of Honor, 1980; Outstanding Member, Region 2, IEEE, 1982; President, IEEE Aerospace and Electronic Systems Society, 1982, 1983; Director, Division IX (Signals and Applications), 1984, 1985. Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics; Fellow, Washington Academy of Sciences; Member, Sigma Xi; NASA Special Achievement Awards, 1977, 1978.


Fellow Award “For significant technical leadership in international standards activities relating to transformers, voltages, and safety”; Transformers Committee Award, IEEE, 1978; Industrial Plants Power System Committee Prize Award, IEEE, 1980. Other Awards: Sigma Tau, 1939; Engineering Award, General Electric Power Systems Sector, 1979; NEMA, 1982, 1983;

Fellow Award “For contributions to computer-aided modeling of silicon devices and fabrication processes.” Other Awards: Department Citation (UCB), 1966; NATO Fellowship, 1975; Fairchild Fellowship, 1966; NSF Fellowship, 1967-70.

Fellow Award “For contributions to engineering direction of electrical systems for aircraft.” Other Awards: Citation, IAE.

Fellow Award “For contributions to mutual understanding between electric power industry, the professional societies, and the schools of engineering”; Distinguished Service Award, Power Engineering Education Committee of Power Engineering Society, 1977; Region I Citation for Contribution to 1980-1981 Professional Awareness Program; USAB Award for Engineering Professionalism, IEEE, 1982; IEEE Centennial Medal, 1984. Other Awards: Fred Plummer Lecturer, American Welding Society, 1975; Listed in “Engineers of Distinction” and “Who’s Who,” American Association of Engineering Societies, Distinguished Service Award, 1977, National President, 1958, Eta Kappa Nu; Special Citations, Edison Electric Institute, 1977, 1978; Lectured to over 40 SPAC’s since 1979; Numerous papers, chairmanships, and citations in IEEE, ECPD, EBI, HKN and ASEE; Eminent Membership, HKN, 1984; Registered P.E.(1941) in N.Y., (1983) in N.C.

Other Awards: Member, Association for Computing Machinery; Member, Society for Industrial and Applied Mathematics; Member, Acoustical Society of America; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.

Fellow Award “For contributions to the science of acoustics and its applications and for distinguished academic leadership in advancing oceanic engineering and its applications”; Distinguished Technical Contribution Award, IEEE Council on Oceanic Engineering, 1982. Other Awards: Fellow (and Biennial Award), Acoustical Society of America, 1960; National Academy of Engineering, 1976; Meritorious Public Service Award, U.S. Coast Guard, 1979; Fellow, American Association for the Advancement of Science, 1980.

Fellow Award “For administrative and technical contributions to radio, including polar expedition communications and important wartime radio countermeasures.”

Fellow Award “For contributions to the understanding and development of high intensity field emission sources and the application of these sources to pulses x-ray equipment”; Electronic Achievement Award, IRE, Region 7, 1958, 1958; IEEE David Sarnoff Award, 1968, “For pioneering contributions to the development of field emission in x-ray technology.” Other Awards: Presidential Certificate of Merit, 1946; Citation, Oregon Academy of Science, 1958; American Physical Society; Oregon Academy of Science; American Association of Physics Teachers; Sigma Xi; Sigma Pi Sigma.

Fellow Award “For contributions in advanced control concepts for the secure and reliable operation of electric power systems”; Prize Paper Award, IEEE Power Group, 1968, for paper “The Adaptive Reliability Control System.”

Fellow Award “For contributions to the development of log-spiral antennas.”

Fellow Award “For contributions and leadership in the design and application of large-scale information processing systems.” Other Awards: Fellow, New York Academy of Sciences, 1966; Fellow, American Association for Advancement of Science, 1972.


Fellow Award “For the development of an industry-accepted method of corona detection in extruded dielectric power cables”; District First Prize Paper, IEEE, 1958, for paper “Transmission Properties of Polyethylene Insulated Telephone Cables at Voice and Carrier Frequencies.”


Fellow Award “For contributions in the development of high frequency transistors”; J. Ebers Award, IEEE Electron Devices Society, 1979. Other Awards: TEXNIKOI Outstanding Alumnus Award, Ohio State University, 1967.


Fellow Award “For his contributions to engineering education.”


Fellow Award “For contributions to impedance measuring techniques and equipment”; Award, IEEE Instrumentation and Measurement Society; President, 112E I&M Group, 1953; Chairman, CPEM, 1960, NEREM, 1954, IEC TC66, 1973-1980; Staff Director of Standards, IEEE, 1976-1980; President, U.S. National Committee, International Electrotechnical Commission; Director, American National Standards Institute. Other Awards: Alumni Citation, Northeastern University.


Fellow Award “For contributions to the development of navigation satellites and worldwide precise time transfer.” Other Awards: Distinguished Civilian Service Award, 1960; Award, Radio Engineers Professional Group for Reliability and Quality Control, 1960; Publications Award, Naval Research Laboratory, 1970; Applied Science Award, Sigma Xi, 1974.


Fellow Award “For contributions in the application of radar scattering analyses and measurements to radar discrimination.” Other Awards: Armed Forces Communications and Electronics Association Award, 1957; Air Force Association Award, 1957; Air Force Special Act of Service Award, 1963; Air Force Association Engineering Achievement Award, 1963; Air Force Civilian Sustained Superior Performance Award, 1964; Air Force Civilian Outstanding Performance Award, 1965; Georgia Tech Sigma Xi Research Award in Engineering, 1974; Member: Sigma Xi, Phi Kappa Phi, Tau Beta Pi, Eta Kappa Nu.

EDELSON, BURTON I., Fellow 1976 Born: July 31, 1926, New York, N.Y. Degrees: B.S., 1947, United
States Naval Academy; M.S., 1954, Ph.D., 1960, Yale University.

Fellow Award “For contributions to and leadership in the development of satellite communications systems.” Other Awards: Howe Research Award, American Society for Metals, 1963; Legion of Merit, U.S. Navy, 1965; Fellow, American Institute of Aeronautics and Astronautics, 1976.


Fellow Award “For contributions to the application of technology to the health sciences.” Other Awards: Member, Biophysical Society; American Physiological Society; American Society for Engineering Education; Association for Medical Instrumentation; Sigma Xi; Tau Beta Pi.


Fellow Award “For contribution to the development of high speed gallium arsenide integrated circuits and III-V alloy photodetectors.” Other Awards: Rockwell International Engineer of the Year Award, 1977.

EDGERTON, HAROLD E., AIEE Fellow 1946, IRE Fellow 1956. Born: April 6, 1903, Fremont, Nebr. Degrees: B.Sc., 1925, University of Nebraska; M.Sc., 1927, D.Sc., 1931, Massachusetts Institute of Technology; D.Eng.(Hon.), 1948, University of Nebraska; LL.D.(Hon.), 1969, Doane College; LL.D.(Hon.), 1969, University of South Carolina; D.Sc.(Hon.), 1979, Washington University in St. Louis.

IRE Fellow Award “For contributions in the application of electronic techniques to high-speed stroboscopic photography.” Other Awards: Morris E. Leeds Award, 1965; National Best Paper Prize in Theory and Research, AIEE, 1936; Award, Oceanography Coordinating Committee, IEEE, 1974. Other Awards: Certificate of Appreciation, War Dept.; Citation, University of California; Medal, Royal Photographic Society of London, 1936; Modern Pioneer Award, National Association of Manufacturers, 1940; Howard N. Potts Medal, Franklin Institute, 1941; Medal of Freedom, 1946; Master of Photography, Photographers Association of America, 1949; Joseph A. Sprague Award, National Press Photographic Association, 1949; U.S. Camera Achievement Gold Medal Award, 1951; Photography Magazine Award, 1952; Franklin L. Burr Prize, National Geographic Society, 1953; Progress Medal Award, Photographic Society of America, 1955; 75th Anniversary Citation, Photographers Association of America, 1955; Progress Award, Society of Motion Picture and Television Engineers, 1959; George W. Harris Achievement Award, Photographers Association of America, 1959; New England Engineer of the Year Award, Engineering Societies of New England, 1959; Boston Sea Rovers Award, 1960. Gordon Y. Billard Award, Massachusetts Institute of Technology, 1962; E. I. duPont Gold Medal Award, Society of Motion Picture and Television Engineers, 1962; Man of the Year Award, Industrial Photographers Association of America, 1963; Silver Progress Medal, Royal Photographic Society of Great Britain, 1964; Technical Achievement Award, American Society of Magazine Photographers, 1965; Richardson Medal, Optical Society of America, 1968; Eminent Member Award, Eta Kappa Nu, 1968; John Oliver LaGorce Gold Medal, National Geographic Society, 1968; Alan Gordon Memorial Award, S.P.I.E., 1965; Albert A. Michelson Medal, Franklin Institute, 1969; Distinguished Service Award, University of Nebraska, 1972; NOGI Award, Underwater Society of America, 1971; Holley Medal (with K. Germshausen), American Society of Mechanical Engineers, 1973; National Medal of Science, 1973; Lockheed Award for Marine Science and Engineering, Marine Science and Technology Society, 1978; Nikon Special Achievement Citation, 1979; Photographic Administrators Award for Technical Achievement, 1980; Professor Emeritus, Massachusetts Institute of Technology, 1968-1981.

Fellow: Photography Society of America, Royal Photographic Society of Great Britain, Society of Motion Picture and Television Engineers; Member: Academy of Applied Science, Academy of Underwater Arts and Sciences, American Academy of Arts and Sciences, American Philosophical Society, Eta Kappa Nu, Marine Technology Society, Boston Museum of Science, National Academy of Engineering, National Academy of Sciences, Society of Photographic Engineers, Sigma Tau, Sigma Xi, Woods Hole Oceanographic Institute; Honorary Member, Boston Camera Club; Honorary Member, Boston Sea Rovers; New England Aquarium; Honorary Member, Fairhaven Whalers Club; Photographers Association of New England; Honorary Member, Society of Motion Picture and TV Engineers.


Fellow Award “For contributions through the invention and development of circuit protective devices.”


IRE Fellow Award "For his creative contributions to the development of the amplydene and other control systems." Other Awards: Charles A. Coffin Awards, General Electric, 1934, 1940, 1949; General Electric Gold Medal to Inventors, "50th Patent"; Invention Fulcrum of Progress.


Fellow Award "For contributions to the development and design of synchronous machines and means of calculating performance."


Fellow Award "For outstanding contributions to the analysis and development of piezoelectric devices." Other Awards: Fellow, American Physical Society, 1981; W.G. Cady Award, Frequency Control Symposium, 1983.


Fellow Award "For pioneering contributions to the FM stereophonic broadcasting system."


Fellow Award "For research in the transport properties of electronic materials and acoustic effects in solids." Other Awards: Fellow, American Physical Society; Fellow, Acoustical Society of America; Fellow, American Association for the Advancement of Science; Member, American Institute of Industrial Engineers; Member, American Society for Engineering Education; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Phi Kappa Phi; Tau Sigma Delta; Alpha Pi Mu.

EITEL, WILLIAM W., IRE Fellow 1953. Born: January 16, 1908, San Jose, Calif.

Fellow Award "For his pioneering contributions to power tube design." Other Awards: Distinguished Public Service Award, U.S. Dept. of Navy, 1950; Fellow, Radio Club of America; Sarnoff Award, Radio Club of America; Professional Electrical Engineer, State of California.


Fellow Award "For exceptional engineering contributions and technical leadership in the development and standardization of electron tubes and semiconductor devices."


Fellow Award "For contributions to the analysis of power systems, and to education for the power industry." Other Awards: Fulbright and Smith Mund U.S. Government Scholarship, 1952-1953.


Fellow Award "For contributions to magnetic memory systems." Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1967; Distinguished Engineering Alumni, Purdue University, 1968.


Fellow Award "For contributions in the field of control and electric energy engineering, and leadership in electric power energy education."


EL-KOSHARY, MAHMOUD A. B., Fellow 1977. Born: April 11, 1909, Tanta, Egypt. Degrees: Dipl.(First Class Distinction), 1929, Royal School of Engineering, Cairo; A.C.G.I.(Associate of the City and Guilds Institute), 1932, B.Sc.(First Class Honors), 1933, D.I.C.(Diploma of Imperial College), 1936, Ph.D., 1936, City and Guilds Engineering College, Imperial College, London University.

Fellow Award "For leadership in the development of his Nation's power system, and engineering education." Other Awards: First Order of Decorations of the Republic 1964, Merit 1980, Science and Arts 1980, Medal of Distinguished Service 1972; Fellow, Institution of Electrical Engineers; Fellow, Egyptian Engineers Society; Canadian Solar Energy Society; Chairman,


Fellow Award “For leadership in electronics research and engineering in his Country.”

ELSPAS, BERNARD, Fellow 1976. Born: July 26, 1925, New York, N.Y. Degrees: B.E.E., City College of the City University of New York; M.E.E., New York University; Ph.D., Stanford University.

Fellow Award “For contributions to information theory and to switching and automata theory.”


Fellow Award “For contributions to spectrum allocations and to the coordination of engineering and scientific programs”; Director Emeritus, IEEE, 1979.


Fellow Award “For contributions to the principles of the design and rating of communication systems.”


Fellow Award “For contributions to the techniques and precision of dielectric measurements.” Other Awards: Award of Merit, American Society for Testing and Materials, 1968; Fellow, American Society for Testing and Materials.


Fellow Award “For contributions to the concept and to the implementation of spectrally efficient, cellular mobile telephone systems”; Paper of the Year Award, IEEE Vehicular Technology Group, 1969, 1973.

Fellow Award “For contributions to parametric, domain, and other active microwave devices, and for leadership in the integration of microwave circuits.”


Fellow Award “For contributions to the understanding of surface-charge transport and its application to the development of new devices.”


Fellow Award “For outstanding contributions in integrated circuits design techniques and device modeling.” Other Awards: Academy of Science, Northrhine-Westfalia, 1978.


Fellow Award “For his contributions to the administration of electronic programs of the U.S. Navy.”

ENGSTROM, ELMER W., IRE Fellow 1940, AIEEE Fellow 1949. Born: August 25, 1901, Minneapolis, Minn. Degrees: B.S., 1923, University of Minnesota; Recipient of 17 honorary doctoral degrees from American colleges and universities and one from a European university.


Fellow Award “For contributions to the design and construction of electric power supply systems.” Other Awards: Registered Professional Engineer, Missouri, Maine, New Hampshire, Vermont, Indiana.


Fellow Award “For contributions to the development of hybrid computers and their application to the operation and control of electric power centers.” Other Awards: Westinghouse Lamme Scholarship, 1964; Listed in “Who’s Who in America,” 1978.


Fellow Award “For contributions to the development of a power utility system and the invention of a simplified network analyzer.”


Fellow Award “For technical leadership in the development of weapons systems for the detection, location, and strike of ground targets”; Chairman, Mohawk Valley Section, IEEE, 1979-1980. Other Awards: Tau Beta Pi, 1958; Phi Beta Kappa, 1959; Dept. of Air Force Decoration for Exceptional Civilian Service, 1974; USAF Rome Air Development Center, Harry I. Davis Award for Outstanding Technical Achievement, 1978; Member, Senior Executive Service, 1981.


Fellow Award “For contributions to statistical communication theory, modeling and analysis of communication networks, and engineering education.” Other Awards: George Corcoran Award, University of Mary-
land, 1977; Distinguished Program Award, Maryland
Association of Higher Education, 1982; CSC, 1979;
Prize Paper Awards, NRL, 1981.

**EPPERS, WILLIAM C., JR.**, Fellow 1976. Born: January
Johns Hopkins University.

Fellow Award "For technical contributions and lead-
ership in the field of laser technology and applica-
tions." Other Awards: Samuel M. Burka Award, 1969;
Outstanding Engineer, Dayton Area, 1972; Tau Beta
Pi; Eta Kappa Nu; Sigma Xi; Gamma Alpha.

**EPPERSON, JOSEPH B.,** IRE Fellow 1958, AIEE Fellow

IRE Fellow Award "For his contributions to radio and
television broadcasting"; AIEE Fellow Award "For his
achievements in the broadcasting field." Other Awards:
Tau Beta Pi Award, University of Tennessee, 1957; En-
engineering Achievement Award, National Association of
Broadcasters, 1974.

**EPSTEIN, HENRY D.,** Fellow 1975. Born: April 5,
1927, Frankfurt-main, Germany. Degrees: B.S.E.E.,
1948, Brown University; M.S., 1950, Harvard Gradu-
ate School of Engineering, Harvard Business School.

Fellow Award "For development of electrical protec-
tion devices for consumer safety and pollution con-
trol."

**ERATH, LOUIS W.,** IRE Fellow 1962. Born: June 10,
1917, Abbeville, La. Degrees: 1939, Louisiana State
University.

Fellow Award "For contributions to seismic and geo-
physical instruments and to naval ordnance." Other
Awards: Meritorious Civilian Service Award, U.S. Dept.
of Navy, 1945.

**ERDELYI, EDWARD A.,** AIEE Fellow 1960. Born: July
13, 1908, Hlohovec, Czechoslovakia. Degrees: B.Sc.,
1926, Czechoslovakia Technical University, Brno;
M.Sc., 1929, German Technical University, Brno; Dpl-
Ing., 1929, Masaryk University, Brno; Ph.D., 1955,
University of Michigan; Doctor honoris causa, 1971,
Budapest Polytechnic University; Dr. Ing. honoris
causa, 1977, Technical University, Braunschweig.

Fellow Award "For contributions to the theory of
noise in electric machinery"; Outstanding Paper Prize,
Professional Group on Aerospace, 1963, for "The Non-
Linear Potential Equation and its Solution for Highly
Saturated Machines"; Paper Prize, Honorable Mention,
Professional Group on Aerospace, 1964, for "Non-
Linear Vector Potential Equation for Saturated
Heteropolar Electrical Machines"; Recognition Award,
Rotating Machinery Committee, 1967, "For outstand-
ing contributions to the field of rotating electrical
machinery by his work on flux distribution and non-
linear solutions for saturated machines. His tireless ef-
forts in disseminating that knowledge has inspired
many in our field." Other Awards: Engineer of the Year

**ERIC, PENNY A.,** AIEE Fellow 1962. Born: April 4,
1916, McKeesport, Pa. Degrees: B.S., 1938, Univer-
sity of Pittsburgh; M.S., 1946, Carnegie Insti-
tute of Technology.

Fellow Award "For contributions to engineering edu-
cation."

**ERICSON, RUDOLPH C.,** AIEE Fellow 1950. Born:
December 6, 1901, Orion, Ill. Degrees: B.S., 1925,
E.E., 1946, University of Illinois.

**ERNST, EDWARD W.,** Fellow 1976. Born: August 28,
1924, Great Falls, Mont. Degrees: B.S., 1949, M.S.,
1950, Ph.D., 1955, University of Illinois at Urbana-
Champaign.

Fellow Award "For contributions to improved meth-
ods of laboratory instruction in electrical engineering
education"; IEEE Centennial Medal, 1984. Other
Awards: Fellow, American Association for the Advance-
ment of Science, 1979; Halliburton Engineering Edu-
cation Leadership Award, 1983.

**ESAKI, LEO,** IRE Fellow 1962. Born: March 12, 1925,
Osaka, Japan. Degrees: B.S., 1947, Ph.D., 1959, Uni-
versity of Tokyo.

Fellow Award "For contributions to the semi-
conductor field, and specifically the tunnel diode";
Morris N. Liebmann Award, IRE, 1960, "For important
contributions to the theory and technology of solid
state devices, particularly as embodied in the tunnel
diode." Other Awards: Nishina Memorial Award, 1959;
Asahi Press Award, 1960; Tokyo Rayon Foundation
Award, 1961; Stuart Ballantine Medal, Franklin Insti-
tute, 1961; Award, Japan Academy, 1965; Fellow,
American Physical Society, 1967; Fellow, Internation-
al Business Machines, 1967; Nobel Prize in Physics,
1973; Order of Culture from Japanese Government,
1974; Member, Japan Academy, 1975; Member, Na-
tional Academy of Science (Foreign Assoc.), 1976;
Member, National Academy of Engineering (Foreign
Assoc.), 1977; IBM-Japan Board Member, 1976; IBM-
Japan Science Institute Governing Board, 1981.

**ESHLEMAN, VON R.,** IRE Fellow 1962. Born: September
17, 1924, Darke Co., Ohio. Degrees: B.S.E.E.,
1949, George Washington University; M.S., 1950,
Ph.D., 1952, Stanford University.

Fellow Award "For contributions to radar astronomy
and communications." Other Awards: Engineer Alumni
Achievement Award, 1974, Alumni Achievement
Award, 1975, George Washington University; National
Academy of Engineering, 1977; NASA Medal for Ex-
ceptional Scientific Achievement, 1981.

**ESPENSCHIE, LLOYD,** IRE Fellow 1924, AIEE Fellow
1930. Born: April 27, 1889, St. Louis, Mo. Degrees:
A.E. 1909, D.Sc.(Hon.), 1957, Pratt Institute.


Fellow Award “For contributions to the fields of thermionic emission and electron tubes.” Other Awards: Andrew Carnegie Scholarship, Institute for Theoretical Physics, Copenhagen, Denmark, 1929-1930; Samuel Morse Medal, New York University, 1929.


Fellow Award “For contributions to communication theory and system analysis.”


Fellow Award “For contributions in the field of automatic elevator controls and reactor power plant instrumentation and design.” Other Awards: Edward Weston Award, New Jersey Institute of Technology, 1962; Fellow, American Nuclear Society, 1965; Allan R. Cullimore Award, New Jersey Institute of Technology, 1968.


Fellow Award “For contributions to power plant design and pioneering application of air pollution control equipment and power plant automation”; IEEE Power Generation Committee Award under title of “Honorary Member of the Power Generation Committee,” 1982. Other Awards: National Academy of Engineering, 1981; Newcomen Medal (ASME/Franklin Institute), 1966; ASME Honorary Member Award, 1963; ASME Prime Movers Committee Award, 1958; Fellow, ASME, 1954; Registered Professional Electrical and Mechanical Engineer, State of California.


Fellow Award “For contributions to the design and operation of interconnected power generating stations and systems.” Other Awards: Fellow, American Society of Mechanical Engineers, 1959.


Fellow Award “For outstanding contributions to university research and education in computers, and to the design and construction of pioneering digital computers.” Other Awards: Lipsky Fellowship, 1954-55; Guggenheim Fellowships, 1962-63, 1967; Distinguished Service Citation, University of Wisconsin, 1975; Special Recognition Award, Third Jerusalem Conference on Information Technology, 1978; Chair, Computer Science Department, UCLA, 1979-1982; Governor, Weizmann Institute of Science, Israel, 1971-; Scientific Advisory Council, Gould, Inc., 1981-1982.


Fellow Award “For contributions to the design and application of computer systems for neurophysiologic and brain research.” Other Awards: Distinguished Service Citation, University of Wisconsin, College of Engineering, Madison, 1975; Achievement Award, Society of Women Engineers, 1981.


Fellow Award “For contributions in the field of aircraft flight instrumentation”; First Paper Prize, AIEE, 1945, for “Electric Automatic Pilots for Aircraft.” Other Awards: Member, International Executive Service Corps.


Fellow Award “For leadership in the development of high-speed digital computers”; Edwin Howard Armstrong Achievement Award, IEEE Communications Society, 1984. Other Awards: NASA Public Service Award, 1969; Meritorious Service Award, Armed Forces Communication and Electronic Association, 1969; Member, National Academy of Engineering, 1970; Professional Achievement Citation in Engineering, Iowa State University, 1971; National Security Agency Citation, 1975.


Fellow Award “For contributions in the field of computer science.” Other Awards: Member, National Academy of Engineering; Computer Design Hall of Fame, 1982; Charter Member, Computer Science & Engineering Board, NAE.


Fellow Award “For contributions to radio relay and
satellite communication systems." Other Awards: Member, American Institute of Aeronautics and Astronautics; Tau Beta Pi; Phi Delta Phi; Sigma Xi.


Fellow Award "For numerous contributions to radar astronomy." Other Awards: Appleton Prize in Ionospheric Physics, Royal Society of London, 1975.


Fellow Award "For contributions to the practice and advancement of reliability theory"; Editor, IEEE Transactions on Reliability. Other Awards: Fellow, American Society for Quality Control, 1972; Editor, ASQC Reliability Review.


Fellow Award "For contributions to applications of video techniques and video systems"; Vladimir K. Zwoorykin Award, IRE, 1963, "For recording of television pictures on paper." Other Awards: Oscar, Academy of Motion Picture Arts and Sciences, 1960.


Fellow Award "For contributions to electrical engineering in the field of geophysical exploration." Other Awards: Tau Beta Pi; Armed Forces Communications and Electronics Association; Society of Exploration Geophysicists; Fellow, AAAS.


Fellow Award "For contributions to the development of digital computers and of computer-based real-time control systems for continental air defense."


Other Awards: Distinguished Service Award, American Management Association, 1973-75.


**EVERITT, WILLIAM L.,** AIEE Fellow 1936, IRE Fellow 1938. Born: April 14, 1900, Baltimore, Md. Degrees: E.E., 1922, Cornell University; M.S., 1926, University of Michigan; Ph.D., 1933, Ohio State University; D.Eng.(Hon.), 1959, Bradley University; D.Sc.(Hon.), 1964, Monmouth College; D.Eng.(Hon.), 1964, Tri-State College; D.Eng.(Hon.), 1966, University of the Andes; D.Sc.(Hon.), 1966, Ohio State University; D.Eng.(Hon.), 1967, Michigan Technological University; D.Eng.(Hon.), 1967, University of Michigan; LL.D.(Hon.), 1968, University of Denver; D.Sc.(Hon.), 1969, University of Illinois; D.Eng.(Hon.), 1972, Southern Methodist University.

Award, Engineers’ Council for Professional Development, 1973; Exceptional Service Award, American Society for Engineering Education, 1980.


Fellow Award “For pioneering contributions to the analysis of the control and dynamics of large-scale electric power systems.”


Fellow Award “For contributions to the development of electrical apparatus and application to electric utility systems.”


Fellow Award “For research and the application of radio astronomy in connection with radiation from galactic and inter-galactic hydrogen”; Morris E. Leeds Award, 1970, “For contributions to the design of sensitive radiometric systems, and for co-discovery of the 21 cm. spectral line of interstellar hydrogen.” Other Awards: Phi Beta Kappa, 1942; Sigma Xi, 1950; Fellow, American Association for the Advancement of Science, 1954; Fellow, American Academy of Arts and Sciences, 1957.


Fellow Award “For his contributions to the development of electronic aids to air navigation and traffic control systems.”


Fellow Award “For contributions to identification and parameter estimation in dynamic systems, to control engineering education in The Netherlands, and to international scientific cooperation.” Other Awards: Sigma Xi; Visiting Research Fellow, U.S. Academy of Sciences, 1958.


Fellow Award “For contributions to nuclear instrumentation, particularly in the technology of linear pulse amplification.”


Fellow Award “For contributions to television broadcasting and for leadership in the emerging semiconductor industry.”


Fellow Award “For discovery and understanding of the two-dimensional properties of silicon inversion layers and for contributions in semiconductor device physics research.” Other Awards: Fellow, American Physical Society; John Price Wetherill Medal, Franklin Institute, 1981.


1963, University of Pennsylvania.
Fellow Award "For work in advancement and understanding of microwave holographs and associated contributions to electrical engineering education."

Fellow Award "For research in microwave optics and solid-state electronics."

Fellow Award "For contributions to the solution of problems in the design and operation of electric power systems, and in the application of equipment thereto."

FARRAND, C. L., IRE Fellow 1931. Born: October 25, 1895, Newark, N.J. Degrees: M.E.(Hon.), 1949, Stevens Institute of Technology.
Other Awards: Fellow, Society of Motion Picture and Television Engineers; American Physical Society; British Kinematograph Society.


Fellow Award "For contributions to the development of high-power vacuum tubes."

FEE, WALTER F., Fellow 1977. Born: November 6, 1921, Providence, R.I. Degrees: B.S.E.E., 1946, Purdue University.
Fellow Award "For contributions to the management of power systems engineering"; IEEE Centennial Medal, 1984. Other Awards: Distinguished Engineering Alumnus Award, Purdue University, 1979.

Fellow Award "For contributions in the application of mathematical programming to engineering problems."

Fellow Award "For his contributions to the orderly assimilation of computer science into education, technology and society." Other Awards: Ordinance Development Award, U.S. Navy, 1945; Sigma Xi.

Fellow Award "For contributions to crossed-field microwave tubes." Other Awards: Member, National Academy of Engineering, 1976.


Fellow Award "For contributions to the understanding of domain structures in permalloy films in the teaching of magnetism." Other Awards: Preis, Deutschen Physikalischen Gesellschaft, 1963; Preis, Nachrichtentechnischen Gesellschaft, 1964.

Fellow Award "For contributions to computer technology." Other Awards: Member, National Academy of Engineering, 1974.

AIEE Fellow Award "For contributions to the advancement of science and education"; IRE Fellow Award "For research at millimeter wavelengths"; Paper Prize, AIEE, District 4, 1960, for "A Circular Polarization Duplexer for Millimeter Waves"; Outstanding Engineer, Region 3, IEEE, 1972. Other Awards: Eta Kappa Nu; Tau Beta Pi; Sigma Xi; Phi Beta Kappa.


Fellow Award “For outstanding contributions to parallel processors and processing”; Best Paper Award, Syracuse Section, IEE, 1975, Honor Roll Award, IEEE Computer Society, 1978; Special Award, IEEE Computer Society, 1981; IEEE Centennial Medal, 1984. Other Awards: Recognition Plaque, Rome Air Development Center, 1975; Phi Kappa Phi; Tau Beta Pi; Sigma Xi; Eta Kappa Nu; Phi Tau Phi.


Fellow Award “For technical contributions and leadership in military communications and space electronics.” Other Awards: Quantrell Prize, University of Chicago, 1943; Exceptional Civilian Service Award, U.S. Dept. of Army, 1953.

FERGUSON, RANDON O., AIEE Fellow 1951.


Fellow Award “For his original contributions and research leadership in high-frequency power amplifiers, servomechanisms, telephone switching, and quality control.” Other Awards: Fellow, American Society for Quality Control, 1948.


Fellow Award “For early contributions in the high-frequency operation of vacuum tubes.”


Fellow Award “For contributions to semiconductor heterojunctions research.” Other Awards: Distinguished Alumni Award, Valparaiso University, 1979.


Other Awards: Sigma Xi, 1927.


Fellow Award “For his leadership and contributions in the development and design of a wide variety of radio and radar equipment.”


AIEE Fellow Award “For his contributions to the analysis, synthesis and design of process control systems”; IRE Fellow Award “For contributions to electronic process control systems.” Other Awards: Fellow, American Association for the Advancement of Science, 1960; Fellow, Instrument Society of American, 1962.


Fellow Award “For contributions to ultrasonics and to the defense research program of the Royal Canadian Navy.” Other Awards: Fellow, Royal Society of Canada, 1944; Fellow, Acoustical Society of America, 1945; Order of the British Empire, 1946.

FIELD, LESTER M., IRE Fellow 1952. Born: February 9, 1918, Chicago, Ill. Degrees: B.S., 1939, Purdue Uni-
versity; Ph.D., 1944, Stanford University.

Fellow Award "For many technical contributions to the electron tube art, and in particular, the development of new forms of traveling-wave tubes." Other Awards: Eta Kappa Nu; Wilbur Scholar, Tau Beta Pi, 1938; National Academy of Engineering, 1967.


Fellow Award "For his contributions and leadership in radio astronomy in the development of large antennas and measurements on an absolute scale."


Fellow Award "For contributions to the foundations of probabilistic reasoning and its implications for modeling and decision making"; Honorable Mention (Best Paper Category); IEEE Control Systems Society, 1978, 1979.


IRE Fellow Award "In recognition of his espousal of high standards of technical publishing and for his wartime contributions in the field of electronic aids to navigation"; Radio Fall Meeting Plaque, IRE, 1951, "For his many contributions to the development of the television industry"; IEEE Director Emeritus (for life), 1974; IEEE Consumer Electronics Award, 1978; Founders Medal, 1978; Donald G. Fink Prize Paper Award, IEEE, established, 1980. Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1940; Premium Award, Institution of Electrical Engineers, U.K., 1944; Medal of Freedom, War Dept., 1946; Presidential Certificate of Merit, 1948; Journal Award, Society of Motion Picture and Television Engineers, 1955; Eminent Member, Eta Kappa Nu, 1965; Fellow, Institution of Electrical Engineers, U.K., 1968; Member, National Academy of Engineering, 1969; Outstanding Civilian Service Award, U.S. Dept. of Army, 1969; Outstanding Service to Television Citation, International Symposium on TV, Montreux, 1971; Progress Medal, Society of Motion Picture and Television Engineers, 1979.


Fellow Award "For contributions to the automatic control of power generation and dispatch, and leadership in underground transmission research." Other Awards: Fellow, Instrument Society of America, 1975; Meritorious Service Award, U.S. Dept. of Energy, 1979; Eta Kappa Nu; Sigma Tau; Tau Beta Pi.


IRE Fellow Award "For his contributions to the development of armament radar"; AIEE Fellow Award "For contributions to gun control, measuring and computing systems, television, radio, and scientific research." Other Awards: Charles A. Coffin Award, General Electric, 1948.


Fellow Award "For the development of innovative radar system detection techniques." Other Awards: Tau Beta Pi; Eta Kappa Nu.


Fellow Award "For fundamental contributions to error-burst-correcting codes."


Fellow Award "For contributions to color television;"
Section Award, IEEE, Philadelphia, 1976, “For his important pioneering contributions in applying television principles to space, medical and instrumentation applications, and his leadership in the IEEE.”


Fellow Award “For contributions to the increased reliability, safety and service continuity of electrical products and systems”; First Chapter Chairman, IEEE Industry and General Applications Group, Connecticut Section. Other Awards: 50 Patents; Listed in “Who’s Who in Engineering,” “International Blue Book,” 1948-1949, “American Men of Science”; Member, National Society of Professional Engineers; Registered Professional Engineer, Connecticut, Michigan.

FITCH, CLYDE J., AIEE Fellow 1959. Born: April 13, 1899, Jersey City, N.J.

Fellow Award “For contributions to electronic machines and to specialized extensions of radio communication.” Other Awards: Fellow, International Business Machines Corp., 1963.


Fellow Award “For contributions to the design of electric power systems and for leadership in the organization and administration of standards”; IEEE Standards Achievement Medal, 1972, “For outstanding achievement through standards.” Other Awards: Award of Merit, Cleveland Electronic Conference, 1980.


Fellow Award “For achievements in the development of communication services.” Other Awards: U.S. Naval Reserve Medal, 1950.


Fellow Award “For contributions to the scientific and economic advancement of Greece through education and the nation’s power system.”


Fellow Award “For leadership in consumer, industrial, and component electronics development.” Other Awards: Forest Award, American Ceramics Society, 1960; New York Academy of Sciences, 1967; Fellow, American Institute of Chemists, 1969; Electrochemical Society of America; American Chemical Society; Industrial Research Institute.


Fellow Award “For contributions and leadership in the field of data communications.” Other Awards: Outstanding Young American Engineer, Honorable Mention, Eta Kappa Nu, 1959.


Fellow Award “For the development of the ion ring compressor and its application to controlled fusion research.” Other Awards: Fellow, American Physical Society.


Fellow Award “For contributions to radar, television, nuclear instrumentation, solid-state computers, and optical electronics.” Other Awards: Member, Sigma Xi, 1950; Fellow, IBM, 1974; Certificate of Merit, Office of Scientific Research and Development, 1945.


FLETCHER, JAMES C., Fellow 1969. Born: June 5, 1919, Millburn, N.J. Degrees: A.B., 1940, Columbia University; Ph.D., 1948, California Institute of Technology; D.Sc.(Hon.), 1971, University of Utah;
D.Sc.(Hon.), 1977, Brigham Young University; Doctor of Laws(Hon.), 1978, Lehigh University.


Fellow Award “For research on microwave beam devices and spin and cyclotron resonances in silicon, and for technical leadership in the development of solid-state devices.” Other Awards: Fellow, American Physical Society; Fellow, American Association for the Advancement of Science, 1982.


Fellow Award “For innovative developments in the design of superconducting and other advanced generators”; AIEE District Branch Paper Prize, 1951; IEEE Centennial Medal, 1984.


Fellow Award “For contribution to the development of radio links and related technology.” Other Awards: Member, Associazione Elettrotecnica Italiana.


Fellow Award “For contributions in the fields of industrial television and medical electronics.” Other Awards: Overseas Award, Institution of Electrical Engineers, U.K., 1938; Awards, Radio Corporation of America Laboratories, 1949, 1950, 1958; Fellow, Radio Corporation of America Laboratories; Sigma Xi.


Fellow Award “For contributions to radar and guidance control systems.” Other Awards: Phi Beta Kappa, 1938; Tau Beta Pi, 1939; Sigma Xi, 1940; ADPA Award, 1978; Distinguished Alumnus Awards, University of Cincinnati, 1969, Duke University, 1984.


Fellow Award “For contributions to the electric power industry in the field of surge arrester application and standardization”; Prize Paper Award, Power Engineering Society, IEEE, 1973, 1974, 1976. Other Awards: Distinguished Service Citation, University of Wisconsin, 1977; Eta Kappa Nu.


Fellow Award “For contributions to electronic instrumentation”; Community Service Award, Region 6, 1967; Engineers Council for Professional Development Visiting Committee, 1970; Engineering Education and Accreditation Committee, 1971, 1972. Other Awards: Charles A. Coffin Award, General Electric, 1938; Navy Legion of Merit, 1946; Tau Beta Pi; Honorary Member, Instrument Society of America, 1976; Corporate Leadership Award, 1976; Medal of Achievement; American Electronics Association, 1976.


Fellow Award “For his contributions to circuit breaker design, and leadership in engineering organization in this field.” Other Awards: John Hopkinson Premium, Institution of Electrical Engineers, U.K., 1938.


Fellow Award “For outstanding contributions to the field of computer architecture.”


Other Awards: Townsend Harris Medal, City College of the City University of New York, 1944; University Medal, Columbia University, 1945; Egleston Medal, Columbia University, 1967; Sigma Xi; Tau Beta Pi; Fellow, American Association for the Advancement of Science; Fellow, New York Academy of Sciences.


Fellow Award “For contributions to microwave measurement techniques and instrument design.” Other Awards: Honor Awards, University of California at Berkeley, 1943; Hewlett-Packard Engineering Achievement Award, 1964; Sigma Xi; Eta Kappa Nu; Tau Beta Pi; HP Consultant and Lecturer.


Other Awards: Honorary Member, Michigan Engineering Society, 1954; Centennial Award, Michigan State University, 1955; Howard Cooley Medal, American Standards Association, 1960; Engineer of the Year Award, Michigan Society of Professional Engineers, 1960; Distinguished Alumnus Award, Michigan State University, 1961; Honorary Member, American Society for Testing and Materials, 1962; Tau Beta Pi; Eta Kappa Nu; Pi Tau Sigma; Fellow, AAS.


Fellow Award “For contributions to the development of television pickup tubes and infrared imaging devices.” Other Awards: Five Outstanding Research Awards, RCA Labs, 1942-1972; Distinguished Alumnus Award, Ohio State University, 1970; Registered Professional Engineer, Ohio.

FORMOSO, JOSE F., AIEE Fellow 1962. Born: April 18, 1903, Mexico City, Mexico.

Fellow Award “For contributions to the operation and maintenance of electric utility systems in Mexico.”


Fellow Award “For his contributions to the fields of electromagnetics, photoelectric mixing and ion generation, including implementation in the field of rocket propulsion.” Other Awards: American Physical Society Fellowship, 1957; Research Award, American Institute of Aeronautics and Astronautics, 1962.

FORRESTER, JAY W., IRE Fellow 1955. Born: July 14, 1918, Anselmo, Nebr. Degrees: B.Sc.E.E., 1939, University of Nebraska; M.Sc.E.E., 1945, Massachusetts Institute of Technology; D.Eng.(Hon.), 1954, University of Nebraska; D.Sc.(Hon.), 1969, Boston University; D.Eng.(Hon.), 1971, Newark College of Engineering; D.Sc.(Hon.), 1973, Union College; D.Eng.(Hon.), 1974, Notre Dame University; D.Pol.Sc.(Hon.), 1979, Mannheim University, Germany.


Fellow Award “For contributions in the understanding of high-voltage conduction and breakdown phenomena and for leadership in related professional activities.” Other Awards: U.S. Inventor’s Hall of Fame; Honorary Professor of Physics, State University of New Jersey, Rutgers, American Institute of Physics; American Chemical Society.


Fellow Award “For contributions to transistor development.” Other Awards: Phi Beta Kappa, 1943; Sigma Xi, 1943; Fellow, Radio Club of America, 1970; Fellow, Physical Society (U.K.), 1970; Busignies Award, Radio Club of America, 1981.


Fellow Award “For contributions to the theory and technology of silicon solar cells and transistors.” Other Awards: Research Unit Award, ASEE(SE Section), 1979; Best Faculty Paper Award, EE Dept., Univ. of Florida, 1979, 1981; Honorary Editorial Advisory Board, Solid-State Electronics, 1979-present; Who's Who in America, 1984.


Fellow Award “For his contributions and technical direction of work leading to better radio receiver design.” Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940.


Other Awards: Charles A. Coffin Award, General Electric, 1935; Howard N. Potts Medal, Franklin Institute, 1951; Award of Merit, Carnegie Institute of Technology, 1952.


Fellow Award “For contributions to the understanding of charge carriers' behavior in inversion layers.” Other Awards: John Price Wetherill Medal, Franklin Institute; Alexander von Humboldt Preis; IBM Fellow.


Fellow Award “For contributions to the introduction of radar to air traffic control, and the development of advanced radar techniques and their application to complex military problems.” Other Awards: Secretary of Defense Meritorious Civilian Service Medal, 1970; Fellow, American Association for the Advancement of Science, 1980; Joint Service Medal, AOC, 1980; Defense Intelligence Agency Exceptional Civilian Service Award, 1982.


Fellow Award “For contributions to atomic instrumentation.”


Fellow Award “For contributions to instrumentation in the field of power.”


Fellow Award “For research and invention in microwave wave-guide techniques”; Quantum Electronics Award, 1978; Microwave Career Award, 1979; David Sarnoff Award, 1979. Other Awards: Naval Ordnance Development Award, 1945; Fellow, Optical Society of America.


Fellow Award “For contributions to radio navigation and the development of instrumentation for the Loran-C system”; AES Pioneer Award, 1971, “For contributions to low-frequency navigation systems, in particular the conception, design, and implementation of Loran C.” Other Awards: Sigma Xi, 1938; Eta Kappa Nu, 1938; Commendation, U.S. Navy Bureau of Ships, 1945; Medal of Merit, Wild Goose Association (Navigation), 1977; Fellow, Engineering Society of Detroit, 1981.

Fellow Award "For contributions to the field of circuit techniques." Other Awards: Sigma Xi, 1931; Eta Kappa Nu, 1963.


Fellow Award "For leadership in engineering education and for outstanding contributions in control theory and applications."


Fellow Award "For pioneering contributions to printed circuit technology." Other Awards: Meritorious Service Award, National Bureau of Standards, 1949; Certificate of Achievement, Harry Diamond Laboratories, 1955; Incentive Award for R & D, DOFL, 1955.


Fellow Award "For contributions to the theory and application of periodically variable networks and filters." Other Awards: Hewlett-Packard Fellowship, 1952-1953.


Other Awards: Sigma Xi; Eta Kappa Nu; Tau Beta Pi; Member, American Society for Engineering Education; Member, Society for the History of Technology; Member, The Newcomen Society in North America.


Fellow Award "For his applications of network analysis and synthesis to television system problems"; Philadelphia Section Award, IEEE, 1980.


Fellow Award "For leadership and contributions in the field of electromagnetic technology and in the development of standards." Other Awards: Naval Ordnance Development Award for Exceptional Service, 1945; Citations, Congressional Record, 1955, 1960; Alumni Achievement Award, Nebraska Wesleyan University, 1960; Who's Who in Engineering, 1982.


Fellow Award "For contributions to gas lasers and the pioneering development of ultrastable lasers." Other Awards: Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award "For contributions to the development of radar systems"; Editor's Award, IRE, 1952. Other Awards: Citation from Commanding General, Strategic Air Command, 1972; Commendation from National Delegates, Advisory Group for Aerospace Research and Development; NATO, Avionics Panel, 1968-1979; Associate Fellow, American Institute of Aeronautics and Astronautics, 1978.


Fellow Award "For contributions to the theory of multivariable discrete-time systems and digital computer graphics." Other Awards: Pullman Prize, Union College, 1946; Postdoctoral Fellow, National Science Foundation, 1966; American Association for the Advancement of Science; Guggenheim Fellow, 1972; Silver Core, International Federation for Information Processing, 1974; President, International Association for Pattern Recognition, 1978-80; Treasurer, 1976-78 and 1982-84.


Fellow Award "For contributions to magnetic transducers and ferromagnetism, medical electronics and education"; Life Member, IEEE Magnetics Society, 1979. Other Awards: Weizmann Prize, Tel-Aviv Municipality, 1956; Member, Computer Pioneer Team, National Computer Conference, 1975; Honorary Fellow, Israel Soc. for Medical & Biological Engineering, 1981; Prof. Emeritus, Weizmann Institute of Science; Editorial Board, Inst. of Cardiovascular Ultrasoundography.


Fellow Award "For contributions to the development of design automation methodologies for large-scale integrated circuitry." Other Awards: IBM Outstanding Innovation Award, 1966.

Fellow Award "For the concept and development of microwave communication techniques and equipment, and his engineering leadership in the system engineering and implementation of microwave communication systems."


Other Awards: Charles A. Coffin Award, General Electric, 1947.


Fellow Award "For contributions to and technical leadership in the development of Doppler radar and relative navigation systems."


Fellow Award "For outstanding contributions to engineering education, to engineering societies, and to the understanding of magnetic devices"; IEEE Centennial Medal, 1984. Other Awards: Senior Award, Special Program, Alexander Von Humboldt Foundation, 1972; Senior Research Fellowship, Japanese Society for the Promotion of Science, 1980.


Fellow Award "For contributions to the application of modern control theory in navigation, guidance, and control systems." Other Awards: Fellow, American Society of Mechanical Engineers, 1974; Rufus Oldenburger Medal, American Society of Mechanical Engineers, 1982.


Fellow Award "For contributions to the development and application of network theory." Other Awards: Peter Trowbridge Fellowship, Columbia University, 1960; Ford Foundation Residency in Engineering Practice at Bell Laboratories, 1965; Guggenheim Fellowship, 1969; Honorable Mention, Lanchester Prize, Operations Research Society of America, 1972; Member, New York Academy of Sciences; Member: Phi Beta Kappa, Tau Beta Pi, Eta Kappa Nu, Sigma Alpha (Queens College Honor Society); Listed in: "American Men of Science," "Who's Who in Computers and Data Processing," "Who's Who in America"; Member, URSI, Commission C.

FRISCH, CARL A., IRE Fellow 1957. Born: August 13, 1906, Freeport, Kans. Degrees: A.B., 1928, Miami University, Ohio; M.S., 1931, Ph.D., 1932, University of Iowa; D.Sc.(Hon.), 1955, Miami University; D.Sc.(Hon.), 1964, Long Island University.

Fellow Award "For contributions in the field of electronic servomechanisms and related devices." Other Awards: Annual Management Award, 1964, Society for the Advancement of Management.


Fellow Award "For contributions to the design and development of aircraft generators and test instrumentation."

FRTIZ, H. R., AIEE Fellow 1939. Born: November 12, 1890, St. Louis, Mo. Degrees: E.E., 1914, University of Texas; M.S., 1917, University of Illinois.


Fellow Award "For contributions and technical leadership in data communications and in developing new telephone services."


Fellow Award "For the development and understanding of programable nonvolatile MOS memories"; Jack A. Morton Award, IEEE, 1982. Other Awards: Member, International Program Committee, International Solid State Circuits Conference.


Fellow Award “For contributions to microwave techniques and for technical leadership”; Outstanding Engineering Manager, Long Island Section, IEEE, 1974. Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics, 1963; Distinguished Citizen Award, Dowling College, 1973; Distinguished Alumnus, Polytechnic Institute of New York; Distinguished Leadership Award, Long Island YMCA, 1977; Distinguished Citizen Award, Suffolk County Boy Scouts of America, 1978; Fellow, Polytechnic Institute of New York; Phi Kappa Phi; Tau Beta Pi; Eta Kappa Nu; Gifford Visiting Executive, Lynchburg College School of Business, 1983.


Fellow Award “For outstanding contributions in applying acoustical theory and techniques to practical problems, and in planning and administering research and development programs.” Other Awards: Arthur S. Flemming Award, 1966; Navy Distinguished Public Service Award, 1969; National Academy of Engineering, 1971; Meritorious Civilian Service Award, Dept. of Defense, 1972; NASA Distinguished Service Medal, 1981.


Fellow Award “For pioneering contribution to the applications of ultrasonics in biology and medicine.”


Fellow Award “For technical leadership and innovative application of technology in the field of space communications.” Other Awards: Bicentennial Award, Columbia University, for Outstanding Academic Achievement; EASCON, Man of the Year Award, 1982.

FU, K.S., Fellow 1971. Born: October 2, 1930, Nanjing, China. Degrees: B.S., 1953, National Taiwan University; M.A.Sc., 1955, University of Toronto; Ph.D., 1959, University of Illinois.


Fellow Award “For his many contributions to the analysis of electronic counter measures.” Other Awards: National Academy of Engineering; Presidential Certificate of Merit; Two Awards, Defense M Distinguished Public Service; Exceptional Service Medal, Defense Intelligence Agency; Vice Chairman, Defense Science Board.


Fellow Award “For contributions to the understanding and design of low noise microwave transistors and..."


Fellow Award "For contributions to statistical pattern recognition." Other Awards: Inada Prize, Institute of Electrical Communication Engineers of Japan, 1962; Ohm Prize, Ohm Book Company, 1964; Prize, Kanto Electrical Association in Japan, 1966.


Fellow Award "For contributions to utility and industrial power systems and creative approaches to power engineering education"; IEEE Centennial Medal, 1984. Other Awards: Charles A. Coffin Award, 1953; Honorable Mention as Young Engineer, Eta Kappa Nu, 1954; NECA Big Ring, 1975; Edison Electric Institute Power Educator, 1977.


Fellow Award "For contributions to design, controls and testing of electrical power equipment."


Awards: Morris N. Liebmann Award, IRE, 1919, "In recognition of the valuable contributions to the radio art embodied in his researches and development work dealing with the high-power Poulson arc converter"; AIEE National Nominating Committee, 1935; National Committee on Education, 1940; National Committee on Telegraphy and Telephony, 1923; Chairman, San Francisco Section, 1929-30; IRE National Offices: Manager 1928; National Committees: Admissions, 1928-29; Radio Transmitters and Antennas, 1930-31; Sections, 1926-28; Specifications for Steamship Radio Equipment, 1914-15; Standardization, 1916-20, 1930-31; Transmitters and Antennas, 1929-30; Wave Length Regulation, 1917-19, 1919-20; Chairman, San Francisco Section, 1927-28. Other Awards: Sigma Xi, Tau Beta Pi, Eta Kappa Nu; Who's Who in America, 1962-63; Who Was Who in America.


Fellow Award "For contributions to the development of advanced computer technology."


Fellow Award "For contributions to the advancement of telephone communication in a large metropolitan area."


Fellow Award "For technical and administrative contributions to the installation, servicing, and maintenance of heavy electrical equipments"; Outstanding Achievement Award, IEEE Industry Applications Society, 1979. Other Awards: Eta Kappa Nu, 1970.

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Fellow Award "For contributions to the engineering of real time digital data processing techniques and equipment and their application to military command and control systems." Other Awards: Fellow, American Association for Advancement of Science.


Fellow Award "For leadership in and contributions to the theory of adaptive antenna arrays and super-resolution processing techniques"; Microwave Prize, IEEE Microwave Theory and Techniques Society, 1966; Distinguished Lecturer, IEEE Antennas and Propagation Society, 1980-1982. Other Awards: Best Paper Award, Naval Research Laboratory, 1977, 1981; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award "For contributions to the development and understanding of fast response time detectors in both the visible and infrared region of the spectrum."


Fellow Award "For contribution to the development of microelectronic circuits and systems with low power consumption, high packing density, and adaptive self-healing features"; Certificate of Merit, PGSET Symposium Committee for Microelectronic, Micropower, Analog and Digital Circuits Function Blocks for Space Ap-


Fellow Award “For contributions to the field of electrical measurements.” Other Awards: Tau Beta Pi, 1937; Sigma Xi, 1947; Commendation, War Dept., U.S. Dept. of the Navy, 1947.


Fellow Award “For his contributions to the application of industrial electronics in the field of photographic manufacturing.” Other Awards: Sigma Xi; Tau Beta Pi.


Fellow Award “For the pioneering contribution to the establishment of a modern electronic industry in Israel.”


Fellow Award “For contributions to information theory and error correcting codes”; W.R.G. Baker Prize Award, 1966. Other Awards: Member, National Academy of Engineering, 1979.


Fellow Award “For original and sustained contributions to molecular spectroscopy and frequency control and for the advancement of millimeter-wave technology.”


Fellow Award “For contributions to the transmission of electric energy by overhead lines and submarine cables.” Other Awards: Registered Professional Engineer, Washington, 1952.


Fellow Award “For pioneering research on domain wall motion in ferrites and on cyclotron resonance in metals, and for technical leadership in the application of physics to communications devices”; Frederick Philips Award, IEEE, 1984.


Other Awards: Honorary Member, Engineers’ Club of St. Louis, 1961.


Fellow Award “For contributions to the understanding of nonionizing radiation effects, to the development of electron devices, and to engineering education”; Special Award, Utah Section, IEEE, 1975; Chairman, IEEE Committee on Man and Radiation, 1980-1982. Other Awards: Member, Diagnostic Radiology Study Section, National Institutes of Health, 1978-1981; Distinguished Research Award, University of Utah, 1979-1980; Member, Board of Directors, Bioelectromagnetics Society, 1979-1982; Member, ANSI Committee C95.4, 1978-present.


Fellow Award “For unremitting and effective management of the procurement, editing, and production of the many publications of the Institute of Radio Engineers”; IEEE Centennial Medal, 1984. Other Awards: Fellow, Society for Technical Communication.


Fellow Award “For contributions to arithmetic coding theory and leadership in computer science education”; Special Group Award for Outstanding Work in the Model Curricula of the IEEE Computer Society, 1977. Other Awards: ASEE Outstanding Young Engineering Teacher for the Southeastern Region, 1972; NSF Science Faculty Fellow, 1968-9; Member, ACM, DPMA, ASEE, Eta Kappa Nu, Tau Beta Pi, Sigma Xi, Phi Kappa Phi.


Fellow Award “For leadership in establishing research in computers and related topics in Spain.” Other Awards: Echegaray Gold Medal, Royal Academy of Sciences (Madrid), 1979; Honorary Fellow, World Organisation of General Systems and Cybernetics (WOGSC), 1978; Silver Core Holder, International Federation of Information Processing (IFIP), 1974; Physics Medal, Royal Spanish Society of Physics and Chemistry, 1968; Professor Emeritus, Complutense University of Madrid; Member, Royal Academy of Sciences.
Fellow Award "For his contribution to the television and microwave tube arts, and his technical leadership of projects in these fields."
Fellow Award "For contributions to the understanding and applications of phase-lock loops."
Fellow Award "For pioneering concepts and leadership in the development of computerized control systems used in process simulators and in automated production lines"; Chairman, Los Angeles Chapter, IEEE Professional Group on Biomedical Electronics, 1955; Chairman, Los Angeles Chapter, IEEE Professional Group on Nuclear Science, 1960; Chairman, Los Angeles Chapter, IEEE Professional Group on instrumentation, 1961; Member, WESCON Future Engineers Show, 1955-1966; Chairman, Education Committee, Los Angeles Section, IEEE, 1965; Chairman WESCON Future Engineers Show, 1966; Member, NECON, 1979; Chairman, North New Jersey Chapter, IEEE Control Systems Society, 1978; Chairman, North New Jersey Section, Education Committee, 1978; Cochairman, New Jersey SILA Committee, 1979; Cofounder and Publicity Chairman, New York/New Jersey Chapter, IEEE Engineering Management Society, 1979; Member-at-Large, Executive Committee, North Jersey Section, IEEE, 1979; Chairman, San Diego Chapter, IEEE Computer Society, 1981; Chairman, San Diego Chapter 299 Robotics International of SME, 1983-1984. Other Awards: Registered Professional Engineer; Certified Manufacturing Engineer; Member, Research Society of America; Sigma Xi; Society for Computer Simulation, Numerical Control Society.
Fellow Award "For contributions to computer simulation of biological systems." Other Awards: Senior Member, Society for Computer Simulation, 1979.
Fellow Award "For contributions in nonlinear and guided wave optics."
Fellow Award "For contributions to the development of residue codes, and for leadership in engineering education." Other Awards: Member, Association for Computing Machinery; Member, American Society for Engineering Education; Member, American Association for Advancement of Science; Eta Kappa Nu; Sigma Xi; Sigma Pi Sigma; Fellowship, Ford Faculty Development, 1961; National Lecturer, Association for Computing Machinery, 1965.
Fellow Award "For leadership in planning and executing electron devices research and development programs in the area of high power tubes for military equipment."
Other Awards: New York State Society of Professional Engineers; Massachusetts Society of Professional Engineers; Coffin Award, General Electric.
Fellow Award “For development of advanced computer techniques in the solution of transmission expansion problems.”

Fellow Award “For contributions to the development and understanding of the limitations of broad-band solid-state microwave switches.”

Fellow Award “For contributions to the understanding of corona and field effects in high-voltage power transmission.” Other Awards: Medaille Blondel, 1968; Laureate Member, French Society of Electrical and Electronics Engineers, 1960, 1970.


Fellow Award “For his contributions to the development of circuits, methods and components in communication engineering, and his leadership of engineering projects.” Other Awards: Knight, The Royal Norwegian Order of Saint Olav, 1968.

GAUSTER, WILHELM F., Fellow 1965. Born: January 6, 1901, Vienna, Austria. Degrees: Dipl.Ing., 1923, Dr.Tech., 1924, Dr.Habil., 1927, Technische Hochschule Vienna, Austria; Honorary Doctor's Degree, University of Technology, Graz, 1982.
Fellow Award “For contributions in the fields of engineering research and teaching.” Other Awards: Fellow, American Physical Society; Member, Austrian Academy of Sciences, 1968; PRECHTL Medal, University of Technology, Vienna, 1981; Golden Stefan Medal, Austrian Institute of Electrical Engineers, Vienna, 1983.

Fellow Award “For contributions to the development of international radio communications”; Chairman, Geneva Section, Region 8, IEEE. Other Awards: World’s First International Festival of Television Arts and Science Citation, 1961; Haile Selassie I Prize, Trust Development of Telecommunications in Africa, 1963; Member, International Frequency Reg. Board, International Telecommunications Union, Geneva, Switzerland, 1953-66.

Fellow Award “For contributions to the fields of grating diffraction, optical data storage and processing, and engineering education.” Other Awards: Fellow, Optical Society of America, 1982; Curtis W. McGraw Research Award, American Society for Engineering Education, 1979; Outstanding Young Engineer Award, Georgia Society of Professional Engineers, 1977; Research Awards, Sigma Xi, 1976,77,78,83; Outstanding Teacher Award, Georgia Tech 1976.

Fellow Award “For contributions to high-voltage power cables and systems.” Other Awards: Premium Pugno-Vanoni, Italian Electrotechnical Association, 1949-1951; Fellow, IEE, 1961; Premium, Institution of Electrical Engineers, 1962; Contributor to ANIAI Premium, 1964.

Fellow Award “For contributions to the numerical solution of stiff and other diferential equations and to computer science education.” Other Awards: Fulbright Fellowship, 1956-1960; ACM SIGNUM George E. Forsythe Memorial Lecturer Award, 1979.

Fellow Award “For contributions to biomedical instrumentation, including techniques for measuring pulmonary function from the body’s electrical impedancere.”

Fellow Award “For contributions to computer-aided filter design.”

Fellow Award “For contributions to the planning and design of high-voltage ac and dc transmission systems”; First Prize Paper Award, Portland Section, AIEE, 1959. Other Awards: Meritorious Service Award, Dept. of Interior, 1977; EPRI Certificate of Appreciation, 1978-1981; Chairman, Radio Noise S/C of T&D Com., 1967-8; Chairman, Portland Section Power Chapter, 1968-9; Licensed Engineer, Oregon.

GEIGES, KARL S., AIEE Fellow 1951. Born: August 24, 1908, Providence, R.I. Degrees: B.S., 1928, New Jersey Institute of Technology; M.S., 1943, Stevens Institute of Technology.

Fellow Award “For outstanding work in the field of electrical safety standards and the techniques for making them effective.” Other Awards: Astin-Polk International Standards Medal, 1978.


Fellow Award “For contributions to the application of modern control and estimation theory to integrated navigation and guidance systems.” Other Awards: Special Fiftieth Anniversary Medal for Outstanding Contribution to Society as a Young Engineer, City College of the City University of New York, 1968.


Fellow Award “For contributions to the crystalline structure of materials and for co-discovery of yttrium iron garnet.” Other Awards: Fellow, American Physical Society, 1963; Fellow, American Mineralogical Society, 1970; University of Colorado Faculty Fellowship, 1977-1978; Research Award, College of Engineering and Applied Science, University of Colorado, 1979; Croft Research Professor, College of Engineering and Applied Science, University of Colorado, 1980; National Science Foundation Creativity Award, 1983.


Fellow Award “For significant contributions to the electric power industry in the fields of high-voltage transmission of dc and ac power”; William M. Habershaw Award, IEEE, 1984. Other Awards: Distinguished Service Award, U.S. Dept. of Interior, 1978.


Fellow Award “For his contributions to the development and understanding of high power semiconductor devices.”


Fellow Award “For his many contributions to piezoelectricity and frequency control.” Other Awards: Outstanding Achievement Award, Army Science Conference, West Point, 1964; Meritorious Civilian Service Award, U.S. Dept of Army, 1965, 1970; C.B. Sawyer Memorial Award, 1981.


Fellow Award “For contributions to the development of television in Europe.” Other Awards: Fernseh-Technische Gesellschaft, Germany, 1954; Fondation des Freres Lumieres, 1957; Gold Medal, Istituto P.T., Rome, 1959; Citation, INTERNATIONAL TELECOMMUNICATION JOURNAL, 1964; Honorary Chairman and Citation, International Television Symposium, Montreux, Switzerland, 1976; Honorary Chairman, Swiss National Committee of U.R.S.I.


Fellow Award “For research in digital signal processing, communications and adaptive systems, and pattern recognition, and for leadership in engineering edu-

Fellow Award “For his contributions to the knowledge of tropospheric and ionospheric propagation.”


Fellow Award “For design and development of microwave tubes and solid-state sources for missile fuze systems”; IEEE Centennial Medal, 1984. Other Awards: Special Act Award, H.D.L., Dept. of Army, 1973; Citation for service in AGED, USDRE, Dept. of Defense, 1982; 14 Patents.


Fellow Award “For contributions to the technology of gaseous discharge flash lamps and stroboscopic lighting equipment.” Other Awards: Fellow, American Academy of Arts and Sciences, 1969; Holley Medal, American Society of Mechanical Engineers, 1973.


Fellow Award “For contributions to the theory of signal processing in communications”; Guillemin-Cauer Prize Paper Award, 1980; Member, Board of Governors, IEEE Communications Society.


Fellow Award “For contributions to the application of electromagnetic theory in electrocardiography”; IEEE Centennial Medal, 1984. Other Awards: Fellow, American College of Cardiology, 1975; Guggenheim Fellow, 1978-79.


Fellow Award “For contributions to modeling and computer applications of microwave circuit design.”


Fellow Award “For his contributions to the development of automatic tracking radar systems”; Pioneer Award, 1975; President, IEEE, 1978. Other Awards: Presidential Medal for Merit, 1944; Naval Ordnance Development Award, 1944; Exceptional Service Award, U.S. Dept. of Air Force, 1960; Fellow, American Physical Society; Fellow, American Academy of Arts and Sciences; Member, National Academy of Engineering; Fellow, American Institute of Aeronautics and Astronautics; Kitty Hawk Award, 1975.


Fellow Award “For contributions to the art of manufacturing and testing of transformers.” Other Awards: American Society for Testing Materials; American Radiographic Society.


Fellow Award “For contributions to microwave solid-state circuits”; Browder J. Thompson Memorial Prize Award, IEEE, 1960.


Fellow Award “For contributions to circuit theory and the application of semiconductor devices.” Other Awards: J.N. Tata Scholar, 1947-1950; Eta Kappa Nu; Pi Mu Epsilon; Phi Kappa Phi; Sigma Xi; Distinguished Teacher Award, Rensselaer Polytechnic Institute, 1976.


Fellow Award “For contributions in active and distributed circuits, and education in network theory”; Regional Outstanding Lecturer, IEEE, 1974-1976. Other Awards: Outstanding Foreign Student Award in Bay Area, Mayor of Oakland, 1958; John F. Dodge Professor of Engineering, Oakland University, 1978-1983; Phi Beta Kappa.


Fellow Award “For contributions in the field of microwave theory and techniques, and for novel antenna concepts.” Other Awards: Fellow, AAAS; Fellow, Wash-

Fellow Award "For his contributions to the understanding of transistors." Other Awards: Fellow, American Association for the Advancement of Science.


Fellow Award "For leadership in the development of optical fiber systems for military applications." Other Awards: Research Society of America Award for Applied Sciences, 1973; Optical Society of American Fellows; Navy Meritorious Civilian Service Medal, 1976; Meritorious Presidential Senior Executive Rank, 1983.


Fellow Award "For outstanding contributions in the field of computer memories and magnetic logic, and in the activities of professional societies." Other Awards: 1981 Thomas Alva Edison Patent Award, Research and Development Council of New Jersey; Sigma Xi; AAAS.


Fellow Award "For contributions to solid-state electronics and engineering education"; Jack A. Morton Award, IEEE, 1980. Other Awards: Esbach Award for Most Outstanding Engineering Graduate, Northwestern University, 1953; Sigma Xi; Tau Beta Pi; Pi Mu Epsilon; Eta Kappa Nu; Phi Eta Sigma; Western Electric Fund Award for Excellence in Teaching, 1971; Member, National Academy of Engineering, 1974; Award for Outstanding Achievement, Northern California Solar Energy Association, 1975; Award for Outstanding Teaching of Undergraduate Engineering Studies, Tau Beta Pi, Stanford, 1976; Founder's Prize, Texas Instruments Foundation, 1983; Reid Weaver Dennis Professorship in Electrical Engineering, 1983.


Fellow Award "For contributions to consumer electronic systems and solid-state circuits." Other Awards: RCA Laboratory Achievement Award, 1961, 1962, 1968, 1979; Fellow, Technical Staff, RCA Laboratories, 1969; Fellow, Audio Engineering Society, 1980.


Fellow Award "For leadership in electrical engineering education and contributions to automatic control and systems engineering"; First Prize Paper, AIEE, Connecticut Section, 1955, for "A Note on the Speed Torque Curves of AC Adjustable Speed Drives"; First Prize Paper, AIEE, Great Lakes District No. 5, 1961, for "A Set of Standard Specifications for Linear Automatic Control Systems" (co-authors Rekasius, McVey, Sridhar, Leedham); First Prize Paper in Industrial Division, AIEE, 1962, for "The Variable Gradient Method for Generating Liapunov Functions" (co-author D. G. Schultz).


Fellow Award "For the discovery of the translinear principle and invention of the translinear multiplier"; IEEE Achievement Award, 1970.


Fellow Award "For contributions to information theory, and for applications of probability theory and combinatorial analysis to electrical engineering." Other Awards: Member, Society for Industrial and Applied Mathematics (SIAM).


Fellow Award "For application of electronics to measurement techniques."

Fellow Award “For contributions in the field of power cable engineering.”


Fellow Award “For contributions to high-voltage equipment reliability through evaluation and maintenance.” Other Awards: Distinguished Service Award, Gold Medal (highest honor), U.S. Dept. of Interior, 1973.


Fellow Award “For contributions to the communication art and for his direction of important developments in the field of radio transmission systems.” Other Awards: Order of the Rising Sun, Japan, 1934.


Fellow Award “For demonstrated managerial and engineering skills, and for outstanding contributions in directing the growth and development of the communications network.”


Fellow Award “For contributions to video recording techniques and equipment”; Vladimir K. Zworykin Award. “For pioneering contributions to the development of video magnetic recording.” Other Awards: David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1957; Fellow, Society of Motion Picture and Television Engineers, 1958; Valdemar Poulsen Gold Medal, Danish Academy of Technical Sciences, 1960; Howard N. Potts Medal, Franklin Institute, 1969; Life Fellow, Franklin Institute, 1969; John Scott Medal, City of Philadelphia, 1970; Member, National Academy of Engineering, 1973; Honorary Member, Society of Motion Picture and Television Engineers, 1976; Honorary Fellow, Royal Television Society.


Fellow Award “For contributions to switching theory, and work in automata and formal languages.” Other Awards: Guggenheim Fellowship, 1974-1975.


Fellow Award “For numerous contributions to microwave art, especially in the development of high-power klystrons”; Morris N. Liebmann Award, IRE, 1958, “For his creative contribution to the generation and useful application of high energy at microwave frequencies”; IEEE, Medal of Honor Award, 1969, “For his outstanding contributions in advancing the technology of high power klystrons and their application, especially to linear particle accelerators.” Other Awards: National Academy of Engineering, 1965; National Academy of Science, 1967; Member, American Academy of Arts and Sciences, 1971; California Manufacturer of the Year, 1974.


Fellow Award “For his contributions to microwave measurements and modern communication curricula”; Meritorious Service Award, IEEE Communications Society, 1976; Honorable Mention Paper Citation, IEEE Education Society, 1981; Achievement Award, IEEE Education Society, 1982; IEEE Centennial Medal, 1984. Other Awards: Certificate of Distinction, Polytechnic Institute of Brooklyn, 1957; Distinguished Alumnus Award, Polytechnic Institute of Brooklyn, 1967; Fellow, American Association for the Advancement of Science, 1977; Distinguished Citation, Graduate Studies Division, American Society for Engineering Education, 1980; Certificate of Appreciation, Engineering Foundation of the United Engineering Trustees, 1980; Western Electric Fund Award, American Society for Engineering Education, 1981; Fellow, American Society for Engineering Education, 1983.


Fellow Award “For pioneering contributions to nonlinear optics”; IEEE MTT-S Distinguished Lecturer Award, 1983. Other Awards: Fellow, American Physical Society, 1967; Fellow, Optical Society of America, 1976; Fellow, New York Academy of Sciences, 1969; Fellow, American Association for the Advancement of Science, 1981.


Fellow Award “For contributions to the design of computers and information systems.” Other Awards: Phi Beta Kappa, 1951; Computer Man of the Year,

GLASFORD, GLENN M., Fellow 1964. Born: November 4, 1918, Arcola, Tex. Degrees: B.S., 1940, University of Texas; M.S., 1942, Iowa State University.

Fellow Award "For contributions to engineering education and leadership in engineering activities."


Fellow Award "For contributions to quantum electronics and to the design of glass lasers for fusion research." Other Awards: Director, Laser Institute of America, 1974-1980; Fellow, Optical Society of America, 1976; Special Citation, DOE and DARPA, 1978; Director, Optical Society of America, 1980-1982.


Fellow Award "For contributions to the understanding of transport, optical, and plasma phenomena in semiconductors." Other Awards: RCA Award for Outstanding Achievement in Research, 1956, 1962.


Fellow Award "For contributions in the field of optical transmission in fibers and in lens waveguides."


Fellow Award "For contributions to communication transmission systems, particularly those utilizing satellite repeaters."


Fellow Award "For contributions to the development of photo tubes."


Fellow Award "For technical leadership in the development and design of television transmitters and radar equipment."


Fellow Award "For technical contributions and leadership in the fields of optical fibers, integrated optical circuits, and millimeter waveguides." Other Awards: Honorable Mention,Eta Kappa Nu Outstanding Young Electrical Engineer of the United States for 1973.


Fellow Award "For contributions to the understanding of semiconductor/oxide interfaces"; J.J. Ebers Award, IEEE Electron Devices Society, 1983.


Fellow Award "For technical contributions to and leadership in the design and development of hardware and software for digital computer-based process-control systems." Other Awards: Fellow, Instrument Society of America, 1973.


Fellow Award "For contributions to the fields of communications and infrared technology"; Harry Diamond Award, IRE, 1951, "For his many contributions in the over-all Signal Corps research and development program and particularly for his accomplishments leading toward a reduction in the infrared-gap." Other Awards: Sargent Award, American Chemical Society, 1961; Distinguished Achievement Award, Instrument Society of America, 1961; Jimmie Hamilton Award, American Society of Naval Engineers, 1971; M.S. Tsawt Chromatography Medal, 1976; Tswett Memorial Medal, All-Union Chromatography Council, Academy of Sciences of the U.S.S.R., 1979; 1981 ACS Award in Chromatography, American Chemical Society; Dal Nagare Award, Chromatography Forum of Delaware Valley, 1982.


Fellow Award "For contributions to speech communication and digital signal processing." Other Awards: Fulbright Fellow, 1954-55; Fellow, Acoustical Society of America; National Academy of Engineering, 1981.

Fellow Award “For innovative engineering of large transportation facilities”; IEEE Standards Board Medalion, 1975. Other Awards: Port Authority of New York & New Jersey Distinguished Service Award, 1979; I&CPS Committee Achievement Award, 1974.

Fellow Award “For his contributions to the field of guided missile armament.” Other Awards: Exceptional Service Award, U.S. Dept. of Commerce, 1953; Distinguished Service Citation, University of Wisconsin, 1964.

Fellow Award “For contributions to the design and introduction of new instrumentation, especially medical instrumentation”; USAB Citation of Honor, IEEE, 1978; IEEE Centennial Medal, 1984. Other Awards: Award of Distinction, Polytechnic Institute of New York, 1980.

Fellow Award “For contributions to the science and technology of thyristors, transistors, and semiconductor integrated circuits.”

Fellow Award “For contributions to signal and circuit theory and to electro-medical research.” Other Awards: Fellow, American Association for the Advancement of Science, 1981.

Other Awards: Mellville Medal, American Society of Mechanical Engineers; U.S. Army Medal for Exceptional Civilian Service.

Fellow Award “For his contributions in the development of cathode ray instruments and in the field of television.” Other Awards: Member, National Television System Committee; Fellow, Society of Motion Picture and Television Engineers; Fellow, Radio Club of America.

Fellow Award “For contributions in the design, construction, and testing of EHV transformers.”

Fellow Award “For leadership in the development of communications facilities for military and civilian applications.”

Fellow Award “For contributions in the field of microwave gaseous electronics”; Microwave Prize, 1958, “For significant contribution to the field of endeavor of the Professional Group on Microwave Theory and Techniques” in IRE TRANSACTIONS, “Nonreciprocal Electromagnetic Wave Propagation in Ionized Gaseous Media.” Other Awards: John Simon Guggenheim Fellow, 1957.


Fellow Award “For contributions to the theory and application of pattern recognition and digital image processing.” Other Awards: UTK Chancellor’s Research Scholar Award, 1978; Magnavox Engineering Professor Award, 1980; M.E. Brooks Distinguished Professor Award, 1980; IBM Professorship, 1981.

Fellow Award “For pioneering development in microwave spectroscopy and contributions to color television receivers.” Other Awards: Alumni Citation, Kalamazoo College, 1951; Life Fellow, Society for Information Display, 1975; Distinguished Alumni Award, Kalamazoo College, 1977, Steinmetz Award, General Electric, 1977.


Fellow Award “For contributions to applications of electricity to industrial heating”; Conference Chairman, Industrial Process Heating, 1952. Other Awards: Engineering Society of Detroit; National Society of Professional Engineers; Fellow, Illuminating Engineering Society, 1947; Fellow, AAAS, 1967; Honorary Member, Australian Institute of Metal Finishing, 1974; Recipient, National Fire Protection Association “Distinguished Service Award,” 1982; 30 year Member, Safety Standards Committee on Industrial Ovens and Furnaces.


Fellow Award “For contributions to the teaching of electrical engineering.” Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu.


Fellow Award “For contributions to the theory of imaging.” Other Awards: Fellow, Optical Society of America, 1970; F.E. Terman Award, American Society for Engineering Education, 1971; Fellow, Society for Photo-Optical Instrumentation Engineers, 1975; Max Born Award, Optical Society of America, 1983.


Fellow Award “For contributions to the analog-digital interface.” Other Awards: National Telemetry Prize for Best Technical Presentation in Telemetry, 1958; One of Ten Outstanding Men of the Year, Boston Chamber of Commerce, 1958; Bausch and Lomb Science Award; Outstanding Living Engineer of the Year, New England Award, Engineering Societies of New England, 1971; Tau Beta Pi; Eta Kappa Nu; Sigma Xi; Hex Alpha (M.I.T.).


Fellow Award “For his scientific contributions in the fields of electro-optics and quantum electronics”; Vladimir K. Zworykin Award, 1975, “For the invention and leadership in the development of the silicon target camera tube, and in the extension of electronic television into new applications.” Other Awards: National Academy of Engineering, 1979.


Fellow Award “For contributions in the application of high intensity airfield lighting and in the adoption of higher distribution voltages in heavy western industries.” Other Awards: Legion of Merit, U.S. Dept. of Army, 1947; Engineer of Year Award, Washington Society of Professional Engineers, Tacoma Chapter; Electric League of the Pacific Northwest, 1973; Registered Professional Engineer, Washington, Oregon, California, Pennsylvania.


Fellow Award “For contributions to the theory, design and development of transformer magnetic circuits.”


Fellow Award “For diversified development work as


Fellow Award "For contribution to educational and for the administration of research." Other Awards: Officier de la Legion d'Honneur.


Fellow Award "For leadership in underwater systems development, and for contributions to the design of a major underwater tracking range"; Outstanding Engineer for Region 3, IEEE, 1973. Other Awards: Rear Admiral William S. Parsons Award for Scientific and Technical Progress, Navy League of the U.S., 1975; U.S. Navy Superior Service Award, 1981.


Fellow Award "For contributions to the theory and design of process control systems and engineering education." Other Awards: Fulbright Research Fellowship, Denmark, 1957.


Fellow Award "For contributions to the theory of microwave tubes." Other Awards: Member, National Academy of Engineering, 1971; Member, National Academy of Sciences, 1974; American Academy of Arts and Sciences, 1982.


Fellow Award "For contributions to aerospace biomedical engineering technology and to education"; IEEE President, 1984. Other Awards: Outstanding Engineer Award, Rutgers University, 1977; Professional Achievement Citation in Engineering, Iowa State University, 1983.

GRADY, ROBERT E., AIEEE Fellow 1962.

Fellow Award "For contributions to industrial and utility construction."


Fellow Award "For promotion of satellite communication systems."


Fellow Award "For many pioneering contributions to automatic flight control theory and systems, and to related education."


Fellow Award "For contributions to digital computers and biomedical electronics."


Fellow Award "For contributions in the field of radar tracking systems and television research."


Fellow Award "For contributions in single sideband radio telephony and for publication of technical information."


Fellow Award "For leadership in research and contributions to aeronautical engineering and to aeronautical engineering."


Fellow Award "For developments in communications and radar systems and related electronic circuits, and for leadership of scientific efforts in satellite communications." Other Awards: Eta Kappa Nu; Sigma Xi.


Fellow Award "For his contributions to air navigation systems and devices, and for his leadership in the engineering of electronic apparatus."
GRASSELLI, ANTONIO. Fellow 1972.
Fellow Award "For contributions to switching circuits, pattern recognition, and computer science education."


Fellow Award "For creative contributions to computer network architecture." Other Awards: IBM Outstanding Contribution Award, 1975; IBM Outstanding Innovation Award, 1981; IBM Outstanding Innovation Award, 1983.

Fellow Award "For contributions to solid-state electronics and engineering education." Other Awards: Ford Foundation Postdoctoral Fellowship, 1961-63; Member, National Academy of Engineering, 1975; Member: Sigma Xi,Eta Kappa Nu, Tau Beta Pi; Fellow, American Academy of Arts and Sciences.

Fellow Award "For contributions to development of integrated circuits"; Best Paper Award, International Solid-State Circuits Conference, 1975; Baker Prize, 1980; Morris N. Liebmann Memorial Award, IEEE, 1983.

Fellow Award "For pioneering advances in radio communication, and for contributions in the field of radio wave propagation."


Other Awards: Tau Beta Pi, 1926; Phi Beta Kappa, 1927; Charles A. Coffin Fellow, 1928-1929; Henry Saltonstall Fellow, 1929-1930; Fellow, Massachusetts Institute of Technology (honorary), 1929-1930; Sigma Xi, 1937; Eta Kappa Nu, 1956.

Fellow Award "For contributions in the development and design of compact high-voltage gas-insulated substations." Other Awards: Eta Kappa Nu, 1936; Tau Beta Pi, 1937; Outstanding Engineering Achievement of 1971, National Society of Professional Engineers, 1972; Gould Scientific Achievement Award, 1976.


Fellow Award "For vital contributions in biomedical engineering"; William J. Morlock Award, IEEE/GMB, 1968, "For the invention of the implantable cardiac pacemaker"; IEEE Centennial Medal, 1984. Other Awards: 125th Anniversary Award, State University of New York at Buffalo, 1970; Professional Engineer of
the Year Award, New York State Society of Professional Engineers, 1974; Laufman Award, AAMI, 1982; Wunsch Award, Brooklyn Polytechnic Institute, 1980; Fellow, Royal Society of Health, FRSH, (Great Britain), 1974; Fellow, American College of Cardiology, FACC, 1975; Senior Scientist Award, North American Society for Pacing and Electrophysiology, 1983.


Fellow Award “For contributions to the development of monolithic linear integrated circuits and leadership in engineering administration and management;” IEEE Centennial Medal, 1984.


Fellow Award “For contributions to communication systems and circuitry;” IEEE Field Award, 1972, “In international communication in honor of Hernand and Soestes Behn”; Vice President, Comsoc International Affairs, 1979, 1980. Other Awards: Veder Award, 1958.


Fellow Award “For outstanding contributions to the development of vacuum interrupters and to the understanding of the interaction between power systems and circuit interrupting devices;” First Prize Paper, Middle Eastern District No. 2, IEEE, 1960-61, 1961-62; Philip Sporn Professor of Engineering, Rensselaer Polytechnic Institute, 1979.


Fellow Award “For contributions to the field of radiation-tolerant semiconductor devices and integrated circuits.”


Fellow Award “For his contributions in the educational field, and research in electronics and electrical measurements especially on the behavior of ferromagnetic materials.” Other Awards: William Siemens Professor of Electrical Engineering, King’s College, University of London, 1940-1970.


Fellow Award “For contributions to communication transmission and application of radio techniques to a communication system.” Other Awards: Eta Kappa Nu, 1953.


Fellow Award “For contributions to pulse modulation systems.”


Fellow Award “For technical leadership and contri-


Fellow Award “For research in electronics and for contributions to engineering education.” Other Awards: Member, “Academie des Sciences de Paris, 1972; Member, Poland Academy of Science, 1977.


Fellow Award “For contributions to engineering educational programs emphasizing the relationship of science and technology to societal concerns.” Other Awards: William E. Wickenden Award, ASEE, 1980; Chester F. Carlson Award, ASEE, 1979; Scientific Achievement Award, Worcester Engineering Society, 1979.


Fellow Award “For contributions to the development of a rapidly expanding electric power system.”


Fellow Award “For pioneering work in VHF and UHF mobile radios”; IEEE Power Generation Committee; Excitation Subcommittee and Working Group. Other Awards: Fellow, Radio Club of America; Honorary Life Member, World CB Union and European CB Federation, Belgium; Honorary Life Member, Federazione Italiana Ricetraammissioni CB, Milano; Honorary Life Member, National CB Council, Republic of Ireland; Honorary Life Member, Netherland CB Federation; Honorary Life Member, Deutscher CB Dachverband e.V., West Germany; Honorary Life Member, La Federazione CB Ticino, Switzerland; Honorary Member, Association Francaise des Amateurs Radio (AFA), France; Honorary Member, Radio Club Austria; Honorary Member, Citizens Band Association, U.K.; Presidential Commendation for affirmative contributions in the telecommunications field, 1981; Who's Who in America, 43rd Edition.


Awards: Best Paper Award, AIEEE, Chicago Section, 1953; IEEE, Brazil Council, Silver Plaque, 1974, “In recognition and appreciation of valued services and contributions to the education of power systems engineers in Brazil”; Award for Major Contributions in Electrical Engineering Management, IEEE Region 1, 1976, conferred “For contributions to furthering the objectives of IEEE through managerial excellence and achievement in organizing the Electric Power Engineering Operation and Curriculum at Rensselaer Polytechnic Institute, together with Faraday’s Law Machines Laboratory”; Citation and Medal, IEEE Power Engineering Society, 1977, “For distinguished personal service to the Power Generation Committee”; and 1978, “For distinguished personal service to the Power Engineering Education Committee”; IEEE Centennial Medal, 1984. Other Awards: Fellow, Institution of Electrical Engineers, U.K., 1943; Sigma Xi, 1943; Tau Beta Pi, 1945; Fellow, AAAS, 1945; Fellow, N.Y. Academy of Sciences, 1967; Citation, American Power Conference, 1972; Distinguished Faculty Award, Rensselaer Polytechnic Institute, 1972; Western Electric Fund Award, ASEE, 1972; Eminent Member, Eta Kappa Nu, 1975; Special Citation, Edison Electric Institute, 1976; National Academy of Engineering, 1978; Austrian Cross of Honor in Science and the Arts, First Class, 1980.

GROSS, FRITZ A., Fellow 1966. Born: October 8, 1910, Germany. Degrees: Dipl., 1930, Lowell Institute, Massachusetts Institute of Technology; Dr.Eng.(Hon.), 1975, Northeastern University.

Fellow Award “For pioneering in the development of early microwave radar and continuing contributions and leadership in that field.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1947; Reginald A. Fessenden Award, National Marine Electronics Assoc., 1981.


Fellow Award “For contributions in the field of frequency stability and electronic technology, and leadership in engineering education and research.” Other


Fellow Award “For his contributions to the technology of power systems and power supplies for a large industry.”


Fellow Award “For contributions to metal-oxide-silicon devices and engineering education”; Region 6 Achievement Award, IEEE, 1969, “For advancing the state-of-the-art in semiconductor devices through his leadership, teaching, publications, and research on the metal-oxide-silicon system”; J.J. Ebers Award, IEEE, 1974, “For outstanding technical contributions to electron devices.” Other Awards: Certificate of Merit, Franklin Institute, 1975; National Academy of Engineering, 1979; Townsend Harris Medal, City College of New York, 1980.

GROVER, FREDERICK W., IRE Fellow 1949. Born: September 3, 1876, Lynn, Mass. Degrees: S.B., 1899, Massachusetts Institute of Technology; M.S., 1901, Wesleyan University; Ph.D., 1907, George Washington University; Ph.D., 1908, Ludwig Maximilians University, Munich, Germany.

Fellow Award “For his long activities and contributions in the field of electrical units and measurements, and for his publications.” Other Awards: Fellow, American Association for the Advancement of Science; American Physics Society.


Fellow Award “For contributions to electron devices and engineering education”; IEEE Utah Section Award, 1971, “In recognition of outstanding technical achievement.” Other Awards: Member: Tau Beta Pi, Phi Kappa Phi, Eta Kappa Nu, Sigma Xi; Distinguished Research Award, University of Utah, 1982-83.


Fellow Award “For contributions to microwave technology”; Chairman, San Fernando Valley Section, IEEE, 1957; Chairman, Los Angeles Council, IEEE, 1962; Chairman, Wescon Board, 1968; Director, Region Six, IEEE, 1971, 1972; Vice President, IEEE, 1973; President, IEEE, 1974; Vice President Professional Activities, 1977; U.S. Activities Board, IEEE, 1977; Engineering Proficiency Award, U.S. Activities Board, IEEE, 1978; Los Angeles, IEEE, Council Leadership Award, 1958; San Fernando Valley Sub-Section Service Award, 1958; Los Angeles, IEEE, Council Recognition Award, 1962. Other Awards: Service Award, Office of Scientific Research and Development, USA, 1945; Pi Mu Epsilon, 1947; Wescon Awards, 1960, 1966, 1968; WINCON Awards, 1960, 1963, 1966; Special Recognition Award, San Fernando Valley Engineers Council, 1964; Engineering Merit Award, 1971; Engineer of the Year Award, 1973; Fellow, Institute for the Advancement of Engineering; Member, American Society for Engineering Education; National Society of Professional Engineers, California Society of Professional Engineers; President-Elect, National Computer Graphics Association; Director of Research, School of Engineering and Computer Science, California State University, Northridge; Commissioner, Board of Water and Power Commissioners, Los Angeles; Director, Healthwest; Director Northridge Hospital Foundation; Director, San Fernando Valley Child Guidance Clinic; Commissioner, Citizens Commission on Pension Policy, Registered Licensed Professional Engineer in New York & California; Engineers Joint Council Recognition Award, 1964; Fellow, Institute for Advancement of Engineering, 1972; OSRD Award for World War II Work at Massachusetts Institute of Technology Radiation Laboratory; Tau Beta Pi, 1973; Distinguished Service Citation, Dept. of Consumer Affairs, California, 1973.


Fellow Award “For contributions to advanced com-
munications systems.” Other Awards: Siemens Ring Stiftung, 1935.

GUERNSEY, ERNEST W., Fellow 1964. Born: May 1, 1896, Harrison Twp., Knox County, Ind. Degrees; B.S., 1918, University of Illinois; M.A., 1922, American University; Ph.D., 1924, George Washington University.

Fellow Award “For contributions to generation, transmission, and distribution of electric power.” Other Awards: Fellow, American Association for the Advancement of Science, 1933; Certificate of Recognition, American Institute of Chemical Engineers, 1945; Award of Merit, American Gas Association, 1955.


Fellow Award “For contributions to mathematical modeling of electronic devices”; Guillemin-Cauer Prize, IEEE Circuits and Systems Society, 1977, for paper “MOTIS - An MOS Timing Simulator” (co-authors B.R. Chawla and P. Kozak); David Sarnoff Award, IEEE, 1983.


Fellow Award “For contributions to the development of microwave tubes.”


Fellow Award “For his discovery and elucidation of a bulk phenomenon in III-V semiconductors now known as the Gunn Effect, which has made possible a new source of high frequency oscillations in the microwave region”; Morris N. Liebmann Prize, 1969, “For contributions to solid-state microwave power generation.” Other Awards: Fellow, American Physical Society; John Scott Award and Medal, City of Philadelphia, 1971; Valdemar Poulsen Medal, Danish Academy of Technical Sciences, 1972; Fellow, American Academy of Arts and Sciences, 1977; Foreign Associate, National Academy of Engineering, 1978.


Fellow Award “For his contributions to the design and his leadership in the development of military electronic equipment.” Other Awards: Award of Merit, Radio Corporation of America, 1952.


Fellow Award “For his contributions to the development of UHF wave generation, its application, particularly to radar.”


Fellow Award “For contributions to the development and application of the silicon controlled rectifier and other power semiconductors.” Other Awards: Cordiner Award, General Electric, 1963; Steinmetz Award, General Electric, 1977; Professional Achievement Award, Marquette University, 1979.


Fellow Award “For contributions to the understanding of microwave interactions with living tissues, and to methods of tissue dosimetry in microwave irradiation.” Other Awards: Westinghouse Achievement Award, 1954; Ph.D. Program Award, Boeing, 1964-1965.


Fellow Award “For contributions to the engineering and design of 500 kV transmission systems”; Power Group Award, 1970; Chairman, Pittsburgh Section, IEEE, 1973-1974; Area Chairman, Region 2, IEEE, 1974-1976; IEEE Centennial Medal, 1984. Other Awards: FCC-First Class Radio Telephone License, 1953; Registered Professional Engineer, 1963; Adjunct Member, EPRI Fusion Committee, 1976; Electric Power Research Institute Distribution Task Force, 1979-1982; Member, ECPD (now ABET) Engineering Technology Review Committee (Nuclear and Power Engineering), 1977 to present; Accreditation for National Association of Trade and Technical Schools (NATTS), 1974-present; Listed in the 43rd Edition of Marquis’ Who’s Who, Inc; Instructor and Lecturer at West Virginia University, Penn State University, and University of Pittsburgh.

Fellow Award “For contributions to the fundamental analysis of radiation effects in semiconductor devices and circuits and for innovative developments of computer aids for integrated circuit design”; Outstanding Conference Paper Award, 1967, 1978. Other Awards: Tau Beta Pi;Eta Kappa Nu; Sigma Tau; Phi Kappa Phi; American Men and Women of Science; Registered Professional Engineer, New Mexico; Panel Member, Board of Assessment of National Bureau of Standards Programs.


Fellow Award: “For contributions to electromagnetic compatibility measurement techniques.”

HABERL, H. W., AIEE Fellow 1962. Born: June 3, 1902, Denver, Colo. Degrees: Duquesne University; Carnegie Institute of Technology.

Fellow Award “For contributions to electric utility design and system engineering.” Other Awards: Engineering Institute of Canada; Professional Engineer, Province of Quebec.


Fellow Award “For contributions in computer-aided circuit design.”


Fellow Award “For contributions to stochastic systems analysis and electrical engineering education.” Other Awards: Sustained Superior Performance Award, National Science Foundation, 1982.


Fellow Award “For contributions to radio astronomy.” Other Awards: Letter of Commendation, Secretary of the Navy, 1945.

HAEFF, ANDREW V., IRE Fellow 1949. Born: December 30, 1904, Moscow, Russia. Degrees: E.E., M.E., 1928, Polytechnic Institute, Harbin, China; M.S., 1929, Ph.D., 1932, California Institute of Technology.

Fellow Award “For contributions to ultra-high-frequency radio tubes and electronics”; Harry Diamond Award, IRE, 1950, “For contribution to the study of the interaction of electrons and radiation, and for contributions to the storage tube art.” Other Awards: Fellow, American Physical Society, 1953.


Fellow Award “For contributions to ferroelectric and electrooptic ceramic materials and devices.” Other Awards: Outstanding Paper Award, Electronics Division, American Ceramic Society, 1960-1970; Fellow, American Ceramic Society, 1971. PACE Award, NICE, 1972.


Fellow Award “For contributions to the improvement of piezoelectric crystals and frequency control devices.”


Fellow Award “In recognition of his basic research work in electronics and nuclear science, and his administration of important scientific programs.” Other Awards: AAAS Award, 1931; Medal of Merit, U.S. Dept of Navy, 1946; King’s Medal in Defense of Freedom, Great Britain, 1946; Distinguished Service Award, Atomic Energy Commission, 1954; William Proctor Prize, Scientific Research Society of America, 1956; Regents Outstanding Achievement Award, University...
of Minnesota, 1962; Charles F. Kettering Award, Patent, Trademark and Copyright Institute, George Washington University, 1967; Sesquicentennial Award, University of Michigan, 1967; Citation, U.S. Atomic Energy Commission, 1968; Stevens Honor Award, Stevens Institute of Technology, 1968; Distinguished Civilian Service Award, DOD, 1972; U.S. Congress Citation, 1980.


Fellow Award “For contributions to the development of military electronic equipment, and for measurements of solar microwave radiation.”


Fellow Award “For contributions to plasma science and optical signal processing.” Other Awards: Spencer A. Wells Award, 1978; P.W. Horn Professorship, 1980; Fellow, Optical Society of America, 1981.


Fellow Award “For contributions to spectrum management and electromagnetic compatibility.”


Fellow Award “For contributions to the theory of large-scale systems.” Other Awards: Sigma Xi Distinguished Research Award, 1976; First American Geophysical Union Congressional Science Fellow, 1977-1978; Fellow, American Society of Civil Engineers, 1979; Case Centennial Scholar, Case Institute of Technology, 1980; Fellow, American Association for the Advancement of Science, 1981; Registered Professional Engineer, Ohio.


Fellow Award “For contributions in applications of graph theory to circuit analysis, analysis and design of communications networks, and coding theory.”


Fellow Award “For contributions to the design of transformers and electric power systems.” Other Awards: Zipernowski Medal, Hungarian Electrotechnical Society, 1940; Engineer of the Year, Reno, Nevada Chapter of the NSPE, 1971; Fellow, Alexander v. Humboldt Foundation, Germany, 1973.


Fellow Award “For significant contributions to the science of control and instrumentation and for the application of analog and digital computers leading to the more efficient operation of electric power systems.”


IRE Fellow Award “For his contributions of theory and practice of servomechanisms.” Other Awards: Ordinance Award, U.S. Dept. of Navy, 1946; Outstanding Young Engineer Award, Eta Kappa Nu, 1947; Meritorious Civilian Service Award, Secretary of Defense, 1965; Fellow, American Institute of Aeronautics and Astronautics; Exceptional Civilian Service Medal, Defense Intelligence Agency, 1972; Distinguished Public Service Medal, 1973, 1975; Member, Cosmos Club, 1961; Member, National Academy of Engineering, 1968; Exceptional Service Award, U.S. Air Force, 1977.


Fellow Award “For contributions to electrical measurement technology, including the development of impedance bridges and standards, and the application of microprocessors to impedance measurements.”


Fellow Award “For contributions to the development of cathode ray tubes and television camera tubes.” Other Awards: Most Meritorious Patent Disclosure Award, Westinghouse Electric; Member, Optical Society of America; Member, American Vacuum Society.


Fellow Award “For contributions in the field of semiconductor devices”; David Sarnoff Award, 1963, “For meritorious achievement in the field of electronics”; Jack A. Morton Award, 1976, “For outstanding achievement in solid-state physics and chemistry and the invention and development of semiconductor de-


Fellow Award “For contributions to engineering management and the use of computer technology in international communications.”


IRE Fellow Award “For his work on aircraft antennas and for his diversified radio effort during the war”; AIEE Fellow Award “For contributions to education, to communications, and to engineering management of a large defense enterprise.”


Fellow Award “For leadership in the communications industry.”


Fellow Award “For his accomplishments in the development of electronic equipment for airborne communication and navigation.” Other Awards: Meritorious Civilian Service Award, War Dept., 1946; Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1963.


Awards: National Best Paper Prize in Engineering Practice, AIEE, 1942; First Paper Prize, AIEE, 1953, Great Lakes District; William M. Habirshaw Award, AIEE, 1962, “For contributions in the fields of high-voltage cable systems and of allowable economic loading of cable systems and electrical equipment under varying environments.” Other Awards: Sigma Xi, 1947; Eta Kappa Nu, 1952; Tau Beta Pi, 1953; Golden Acorn Award, Chamber of Commerce, Menlo Park, California, 1975.


HAMBLEY, J. MERVYN, AIEE Fellow 1961. Born: May 26, 1905, Copper Cliff, Ontario, Canada. Degrees: B.Sc., 1929, Queen’s University, Ontario; D.Eng.(Hon.), 1965, University of Waterloo; D.Sc.(Hon.), 1967, Queen’s University.

Fellow Award “For contributions to the expansion of a large electric utility.”


IRE Fellow Award “For his leadership as a teacher and author in the electronics and electrical engineering fields.”


Fellow Award “For contributions to the field of electrochemistry”; First Paper Prize, AIEE, Industry Division, 1954, for “Some Aspects of the Charge and Discharge Processes in Lead Acid Storage Batteries.” Other Awards: Certificates of Merit, Manhattan Project and Office of Scientific Research and Development, 1945; Superior Accomplishment Awards, U.S. Dept. of Com-

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HAMILTON, HOWARD B., Fellow 1980. Born: October 28, 1923, Augusta, KS. Degrees: B.S.E.E., 1949, University of Oklahoma; M.S.E.E., 1955, University of Minnesota; Ph.D., 1962, Oklahoma State University. Fellow Award "For contributions to electrical machinery and applications of power systems technology." Other Awards: "Professor Distinguido Honoris Causa," University Tecnica, Valparaiso, Chile; Listed in Marquis "Who's Who, Inc"; "American Men of Science"; "Directory of International Biography"; Registered Professional Engineer, Pennsylvania and Ohio; Fellow, American Association for the Advancement of Science.

HAMILTON, J. L., AIEEE Fellow 1921. Born: September 24, 1883, Morrisville, Mo. Degrees: B.S., 1904, University of Missouri.


Fellow Award "For contributions to the development of control systems for nuclear reactor plants." Other Awards: Order of Merit, Westinghouse Electric, 1958.


Fellow Award "For service in teaching and research." Other Awards: Minnie-Stevens-Piper Teaching Award, 1958; National Institutes of Health Extramural Associate, 1978; National Research Council Senior Postdoctoral Associate, 1979.


Fellow Award "For contributions to numerical analysis, information coding, and improved operation of computing centers"; Emanuel R. Piore Award, 1979. Other Awards: Turing Prize, 1968; Member, National Academy of Engineering, 1980; Harold Pender Award, University of Pennsylvania, 1981.


Fellow Award "For contributions to the technology of quartz crystals and their applications as transducers." Other Awards: Sawyer Award, 1971.


Fellow Award "For contributions to engineering education and the field of communications through research, teaching, and administration." Other Awards:


Awards: Lamme Medal, AIEE, 1955. "For his fundamental calculations and developments in the field of electrodynamics and particularly for his achievements in the design of generator voltage regulators, automatic rolling mill controls, and tank gun stabilizers." Other Awards: Order of Merit, Westinghouse Electric, 1940; Presidential Citation, 1942; Howard N. Potts Medal, Franklin Institute, 1949.


Fellow Award "For contributions to electric power system planning." Other Awards: Tau Beta Pi, 1972.


Fellow Award "For fundamental contributions to the theory and development of antennas, notably the Cassegrain, monopulse, and phased-array types."


Fellow Award "For contributions to power systems engineering and in the development of power system stabilizing method." Other Awards: Power Engineering Prize, 1955, Achievement Prize, 1965, Authorship Prize, 1970, Institute of Electrical Engineers of Japan; Founder's Memorial Academic Award, Waseda University, 1968; Third Rising-Sun Prize, Japanese Government, 1969.


Fellow Award "For contributions in the fields of radio navigation and direction finding"; Pioneer Award, Aerospace and Electronic Systems Society, 1970, "For invention of Doppler VOR and contributions toward its development." Other Awards: Meritorious Civilian Service Award, War Dept., 1946; Distinguished Service Award, University of Florida, College of Engineering, 1976.


Fellow Award "For his contributions to design and improvement of electrical instruments." Other Awards: Charles A. Coffin Award, General Electric, 1948.


Fellow Award "For contributions to the theory of antenna systems." Other Awards: Tau Beta Pi, Eta Kappa Nu, Sigma Xi, Phi Kappa Phi; Member, Commission B International Scientific Radio Union.


Fellow Award "For contributions to the theory of false alarm control in radar systems."


Fellow Award "For the development and implementation of improved time and frequency dissemination services using satellite techniques"; IEEE M. Barry Carlton Award, best technical paper, 1975, Aerospace and Electronic Systems. Other Awards: IR-100 Award, Industrial Research Magazine, 1977.


Fellow Award "For contributions to manufacturing, engineering, and administration in the field of electron devices." Other Awards: Distinguished Service Award, American Standards Association, 1946.


Other Awards: Sigma Xi; Eta Kappa Nu; Tau Beta Pi.


Fellow Award "For contributions to the development of combined magnetic and semiconductor devices for power control." Other Awards: Prize Paper Award, Institute of Electrical Engineers, Japan, 1965; Inoue
Harushige Prize, Research Development Corporation, Japan, 1980; Award for Outstanding Technology, Society of Instrument and Control Engineers, Japan, 1982.


Fellow Award “For contributions to high-voltage testing techniques and to the understanding of lightning and switching impulse flashover phenomena.” Other Awards: Thesis Award, Institute of Electrical Engineers, Japan, 1966; Progress Award, Institute of Electrical Engineers, Japan, 1968, 1971; Progress Award with Fukuda Prize, Institute of Electrical Engineers, Japan, 1973; Electric Power Award, Institute of Electrical Engineers, Japan, 1975.


Fellow Award “For contributions in the field of power system protection and for achievements in the applications of computers to the analysis, design, and operation of large electric power systems.”


Fellow Award “For contributions in image processing and computer vision.” Other Awards: Dow Chemical Young Outstanding Faculty Award, 1975; Mideast Region, ASEE, Recognition of Outstanding Young Electrical Engineers, Honorable Mention, 1975; Best Paper Award, AIPR, 1975;Eta Kappa Nu.


Fellow Award “For contributions in the application of electronics to bio-medical instrumentation.” Other Awards: Award, Office of Scientific Research and Development, 1945; Sigma Xi; P.E., Pennsylvania; 12 Patents; Adjunct Associate Professor, Drexel University.


Fellow Award “For contributions to radar systems, including synthetic aperture and harmonic radar, to optical communication theory, and to graduate and continuing education”; H. Barry Carlton Paper Award, IEEE Aerospace and Electronic Systems Society, 1977.


Fellow Award “For notable contributions to improvement in economy of electric power generation.” Other Awards: Fellow, American Society of Mechanical Engineers, 1958; Prime Movers Award, American Society of Mechanical Engineers, 1960; Philadelphia Engineer of Year, 1962; Newcomen Medal, Franklin Institute, 1963; Pennsylvania Engineer of Year, 1966; President, ASME, 1966-1967.


Fellow Award “For his contributions in the fields of broadcast antennas and transmitters and to electronic development in World War II.” Other Awards: Outstanding Contribution Award, War Dept., U.S. Dept. of Navy; Certificate of Effective Service, Office of Scientific Research and Development; Silver W Award, Order of Merit, Westinghouse Electric, 1957; Engineering Achievement Award, National Association of Broadcasters, 1962.

University.
Fellow Award “For developments in UHV insulation and suspension systems.” Other Awards: Phi Eta Sigma; Eta Kappa Nu; Tau Beta Pi; Sigma Xi.

Fellow Award “For contributions by leadership in the development of new electric power controls.” Other Awards: Management Award, General Electric Co., 1963.

Other Awards: San Fernando Valley Engineer of the Year Award, 1963.

HARPER, JOHN D., AIEE Fellow 1950. Born: April 6, 1910, Louisville, Tenn. Degrees: E.E., 1933, University of Tennessee; LL.D.(Hon.), University of Evansville; Dr.Eng.(Hon.): Lehigh University, Maryville College, Rensselaer Polytechnic Institute; Dr. of Commercial Science(Hon.), Widener College; D.Sc.(Hon.), Clarkson College of Technology; Dr. of Laws (Hon.), Carnegie-Mellon University, 1982.
Other Awards: Member, American Society of Mechanical Engineers; Nathan W. Dougherty Award, University of Tennessee; Professional Engineers Distinguished Service Award, Pittsburgh Chapter, Pennsylvania Society of Engineers; William Metcalf Award, Engineers' Society of Western Pennsylvania; Gold Medal, Pennsylvania Society; Invest-In-America “Spokesman for Business Award”; Knight's Cross, Order of St. Olav (Norway); National Academy of Engineering; First Bryce Harlow Award (Government/Business Recognition, 1982.

Fellow Award “For contributions to the design and performance analysis of large steam turbine driven generators”; Nikola Tesla Award, IEEE, 1981. Other Awards: National Academy of Engineering, 1981.

Fellow Award “For contributions to power circuit breakers and the application of high voltage capacitors”; First Student Paper Prize, Region, 1934; First Paper Prize, AIEE, Northwest District, 1954, for “Shunt Capacitors in Large Transmission Networks”; William M. Habirshaw Award, IEEE, 1975, “For contributions in the application of high-voltage power circuit breakers, high-voltage series and shunt capacitors, and high-voltage direct-current transmission technology.” Other Awards: Eta Kappa Nu; Tau Beta Pi; Sigma Tau; Special Act Award, Bonneville Power Administration, 1965; Distinguished Service Award, Gold Medal, Bonneville Power Administration, 1966; CIGRE Attwood Award, 1983.

Fellow Award “For contribution to radar detection.” Other Awards: Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1952; Citation for Distinguished Professional Achievement, Cooper Union, 1965; Fellow, American Association for the Advancement of Science, 1976; Fellow, American Institute of Aeronautics and Astronautics, 1977.


Fellow Award “For contributions to the science of acoustics.” Other Awards: Honorary Member, Audio Engineering Society, 1973; Member, National Academy of Engineering, 1975; Honorary Award, U.S. Institute for Theatre Technology, 1977; Franklin Medal, 1977; W.C. Sabine Medal, Acoustical Society of America, 1979; Member, National Academy of Sciences, 1980; American Institute of Architects Medal, 1980; Charles Batchelor Professor of Electrical Engineering and Professor of Architecture, Columbia University, New York, N.Y.

Fellow Award “For contributions to the art of electrical instrumentation”; Morris E. Leeds Award, 1972, “For a lifetime of making outstanding advances in the
science of high-accuracy electrical measurements, and of stimulating further advances through his teaching, authorship, and committee activity." Other Awards: Fellow, Washington Academy of Sciences; Medal, U.S. Department of Commerce, 1956; Rosa Award, National Bureau of Standards, 1967; Si Fluor Award, Instrument Society of America, 1974; William A. Wildhack Award, National Conference of Standards Laboratories, 1981.


Fellow Award "For contributions to the theory and design of electronic control systems and for military systems engineering development."


Fellow Award "For pioneering contributions to the understanding and application of wave effects in integrated and thin-film optical devices." Other Awards: New York State Scholar 1954-1958; Sigma Xi, 1958; Hughes Master's (1958) and Doctoral Fellow (1962-1965); Fulbright-Hayes Fellow, 1965; Stanford Ames Fellow, 1967; Traveling Lecturer, Optical Society of America, 1971; Special Achievement Award, National Science Foundation, 1980; Tau Beta Pi, 1981.


Fellow Award "For the development of highly reliable systems for outer space and underwater applications"; Outstanding Service Award, Region 3, IEEE, 1981.


Fellow Award "For contributions to the design and application of control systems for the precise regulation of speed, tension and position"; Outstanding Achievement Award, IEEE Industry Applications Society, 1975; Tau Beta Pi; Eta Kappa Nu.


Fellow Award "For numerous and fundamental contributions to antenna theory, and for the application of electromagnetic principles to nuclear weapon and missile design"; Region 6, IEEE, Electronics Achievement Award, 1966, Citation: same as fellow award; IEEE EMC Best Paper Award (with R.W.P. King), 1972.


Fellow Award "For contributions and technical leadership in the development of microwave ferrimagnetic compounds and their application in microwave components and integrated circuits"; Florida West Coast Section Special Citations, 1964, 1965, "For perseverance and creativity as Editor of the Suncoast Signal, resulting in a timely and informative publication of great value to the members" 1968, 1969, "For services rendered in furthering the objectives of the IEEE and the Section." Other Awards: Best Tutorial Paper, National Electronics Conference, 1969.


Fellow Award "For contributions to computer systems for use in process-control applications and to the development of standards for process-control computer systems." Other Awards: Fellow, Instrument Society of America, 1981.


Fellow Award "For development of diagnostic measurement techniques for locating discharges in high-voltage apparatus." Other Awards: IR-100 Award, 1981; IR-100 Award, 1983; Engineering Achievement Award, Westinghouse Electric Corporation, 1983.


Fellow Award "For contributions to missile fire control radars, air traffic control, and landing systems."

1966, Stanford University.
Fellow Award “For advances in pattern recognition and artificial intelligence.” Other Awards: Eta Kappa Nu; Tau Beta Pi; Sigma Xi; “Citation Classic” recognition, Institute for Scientific Information, 1982; Distinguished Computer Science Lecturer, Carnegie-Mellon University, 1981; Distinguished Computer Science Lecturer, MIT, 1983.

Fellow Award “For contributions to optoelectronic and high-frequency semiconductor devices.”

Fellow Award “For contributions to the field of coherent high resolution radar”; Electronics Award, IRE Phoenix Section, 1960.

Fellow Award “For his contributions to the design and development of electric power systems.”

Fellow Award “For outstanding research on metallic (power semiconductor) rectification and fundamental contributions in the field of rectifier engineering”; Initial Paper Prize AIEE, 1937, for “Aging in Copper Oxide Rectifiers”; Certificate of Appreciation, AIEE-IEEE, 1959, as Chairman Power Semiconductor Committee, 1967, as Chairman Columbus Section. Other Awards: Charles A. Coffin Award, General Electric, 1946; Naval Ordnance Development Award, U.S. Navy, 1946; Certificate of Appreciation, U.S. Dept. of Defense, 1947; President, Massachusetts Society of Professional Engineers, 1949-1950; Establishment of the Edgar A. Harty Scholarship at Wittenberg University, by Dr. Stanley M. Hanley, 1973; Registered Professional Engineer, Massachusetts.

Fellow Award “For his contributions in the fields of electronic navigation and communication.”

Fellow Award “For contributions to linear and nonlinear wave dynamics in laboratory and space plasmas, to nonlinear optics, and to nonlinear fluid dynamics.”
Other Awards: Fulbright Scholar, 1961-64; Fellow, American Physical Society; Distinguished Technical Staff, ATT Bell Laboratories, 1983.

Fellow Award “For contributions to radio instrumentation in the field of precision time and frequency measurement.” Other Awards: Distinguished Civilian Service Award, U.S. Dept of Navy; Award of Merit, Fleet Ballistic Missile Program; Group Achievement, U.S. Dept. of Navy.

Fellow Award “For contributions to coordination and integration of regional generating resources and transmission facilities.” Other Awards: Phi Beta Kappa; Sigma Xi; Tau Beta Pi; Northwest Electric Light and Power Association.

Other Awards: Registered Professional Engineer, 1936.

Fellow Award “For service and leadership in research and engineering of electric power cables and their application.” Other Awards: Charter Member, Tau Beta Pi.

Fellow Award “For leadership of industrial semiconductor research and development.” Other Awards: Excellent Books Award for “Solid State Physics for Electronics Engineers”, IEECE Japan, 1972.

Fellow Award “For contributions to classical thermodynamic theory, and for research and development on the thermionic conversion of heat to electrical energy.” Other Awards: Gold Medal Award for Outstanding Achievement in the Field of Engineering, Pi Tau Sigma, 1950-60; Gold Plate Award, Academy of Achievement, 1961; Fellow, American Academy of Arts and Sciences, 1966; National Academy of Engineering, 1978.

Sc.D., Massachusetts Institute of Technology.

Fellow Award "For contributions to noise theory in electron-beam devices and electric networks." Other Awards: Guggenheim Fellow, 1959-60; Teaching Award, American Society of Engineering Education, 1972; National Academy of Engineering, 1976; Fellow, American Academy of Arts and Sciences, 1981.


Fellow Award "For contributions in the field of complex interconnected power systems reliability and UHV transmission systems." Other Awards: Member, National Academy of Engineering.


Fellow Award "For his contributions in the fields of radar and telemetry"; Chairman, Santa Barbara Section, IRE, 1958; Chairman, Los Angeles Section, 1960. Other Awards: Charles A. Coffin Award, General Electric, 1952; Fellow, AAAS.


Fellow Award "For outstanding technical contributions to modern digital computers, and for sustained leadership in developing technical capabilities of European data processing laboratories." Other Awards: Presidential Certificate of Merit, 1948.


Fellow Award "For contributions to promote the use of satellites for communications, particularly direct broadcasting." Other Awards: Fellow, American Astronautical Society; Fellow, British Interplanetary Society.


Fellow Award "For contributions to the development and understanding of room temperature (Al-Ga) As laser diodes." Other Awards: Fujiwara Award, 1962; Ichimura Award, 1974; Award, 1975, Institute of Electronics and Communications Engineers of Japan.

HAYCOCK, OBEY C., Fellow 1964. Born: October 5, 1901, Panguitch, Utah. Degrees: B.S., 1925, University of Utah; M.S., 1931, Purdue University.

Fellow Award "For contributions to research on the upper atmosphere and to engineering education." Other Awards: Outstanding Engineer Award, Utah Joint Engineering Council, 1962.


Fellow Award "For contributions in Canada to the development of outstanding shortwave antennas and switching designs." Other Awards: Fellow, Society of Motion Picture and Television Engineers, 1966.


Fellow Award "For contributions to the theory of local distribution in computer communications"; Special Acknowledgement Prize Paper Award, IEEE Information Theory Group, 1981; Magazine Prize Paper Award, IEEE Communication Society, 1982.


Fellow Award "For contributions in planning and development of energy systems."


Fellow Award "For contributions to planning, designing and construction of a statewide power system." Other Awards: Honorary Member, Eta Kappa Nu, 1956.


Fellow Award "For contributions to signal processing, communication theory, and electrical engineering education." Other Awards: Fellow, Royal Society of Canada, 1980.


Fellow Award "For contributions to electrical engineering education." Other Awards: ASEE Western Elec-
Fellow Award “For contributions to the development of communication plant facilities in rapidly growing communities while Davenport Engineer, Southwestern Bell Telephone Co. - Period 1920-1965."

Fellow Award “For contribution over many years to the design and manufacture of radio communication equipment for both civil and military use.” Other Awards: Diploma of Membership, Imperial College of Science and Technology, University of London; Associate, City and Guilds College, University of London; Fellow, Institution of Electrical Engineers, U.K., 1967.

Fellow Award “For creative leadership in the switchgear field”; IEEE, Philadelphia Special Section Award, 1970, “For noteworthy and creative contributions and inspiring leadership in the art and science of system protection”; Power and Life Award, IEEE Switchgear Committee, 1977. Other Awards: Award, National Electrical Manufacturers Association.

Fellow Award “For contributions to electron optics, microwave tubes, and the development of the electrostatically focused power amplifier klystron.”

Fellow Award “For contributions in the engineering of manufacture for the rapidly advancing communications art.”

Fellow Award “For contributions to the development of solutions for wave propagation and electrical transients on extra-high-voltage transmission systems”; Award for Noteworthy Paper in IEEE TRANSACTIONS on Power Apparatus and Systems, 1969, entitled “Field and Laboratory Tests of Contaminated Insulators for the Design of the State Electricity Commission of Victoria’s 500 kV System.” Other Awards: Member, Secretary IEC-TC-37, Surge Protective Devices Committee; CIGRE; Member: Sigma Tau, Pi Mu Epsilon, Eta Kappa Nu.

Fellow Award “For contributions to the development of analog computers and their applications.”

Fellow Award “For fundamental discoveries of electrooptic effects in liquid crystals, and basic liquid crystal device concepts”; David Sarnoff Award, IEEE, 1976, “For combining science with engineering to create the dynamic scattering liquid crystal display.” Other Awards: RCA Laboratories Achievement Awards, 1960, 1962, 1965, 1969; Outstanding Young Electrical Engineer, Eta Kappa Nu, 1968; IR-100 Award, 1968, 1969; Outstanding Young Electrical Engineer in the United States of America, Eta Kappa Nu, 1969; White House Fellow Award, 1970; 26th Annual Arthur Fleming Award as Outstanding Young Man in Government, 1974; Secretary of Defense Civilian Meritorious Service Medal, 1974; Special Recognition Award, Society for Information Display, 1975, 1977; Dept. of Defense Distinguished Civilian Service Medal, 1975-1977; Tau Beta Pi; Sigma Xi; Eta Kappa Nu; National Academy of Engineering; Defense Science Board; Air Force Scientific Advisory Board; Visitors Committee of Stanford University, Princeton University, University of Pennsylvania.

Fellow Award “For contributions to circuit design in the field of telecommunications test instrumentation”; Patron Award, Washington Section, IEEE, 1979. Other Awards: Sigma Tau, 1948; Alumni Achievement Award, George Washington University, 1976; Eta Kappa Nu, 1979.

Fellow Awards “For engineering contributions to VHF air ground communications, and technical direction of commercial and military radio systems.” Other Awards: Fellow, Institute of Physics, U.K., 1947; Associate, Royal College of Science, University of London; Associate Fellow, AIAA, 1955.

Fellow Award “For fundamental contributions to ferrite and antiferromagnetic devices at microwave and millimeter-wave frequencies.”


Fellow Award “For contributions to cryptography”; Prize Paper Award, IEEE Information Theory Group, 1978; Donald G. Fink Award, IEEE, 1981. Other Awards: California State Psychological Association Award, 1978.


IRE Fellow Award “For work in military electronics”; AIEE Fellow Award “For contributions in the field of civilian and military electronics”; IEEE Communication Society, Achievement Award, 1970.


Fellow Award “For discovery, invention, leadership, and teaching in the field of quantum electronics”; Student Award, Princeton Section of IRE, 1952, “In recognition of his professional development and accomplishments.” Other Awards: Sigma Xi, 1951; Phi Beta Kappa, 1951; Rhodes Scholar, 1952; Honoree and Fellow, American Academy of Achievement, 1967; Lawrence A. Hyland Patent Award, 1968; National Science Foundation Senior Postdoctoral Fellow, St. Peter’s College, Oxford University, 1970-71; Outstanding Educators of America, 1973; National Academy of Engineering, 1977; Fellow, American Physical Society, 1982; Fellow, Am. Ass. Advancement of Sci., 1982; 1983 Charles Hard Townes Award of the Optical Society of America.


Fellow Award “For his contributions in the field of radio direction-finding systems, and in particular, for his work in the development of Canadian radar during the war”; First McNaughton Award, Canadian Region, IEEE, 1969. Other Awards: Member of the Order of the British Empire, 1943; Fellow, Royal Society of Canada, 1944.


Fellow Award “For contributions to electric propulsion and small particle technology.” Other Awards: Fellow, American Physical Society; Fellow, American Association for the Advancement of Science; Associate Fellow, American Institute of Aeronautics and Astronautics; Member, American Association of Physics Teachers; Charter Member, Electrostatics Society of America; Phi Beta Kappa; Phi Kappa Phi; Sigma Xi; Sigma Pi Sigma; Tau Beta Pi; Eta Kappa Nu.


Fellow Award “For his contributions to the development of solid-state switching circuits.” Other Awards: Fellow, IBM, 1964; Twelfth IBM Invention Achievement Award, 1978; National Academy of Engineering, 1982.


Fellow Award “In recognition of his accomplishments in obtaining publication of the technical information essential to the radio engineer”; Plaque, IRE, Rochester Fall Meeting, 1944, “For his many years of unselfish service to the radio and electronic industries through the technical press.” Other Awards: Pioneer Award, Radio Club of America, 1982.


Fellow Award “For contributions to microwave instrumentation and measurement techniques.”


Other Awards: Eta Kappa Nu, 1953; Arthur L. Williston Award, American Society for Engineering Education, 1964; James H. McGraw Award, American Socie-
ty for Engineering Education, 1973; Life Member, American Society for Engineering Education; Life Member, National Society of Professional Engineers.


Fellow Award “For his leadership of a group studying radiowave scattering by atmospheric turbulence”; Harry Diamond Award, IRE, 1959, “For original research and leadership in radiowave propagation.” Other Awards: Gold Medal, U.S. Dept. of Commerce, 1966; Director, Consultative Committee on International Radio, International Telecommunications Union, Geneva, Switzerland, 1966-74.


Fellow Award “For contributions in the field of the energy band structure of solids.” Other Awards: Outstanding Research Awards, Radio Corporation of America Laboratories, 1950, 1952, 1955; Outstanding Young Man Award, New Jersey Chamber of Commerce, 1959; Tau Beta Pi; Sigma Xi; Fellow, American Physical Society; Visiting Professor: Technion, Haifa, 1971, University of Paris, 1973, Chalmers University, Gothenburg, 1977; Lecturer, Stanford University, 1964-present.


Fellow Award “For invention and outstanding technical work in the field of gas discharge devices, thermionic energy conversion, and laser technology.” Other Awards: IR-100 Award, Industrial Research, 1967; David Sarnoff Award for Outstanding Technical Achievement, 1974 and 1982.


Fellow Award “For his contributions to theory and design in the field of vacuum tubes”; Founders Medal, IEE, 1976, “For his outstanding contributions to the electrical engineering profession at large, and in particular his insight and leadership in the development of color television.” Other Awards: Phi Beta Kappa, 1930; Sigma Xi, 1942.


Fellow Award “For his early contributions to the development of radar, and to frequency stabilization using microwave absorption lines”; IEEE Awards Committee, 1962-1964. Other Awards: RCA Laboratories Award, 1948; Chairman WESCON, 1953; Fulbright Research Scholar, Leyden University, 1955-1956; Visiting Professor, Technical University, Munich, 1968; University of Hawaii, 1975.


Fellow Award “For contributions to microwave devices.” Other Awards: RCA Outstanding Achievement Award, 1964, 1967.


Other Awards: Licensed Professional Engineer, New York State, 1938.


AIEE Fellow Award “For contributions to the theory and development of servomechanisms”; IRE Fellow Award “For contributions to servomechanism technology.” Other Awards: Order of Merit, Westinghouse Electric Corp., 1958; Member, National Academy of Engineering, 1967; Exceptional Civilian Service Award, Dept. of Defense, 1974.

**HERZ, ERIC**, Fellow 1983.

Fellow Award “For contributions to the development and management of information systems for testing aerospace vehicles and for valuable services to the Institute.”

**HERZOG, GERALD B.**, Fellow 1966. Born: August 19, 1927, Minneapolis, Minn. Degrees: B.S.E.E., 1950,
M.S.E.E., 1951, University of Minnesota.

Fellow Award “For contributions to solid-state television and computer circuits.” Other Awards: RCA Achievement Awards, 1953, 1960; David Sarnoff Outstanding Technical Achievement Awards, 1962, 1972; Outstanding Achievement Award, University of Minnesota, 1972; RCA Fellowship, University of Cambridge, England.


Fellow Award “For his contributions to radioactive instrumentation for geological survey and medical applications.” Other Awards: Fellow, American Physical Society.


Fellow Award “For contributions to the organization of electrical engineering education.” Other Awards: Contribution and Leadership Award, Engineering Society of Detroit, 1965; Fellow Award, Engineering Society of Detroit, 1974; Faculty Service Award, Wayne State University, 1976; Distinguished Service Award, Engineering Society of Detroit, 1978; Distinguished Engineering Alumni Achievement Award, Wayne State University, 1983.


Fellow Award “For contributions to the theory of periodic structures as applied to phased array antennas”; Best Paper Award (coreipient), IEEE Transactions on Antennas and Propagation, 1974. Other Awards: Citation for Distinguished Research in the Field of Electromagnetics, Sigma Xi, 1977.


Fellow Award “For contributions to design of magnetic controls.”


HEYWANG, WALTER, Fellow 1979. Born: October 1, 1923, Schweinfurt, West Germany. Degrees: Master degree, 1948, Ph.D., 1950, University of Wurzburg; Dr.Ing.(h.c.), 1981, University of Lund.

Fellow Award “For contributions to the development of semiconductor and piezoelectric materials and devices.” Other Awards: Wilhelm-Exner Medal, 1983, Austria.


Fellow Award “For research, development, design and construction of radar antennas and for fundamental efforts in radar cross section measurements”; President, Administrative Committee, IEEE Antenna and Propagation Society, 1970. Other Awards: Fellow, American Association for the Advancement of Science, 1969;Eta Kappa Nu, Sigma Xi, Tau Beta Pi; Professor Emeritus, Electrical and Computer Engineering, University of Michigan; Certificate of Service Award, Office of Scientific Research and Development, 1945.


Fellow Award “For contributions to plasma diagnostics.”


Fellow Award “For research and leadership on electromagnetic compatibility analysis techniques and spectrum engineering.” Other Awards: Effective Service Award, Office of Scientific Research and Development, National Research Committee, 1945; American Man of Science, 1958; Listed in “Who’s Who in Engineering,” 1978.

HIERONYMUS, T. GALEN, AIEE Fellow 1950. Born: November 21, 1895, Valparaiso, Ind.

Other Awards: Honorary Doctor of Philosophy, The Universal Society of Pathometrists in Atomic-Medicine, 1939; Silver Beaver Award for Distinguished Service to Boyhood, Boy Scouts of America, 1941; Annual Achievement Award, U.S. Radionics Congress, 1976; Professional Engineer, Missouri; patents in three countries.


Fellow Award “For his researches in circuit theory and allied fields and for his leadership in electrical engineering education.” Other Awards: George Westinghouse Award, American Society for Engineering Education, 1954; Benjamin Smith Reynolds Award, College of Engineering, University of Wisconsin, 1963; Engineer of the Year Award, Wisconsin Society of Professional Engineers, 1964; Donald P. Eckman Education Award, Instrument Society of America, 1964.


Fellow Award “For his contributions to communication and weapon systems development.” Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1940.


Fellow Award “For contributions to pulse circuits and nuclear instrumentation”; First Annual Award, IEEE Nuclear Science Group, 1972, “In recognition of professional leadership in nuclear science and instrumentation and the quality and excellence of his technical contributions.” Other Awards: Fellow, American Physical Society; Fellow, American Nuclear Society; Fellow, American Association for the Advancement of Science; First Annual Distinguished Service Award, Institute of Nuclear Materials Management, 1979.


Fellow Award “For contributions to the theory of lightning and switching surges and for the application of insulation concepts to EHV and UHV transmission systems design.”


Fellow Award “For contributions to the development of integrated circuits”; Outstanding Chapter Award, Philadelphia Section, IEEE, 1975-1976. Other Awards: Fellow, National Science Foundation, 1952-1954; Registered Professional Engineer, N.Y. State.


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Fellow Award "For his contributions in the field of motion-picture and audio engineering, and in the advancement of standards"; Audio Achievement Award, IRE, 1963. Other Awards: John H. Potts Award, Audio Engineering Society, 1961; Fellow, Society of Motion Picture Television Engineers; Fellow, Acoustical Society of America; Fellow, Audio Engineering Society.


Fellow Award "For pioneering theoretical predictions of negative resistance effects due to hot electrons in gallium arsenide"; David Sarnoff Award, IEEE, 1981. Other Awards: Faraday Medal, 1982; GaAs Symposium Award, 1978; Rank Prize for Opto-Electronics, 1980; F.Inst.P.; F.I.E.E.; F.Eng., F.R.S. Foreign Associate, N.A.E.


Fellow Award "For contributions and leadership in the development of aerial navigation." Other Awards: Honorary Vice President, American Society for Zero Defects; Tau Beta Pi.


Fellow Award "For contributions in the fields of meteorographie instrumentation, aircraft navigation, and ordnance electronics"; Harry Diamond Award, IRE, 1956, "For his contributions to the electronic art in the fields of meteorology and proximity fuses." Other Awards: Exceptional Civilian Service Award, U.S. Dept. of Army, 1958; Distinguished Civilian Service Award, U.S. Dept. of Defense, 1960; Presidential Award for Distinguished Civilian Service, 1961.


Fellow Award "For contributions and leadership in the development of electronic switching and communication systems."


Fellow Award "For contributions to active network theory and leadership in graduate education." Other Awards: Best Paper Award, Institute of Electronics and Communication Engineers, Japan, 1960; Distinguished Services Award, Institute of Electronics and Communication Engineers, Japan, 1981.


Awards: AIEE, 1912; National Director, Vice President District 8, IEEE. Other Awards: Medal of Freedom, 1944-1945; NATO Staff, 1953-1954; San Marino
City Council, 1955-1969; Mayor, San Marino, 1960-1969; Armed Forces Communications and Electronics Association; American Association for the Advancement of Science; Phi Beta Kappa; Tau Beta Kappa; Tau Beta Phi; Registered and Certified Electrical Engineer, California.


Fellow Award “For his contributions and leadership in electron device research and development.” Other Awards: National Academy of Engineering, 1976.


Fellow Award “For contributions in the field of electrical engineering education.” Other Awards: Outstanding Engineer Award, Raleigh Engineers Club, 1973; Certificate of Appreciation, North Carolina State University Chapter of Eta Kappa Nu, 1974.


Fellow Award “For contributions to the fields of magnetic recording and data storage for electronic computers”; Best Paper Prize, AIEE, 1956, for “Magnetic Recording Theory: Head Design”; President, IEEE Computer Society, 1972-1973; Director (Board Member), IEEE, 1974-1975. Other Awards: Phi Beta Kappa; Sigma Xi; Eta Kappa Nu; Tau Beta Pi; President, AFIPS, 1978-1980; Trustee, Charles Babbage Foundation, 1979-1981.

HOAGLAND, JACk C., Fellow 1980. Born: November 14, 1918, Los Angeles, CA. Degrees: B.S., 1942, California Institute of Technology; Graduate studies, UCLA, UCI, 1972-75.


Fellow Award “For contributions in the fields of battery charging and welding.”


Fellow Award “For contributions to the planning, analysis, and forecasting of computer systems and technology”; Leadership Award, Los Angeles District of IEEE, 1965, “For excellence in leadership both as Professional Coordinator and Section Coordinator for the Los Angeles District of the IEEE.” Other Awards: Tau Beta Pi, 1947; Eta Kappa Nu, 1947.


Fellow Award “For his contributions to the field of telemetry and remote control.” Other Awards: Fellow,
Tau Beta Pi; Fellow, Massachusetts Institute of Technology; Distinguished Service Citation, University of Wisconsin; Associate Fellow, AIAA; Pioneer, Missile, Range and Space; 72 patents; 64 publications.


Fellow Award “For the invention of the planar transistor, and for other contributions to the theory and technology of semiconductor devices”; McDowell Award, IEEE Computer Society, 1972. Other Awards: Sigma Xi, 1953; John Scott Award, City of Philadelphia, 1966; Edward Longstreth Medal, Franklin Institute, 1969.


Fellow Award “For the conception and development of the microprocessor”; Cledo Brunetti Award, IEEE, 1980. Other Awards: Stuart Ballantine Medal, Franklin Institute, 1979.


Fellow Award “For contributions to the economic planning of large power systems.”


Fellow Award “For contributions to power conversion systems”; William E. Newell Power Electronics Award (first recipient), IEEE, 1977.


Fellow Award “For pioneering in the application of ferrites”; Frederik Philips Award, 1975, “For outstanding accomplishments in the management of research and development resulting in important innovation in the semiconductor industry.” Other Awards: National Academy of Engineering, 1977; Honorary Fellow, IEE (London), 1978; Medal of Achievement, American Electronics Association, 1978; Fellow, American Association for the Advancement of Science, 1978; The Berkeley Citation, University of California at Berkeley, 1981.


Fellow Award “For contributions to terrain-sensing correlation guidance”; IRE Outstanding Student Award, Dayton Section, 1959. Other Awards: Award of Excellence in Electrical Engineering, University of Dayton, 1959; Dr. Karl Arnstein Award for Technical Achievement, Goodyear Aerospace Corporation, 1979.


Fellow Award “For contributions to the advancement of engineering education”; First Prize, Prize Paper Competition, AIEE Section, 1953. Other Awards: Fellowship, University of Wisconsin, 1951-53; Honor Award for Distinguished Service, Univ. of Missouri, 1973; Board of Governors, American Ass’n of Eng. Societies, 1982-83; Board of Directors, ASEE, 1973-75, 1981-84; Board of Directors, Engineers Council for Professional Development, 1974-80; Alumni Achievement Award, Washington University, 1979; Engineer of the Year, Indiana Society of Professional Engineers, 1981; Special Presidential Award, University of Notre Dame, 1981; Dean Emeritus of Engineering, University of Notre Dame, 1981; President, American Society for Engineering Education, 1982-83; Fellow, American Society for Engineering Education, 1983.


Fellow Award “For contributions to lightning protection of power transmission lines and to standardization of impulse voltage testing, and for leadership in research and development of power cables.” Other Awards: Outstanding Paper Prize, 1946, Outstanding
Technical Achievement Prize, 1951, Outstanding Book Prize, 1953, Prize of Merit in Electrical Power Field, 1954, Institute of Electrical Engineers of Japan.


Fellow Award "For contributions to the design of computing equipment and to evaluation methodology for large-scale information systems"; IEEE Centennial Medal, 1984. Other Awards: Commendation, U.S. Navy, 1944; Fellow, Institute for the Advancement of Engineering, 1970; Fellow, National Contract Management Association, 1978.


Fellow Award "For contributions to the design of large turbine-driven synchronous generators"; District Prize Paper Award, AIEE, for "Water Cooling of Turbine-Generator Stator Windings"; Award Citation, IEEE Region 1, 1975, "Through his outstanding leadership and management of large-scale research, development and production organizations in the electrical power field"; Nikola Tesla Award, 1978; IEEE Centennial Medal, 1984. Other Awards: National Academy of Engineering, 1976.


Fellow Award "For contributions to the development and application of underground cables." Other Awards: Fellow, Institution of Electrical Engineers, U.K., 1946.


Fellow Award "For contributions to electronic countermeasures and color television." Other Awards: Army-Navy Certificate of Appreciation, 1946.


Fellow Award "For contributions to electronic early warning systems and leadership of manned space flight programs." Other Awards: Paul T. Johns Award, Arnold Air Society, 1963; Outstanding Leadership, NASA, 1963; Eta Kappa Nu; Tau Beta Pi; Chi Psi; Aerospace Industries Association; American Institute of Aeronautics and Astronautics; National Academy of Engineering; National Aeronautic Association; National Space Club; The Navy League.


IRE Fellow Award "For contributions to theory and practice in the field of magnetic recording." Other Awards: Leo H. East Memorial Award, Engineer of the Year, City of Rochester, NY, 1967.


Fellow Award "For his contributions to solid state device applications including generation of visible coherent radiation from a semiconductor junction and discovery of phonon-assisted tunneling"; IEEE Morris Liebmann Award, 1973, "For outstanding contribution to the field of visible light emitting diodes and diode lasers"; Jack A. Morton Award, IEEE, 1981. Other Awards: Cordiner Award, General Electric, 1962; Texas Instruments Fellowship, University of Illinois, 1953-54; Member, National Academy of Engineering, 1973; John Scott Award, City of Philadelphia, 1975; GaAs Conference Award with Welker Medal, 1976; Center of Advanced Study, University of Illinois, 1977; Electrotechnical Society Solid State and Technology Award, 1983.


Fellow Award "For major contributions to electronic digital computer technology and particularly, for the invention and development of a wide variety of optical character recognition equipment." Other Awards: Silver Medal, U.S. Commerce Dept.


Fellow Award "For technical leadership in semiconductor research and development." Other Awards: Phi Eta Sigma, 1949; Phi Beta Kappa, 1951; Fellow, American Physical Society, 1965; J. Daniels Award (1st in graduating NROTC class), 1952.

HONEY, RICHARD C., Fellow 1968. Born: March 9, 1924, Portland, Oreg. Degrees: B.S., 1945, California Institute of Technology; Ph.D., 1953, Stanford Univer-
sity.

Fellow Award "For his contributions to the fields of microwave antennas and laser applications." Other Awards: Fellow, Optical Society of America.


Fellow Award "For contributions to fault-tolerant computing, design automation, and error-correcting codes." Other Awards: Honorable Mention Award for Outstanding Young Electrical Engineer, 1975; Three Outstanding Innovations Awards, IBM.


Fellow Award "For contributions to electrical engineering education and electronic instrumentation." Other Awards: M. A. Ferst Sigma Xi Research Award First Prize, Georgia Institute of Technology, 1951; Distinguished Graduate Faculty Lecturer, Auburn University, 1976-1977; Nine Certificates of Recognition, NASA, 1970-1981; Sigma Xi; Phi Kappa Phi; Tau Beta Pi;Eta Kappa Nu; Professor Emeritus, Auburn University 1981.


AIEEE Fellow Award "For his contributions to electrical engineering in the fields of research and education"; IRE Fellow Award "For distinguished teaching and research in applied electronics"; Paper Prize, AIEEE, District 7, 1958. Other Awards: Legion of Merit, United States Military Academy, 1946; Fellow, American Association for the Advancement of Science, 1955; Marconi Premium, Institution of Radio Engineers, U.K., 1956; Colonel, USAF-Retired 1968; Professor Emeritus, Washington University, 1976.


Fellow Award "For contributions to the theory and design of electrical machinery, including reluctance machines." Other Awards: Eminence in Science and Engineering, 1962; Engineering Award of Merit, 1964, 1965.


Fellow Award "For contributions to interconnection technology and memory components."


Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu.


Fellow Award "For contributions to coordinated electronics and high-voltage engineering, and to engineering education." Other Awards: Phi Beta Kappa; Tau Beta Pi; Sigma Xi.


Fellow Award "For contributions to microwave components and instruments, especially to wide-band power measuring devices." Other Awards: New York Academy of Sciences; Sigma Psi, American Physical Society.


Fellow Award "For contributions to nonlinear control systems and engineering education"; Best Paper Prize, AIEEE, Industrial Group, 1951. Other Awards: Member, American Society for Engineering Education; Phi Eta Sigma; Sigma Xi; Eta Kappa Nu; Tau Beta Pi.


Fellow Award "For contributions to power capacitor design and application in transmission systems"; Member, IEEE Capacitor Subcommittee 1957-1975. Other Awards: Member, CIGRE; U.S. Representative, CIGRE Study Committee 18, Capacitors, 1960-1967; Member, NEMA Capacitor Tech. Comm., 1956-1975; Chairman, NEMA Capacitor Section, 1964-1967. Sigma Tau; Tau Beta Pi; Phi Kappa Phi.


Fellow Award "For contributions in underwater sound search and sound recording"; IEEE Committees on Audio, Stereo, Sound Recording, and Acoustics. Other Awards: Society of Motion Picture and Television Engineers; American Standards Association; Citation, Office of Scientific Research and Development.


Fellow Award “For contributions to electron devices.”


Fellow Award “For his contributions to the field of communications in both military and civilian applications.” Other Awards: Combat Legion of Merit; National Regional Medal, Civil Aeronautics Administration, 1952; Medal of Honor, Electronic Industries Association, 1964; Gold Knight Award, National Management Association, 1962; Governor’s Award, California Advisory Council on Vocational Education Services (CACVE), 1975; Member, American Association for the Advancement of Science.


Fellow Award “For contributions to active network theory and feedback control theory.” Other Awards: Best Paper, National Electronics Conference, 1956.


Fellow Award “For contributions to power-system integrity through protective relaying and to education through industry/education research programs.”


Fellow Award “For contributions to military electronics and computer engineering.”


Fellow Award “For the technical leadership of a large government laboratory and, specifically for the invention of fluid amplification.” Other Awards: Arnold O. Beckmann Award, Instrument Society of America, 1960; U.S. Army Decoration for Exceptional Civilian Service, 1965; John Scott Award, City of Philadelphia, 1966; Distinguished Civilian Service Award, Department of Defense, 1967; Inventor of the Year, PTC Research Institute, George Washington University, 1971; National Academy of Engineering, 1979.

Fellow Award “For contributions to the engineering of pulse code modulation and satellite communication systems.”


Fellow Award “For pioneering contributions in the field of broadcast reception.” Other Awards: Armstrong Medal, Radio Club of America, 1941; Marconi Medal, Veteran Wireless Operators Association, 1955.


Fellow Award “For leadership in military electronics development associated with guided missiles”; Alexander Graham Bell Medal, IEEE, 1980. Other Awards: Phi Beta Kappa; Sigma Xi; Outstanding Young Electrical Engineer Award; Eta Kappa Nu, 1947; Member, National Academy of Engineering, 1983.


Other Awards: Engineer of the Year Award, Cleveland Society of Professional Engineers, 1967; Distinguished Service Award, Cleveland Technical Societies Council, 1972.


Fellow Award “For contributions to the determination of electrical and thermal characteristics of stranded and bare conductors.” Other Awards: Life Member, American Society of Mechanical Engineers; Member Emeritus, Sigma Xi.


Fellow Award “For contributions to the logical design of computers.” Other Awards: Commendation, President’s Commission, 1974-75; Letter of Commendation, U.S. Air Force.


Fellow Award “For research and engineering in electron physics.”


Fellow Award “For contributions to the advancement of semiconductor circuits and devices, especially analog and digital LSI technology.”


Fellow Award “For contributions to microwave integrated circuits.”


Fellow Award “For contributions to analog and hybrid computer technology.”


Fellow Award “For his contributions as a teacher in the field of communication engineering”; Lecturer, McGill Univ., Dept. of Elec. Eng., 1929-43; Professor Emeritus of Electrical Engineering, 1964.


Fellow Award “For contributions to engineering of domestic and foreign utility generation and transmission facilities.”


Fellow Award “For contribution to computer reliability, error-correcting codes, and the detection and testing of faults.” Other Awards: Outstanding Invention Awards, IBM, 1972, 1979.

Taiwan University; M.S., 1960, Sc.D., 1963, Massachusetts Institute of Technology.
Fellow Award "For contributions to the theory and application of image processing and digital filtering." Other Awards: Guggenheim Fellow, 1971-72; U.S. Senior Scientist Award, Humboldt Foundation, 1976-77.

HUBBARD, DAVID C., AIEE Fellow 1952. Born: August 11, 1908, Baltimore, Md. Degrees: B.S.E.E., 1930, Purdue University.
Fellow Award "For fifteen years of major contributions to live line maintenance equipment." Other Awards: Anchor Hall of Fame, A.B. Chance, 1972. 57 U.S. Patents, 1941-1974; International Merit Award for Creative Thinking, 1975; International Inventors Incorporated.

Other Awards: Presidential Certificate of Merit, 1946.

Fellow Award "For contributions to electrical engineering education and circuit theory." Other Awards: National Electronics Conference Award, 1961; National Aeronautics and Space Administration Award, 1970; Anderson Prize, 1975.


Fellow Award "For contributions in the field of circuit theory"; Browder J. Thompson Award, IRE, 1948; Education Medal, 1966, "For his creative approach to and extraordinary effectiveness in teaching, and for his abiding interest in and rapport with students." Other Awards: Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1954; Annual Award, National Electronics Conference, 1955; Fellow, Acoustical Society of America, 1959; Western Electric Fund Award, American Society for Engineering Education, 1965; National Academy of Engineering, 1970.

Fellow Award "For contributions to understanding of speech." Other Awards: IR 100 Award, 1981; Special Fellow, National Institute of Neurological Diseases and Blindness, Istituto di Fisiologia, University of Pisa, Italy, 1963.


Fellow Award "For contributions to color television." Other Awards: Man of the Year, Stillwater, OK Junior Chamber of Commerce, 1963; Outstanding Alumni, College of Engineering, Iowa State University, 1980.

Fellow Award "For electronic contributions to the military services." Other Awards: Commendation Medal, U.S. Dept. of Navy, 1940; Legion of Merit, 1946; Fellow, Acoustical Society of America, 1952; Medal of Honor, Electronic Industries Association, 1960.

Fellow Award "For contributions to magnetic device flux reversal mechanisms, and for improving engineering education using laboratory instruction techniques."

Fellow Award "For his contributions to the development of specialized digital computers and communication systems for military application and leadership in the area of advanced computer programming"; Member, Editorial Board, IEEE Spectrum; Member, ACM; 5 U.S. patents (computer field).

Fellow Award "For contributions to industrial electronics and control automation." Other Awards: NASA Technology Award, NASA, 1969; Certificate for Contribution to Technology, NASA/MSFC, 1970; M.E. Brooks Engineering Professor Award, Univ. of Tenn., 1973; Letter of Commendation, U.S. Department of
Army, MICOM, 1981; Distinguished Service Professorship, Univ. of Tenn., 1983.


Fellow Award “For contributions to the organization of telecommunications research and development.”


Fellow Award “For contributions to the theory and practice of digital image processing.”


Other Awards: U.S. Dept. of Navy; Modern Pioneer Award, National Association of Manufacturers, 1940; First Distinguished Alumnus Award, University of Southern California, School of Engineering, 1966; Lloyd F. Hunt Chair in Electric Power Engineering, University of Southern California, 1968; Sigma Xi;Eta Kappa Nu; CIIGRE.


Fellow Award “For contributions to semiconductor research and publications.” Other Awards: Fellow, American Physical Society; Outstanding Invention Award, IBM, 1964.


Fellow Award “For contributions to the design of large turbine generators.”


Fellow Award “For his contributions in the fields of electronic ordnance and electron physics.” Other Awards: Certificate of Appreciation, Office of Scientific Research and Development, 1945; Certificate of Appreciation, War Dept., Secretary of War, 1945; Naval Ordnance Development Award, 1945; Presidential Certificate of Merit, 1948; Award in Physical Sciences, Washington Academy of Sciences, 1948; Exceptional Service Award, U.S. Dept. of Commerce, 1949; Achievement Award, Iowa State Teachers College, 1957.


Fellow Award “For technical leadership in developing innovative energy conversion and transmission technology for bulk power systems.” Other Awards: Senior Member, Institute Society of America; Phi Kappa Phi; Phi Lambda Phi.


HUSSON, SAMIR S., Fellow 1983.

Fellow Award “For contributions to microprogramming, design automation, and computer system development methodology.”


IRE Fellow Award “For his contributions and technical direction of work in radio research.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1946.


Fellow Award “For progressive planning, system design and management of electric utility operation.”


Fellow Award “For his contributions in the field of electron ballistics and electron optics.”


Fellow Award “For contributions to electrical application and pipeline pumping.” Other Awards: Award of Merit, Westinghouse Electric, 1953.


Fellow Award “For his contributions to aircraft radio direction finding, and his effective direction of research”; Pioneer Award, IRE, 1957; Founders Medal, IEEE, 1974; “For leadership and management in the field of electronics.” Other Awards: Distinguished Pub-


Other Awards: American Society of Mechanical Engineers; American Society of Heating and Air Conditioning Engineers; National Society of Professional Engineers; Institution of Mechanical Engineers, U.K.; Engineering Institute, Canada.


Fellow Award “For the development of electronic apparatus for converting images formed by electromagnetic waves to electrical signals, first in the television field, and later, using new principles, in the realm of short radio waves.” Other Awards: Sigma Xi, 1932; Modern Pioneer Award, National Association of Manufacturers, 1940.

IBUKA, MASARU, Fellow 1972. Born: April 11, 1908, Nikko City, Japan. Degrees: B.Sc., 1933, Waseda University; Dr.Sci., 1974, Plano University; Dr.Eng.(Hon.), 1976, Sophia University, Tokyo; Dr. Sc. (Hon.), 1979, Waseda University, Tokyo; D.Hum.(Hon.), 1982, Minden State University.

Fellow Award “For contributions to the development and application of solid-state devices in consumer and computer electronics”; IEEE Founders Medal, 1972, “For outstanding administrative leadership in applying solid-state devices in consumer electronics, thereby enhancing industry growth and bringing distinction to the profession.” Other Awards: Medal of Honor with Blue Ribbon, H.M. Emperor of Japan, 1960; Niwa-Takayanagi Memorial Award, Institute of Television Engineers, Japan, 1973; NHK Broadcast Cultural Award, Japan Broadcasting Corp., 1977; Imperial Order of the Sacred Treasure I, H.M. Emperor of Japan, 1978; Humanism and Technology Award, Aspen Institute for Humanistic Studies, 1981.


Fellow Award “For achievements in the management of engineering research, and for contributions to sonar and other underwater devices.” Other Awards: Harvard Engineering Society Prize Scholarship, 1927; Civilian Meritorious Service Award, 1945; National Civil Service League Award, 1958; Fellow, Acoustical Society of America; Phi Beta Kappa; Tau Beta Pi; Delta Sigma Rho.


Fellow Award “For contributions to design and development of submarine cable repeaters and systems.”


Fellow Award “For contributions to storm-proofing of inter-city and rural communications.”


Fellow Award “For technical contributions and pioneering leadership in the development of international communication systems”; IEEE Award in International Communication, 1979; Science Award, Turkish Scientific and Technical Research Council, 1982; Secretary General, The Turkish Science and Engineering Research Council, Ankara.


Fellow Award “For contributions to the applications of electrostatics in mineral separation and gas cleaning”; Prize Paper Award, Honorable Mention, IEEE Industry Applications Society, 1978; Outstanding Achievement Award, IEEE Industry Applications Society, 1983. Other Awards: Award for Visiting Scientists...


Fellow Award “For contributions to the development of digital switching, digital modulation, and road traffic control systems”; IEEE Award in International Communication in Honor of Hernand and Sothenes Behn, 1982. Other Awards: Marconi International Fellowship, 1976; Japan Academy Prize, 1979; Foreign Associate, National Academy of Sciences, 1977; Member, American Philosophical Society, 1979.


Fellow Award “For contribution to power systems engineering, and pioneering leadership in nuclear electric power plants.” Other Awards: Honorary Member, Society of Atomic Energy of Japan, 1967; Honorary Member, Institute of Electrical Engineers of Japan, 1971; Foreign Associate, National Academy of Engineering, 1978.


Fellow Award “For outstanding contributions in the planning and basic design of the nationwide telephone system, in particular the transmission and switching aspects of long distance service.” Other Awards: Tau Beta Pi, 1915; Sigma Xi, 1917.


Fellow Award “For contributions to industrial electronics, control instrumentation, and engineering education”; IEEE Centennial Medal, 1984.


Fellow Award “For contributions to the engineering aspects of television broadcasting, and for leadership in demonstrating the important application of television techniques to university-level teaching.” Other Awards: Fellow, Audio Engineering Society, 1965; Fellow, Society of Motion Picture and Television Engineers, 1972.


Fellow Award “For contributions to electromagnetics and wideband magnetic recording.” Other Awards: Fellow, Society of Motion Picture and Television Engineers, 1956; Fellow, Audio Engineering Society, 1971; Engineer of Distinction, Engineers Joint Council, 1974.

Fellow Award “For contributions to dielectric and printed waveguide technology for millimeter-wave integrated circuits.”

IVEY, HENRY F., Fellow 1975. Born: June 16, 1921, Augusta, Ga. Degrees: A.B., 1940, M.S., 1941, University of Georgia; Ph.D., 1944, Massachusetts Institute of Technology.

Fellow Award “For contributions and leadership in the advancement of the science of luminescence.” Other Awards: Honorary Member, Electrochemical Society, 1980.


Fellow Award “For contributions to the development of magnetic high-density recording technology.”


Fellow Award “For contributions and leadership in the development of semiconductor devices.”


Fellow Award “For contributions to corona measurement techniques.” Other Awards: OHM Award, OHM Award Association, Japan, 1967; Progress Award, Japanese Electrical Manufacturing Association, 1968; Invention Award, Tokyo Chapter, Japan Invention Association, 1973.

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Fellow Award “For contributions to the finite word length design and hardware implementation of digital filters.”


Fellow Award “For contributions to novel energy conversion systems and for the promotion of international cooperation in energy research and development.” Other Awards: United Kingdom Fulbright Scholar, 1955-57; Fellow, Institution of Electrical Engineers, United Kingdom, 1974; U.S. Energy Research and Development Administration, Special Achievement Award, 1976; Societe d'encouragement pour la recherche et l'invention, SERI Award, 1978.


Fellow Award “For contributions to and technical leadership in electronic computers, aircraft navigation systems, guided-missile range instrumentation, aviation fire control, and missile guidance”; IEEE Centennial Medal, 1984. Other Awards: National Honor Society, 1932; Phi Beta Kappa, 1936; Pi Mu Epsilon, 1936; Psi Chi, 1936; Sigma Pi Sigma, 1937; Listed in “Who's Who in Engineering.”


Fellow Award “For his many contributions in the field of solid-state and semiconductor devices”; Harry Diamond Award, 1973, “For identification of new bulk semiconductor effects at millimeter-waves, with applications to the fields of imaging and surveillance”; Guest Editor, Special Issue on Millimeter Waves, IEEE Transactions on Microwave Theory and Techniques, 1983. Other Awards: Decoration for Exceptional Civilian Service, Dept. of the Army, 1969; U.S. Army Re-


Fellow Award "For contributions to and leadership in the development of lightwave communication systems."


Fellow Award "For contributions to the field of industrial instrumentation and control."


Fellow Award "For contributions to dynamic programming and singular optimal control." Other Awards: South African Cable Maker's Association Award, 1965; Jaycees Four Outstanding Young South Africans Award, 1974; Registered Professional Engineer and Registered Natural Scientist in South Africa; Fellow, South African Institute of Electrical Engineers (SAIEE), 1982; Formerly Post Doctoral Fellow, Assistant Professor, Associate Professor at Harvard University, Cambridge, Massachusetts; Deputy President, Council for Scientific & Industrial Research, Pretoria, South Africa.


Fellow Award "For contributions to coding and signal processing for digital magnetic recording." Other Awards: ISS/Sperry Univac Outstanding Contributor's Award, 1978; Registered Professional Engineer, Pennsylvania, 1954; 20 U.S. Patents.


Fellow Award "For contributions to the development and deployment of electronic operator assistance telecommunication switches systems."


Fellow Award "For contributions to the science of space telecommunications"; IEEE Award in International Communication, 1967. Other Awards: Exceptional Service Award, NASA, 1964; Arthur S. Flemming Award for Scientific and Technical Achievement, 1965; Fellow, American Astronautical Society; Member, International Astronautical Federation; Eta Kappa Nu; Tau Beta Pi; Lloyd V. Berkner Space Utilization Award, AAS, 1967; NASA Medal for Outstanding Leadership, 1972; NASA Distinguished Service Medal, 1977; Aerospace Communications Award, American Institute of Aeronautics and Astronautics, 1978; President's Commission on Accident at Three Mile Island, Exceptional Service Award, 1979.


Fellow Award "For contributions to microwave antenna research and earth-satellite communications"; Annual Paper Award, IEEE, 1971. Other Awards: Alumni Award of Merit, Northwestern University, 1962.


Other Awards: Charles A. Coffin Award, General Electric, 1931; Citation, Office of Price Stabilization, U.S. Government, 1952; Citation, National Electrical Manufacturers Association; Chairman, Lamme Gold Medal Committee; Chairman, ASA C57 Committee; Member, IEEE Standards Committee; Member, Transformer Standards Committee.


Fellow Award "For contributions and leadership in the development of television systems and color television cameras." Other Awards: British IRE Marconi Award, 1961; British IRE Rediffusion Premium (Shared), 1962; Electronic Engineering Premium, Television Society, 1962; IERE Rediffusion Premium
SCHURP, JEROME, Fellow 1970. Born: September 13, 1925, New York, N.Y. Degrees: B.S., 1946, M.S., 1948, New York University. Fellow Award “For contributions to the theory of stability of linear systems.” Other Awards: Sigma Xi, Member, New York Academy of Sciences; Associate Editor, Columbia University Press; Member, American Society of Mechanical Engineers; Member, Institute of Electrical and Electronics Engineers.

JAMES, JACK N., Fellow 1970. Born: November 22, 1920, Tex. Degrees: B.S.E.E., 1942, Southern Methodist University; M.S.E.E., 1948, Union College, Albany. Fellow Award “For leadership in directing space flight projects.” Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics; Sigma Tau; Sigma Xi; Member, Caltech Management Club; Louis W. Hill Space Transportation Award (with corecipient), 1962; Astronautics Engineer Award, National Rocket Club, 1963; Public Service Award, NASA, 1963; Medal for Exceptional Scientific Achievement, Presented at White House, 1965; Distinguished Engineering Alumnus, Southern Methodist University, 1966; Stuart Ballantine Medal (with co-recipient), Franklin Institute, 1967.


Fellow Award “For contributions to engineering education.” Other Awards: Distinguished Service Certificate, National Council of State Boards of Engineering Examiners.


Fellow Award “For contributions to the development of extra high voltage power systems”; IEEE William M. Habirshaw Award, 1971, “For leadership in the creation of the world’s first 400 KV extra-high voltage transmission system, including the application of series capacitors at that voltage.” Other Awards: Gold Medal, Royal Swedish Academy of Engineering Sciences, 1954; Member, Royal Swedish Academy of Engineering Sciences, 1956; Gold Medal, Swedish Standards Association, 1967; Foreign Associate, National Academy of Engineering, 1977; President, CIGRE, 1972-1978.


Fellow Award “For contributions in power systems analysis, long-distance transmission, and high-voltage corona research.”


Fellow Award “For contributions to adaptive quantization and digital speech communication”; Browder J. Thompson Award, IEEE, 1975.


Fellow Award “For contributions to the theory of information transmission”; Prize Paper Award, Information Theory Group, 1969-70. “For his outstanding contribution to information theory research as author of paper entitled ‘Tree Encoding of Memoryless Time-Discrete Sources with a Fidelity Criterion.’”


Fellow Award “For contributions to the design and construction of high and extra high voltage transmission systems.” Other Awards: Distinguished Service Award, Charlotte Engineers Club, 1976; Decorated by Yugoslavia with Order of the Yugoslav Flag With Gold Wreathe, 1977, for, “Promoting the name and work of Nikola Tesla”.


Fellow Award “For contributions to the development of microwave devices.”


Fellow Award “For contributions to the development of electronic storage tubes and special electron devices.” Other Awards: Naval Reserve Medal, 1951; Armed Forces Reserve Medal, 1961; Patent Award, Westinghouse Electric, 1965, 1976, 1982; Profes-
ional Member, Maryland Academy of Sciences, 1966; Special Corporate Patent Award, Westinghouse Electric, 1972; Fellow, Washington Academy of Science, 1976; Captain, U.S.N.R., 1960; Member, Maryland State Board of Registration for Professional Engineers, 1979-1984.


Fellow Award “For contributions to microwave tubes and ultrahigh vacuum.”


Fellow Award “For leadership in microelectronics research, development, and education.”


Fellow Award “For leadership and personal contributions in the development and evaluation of television systems.” Other Awards: Fellow, Institution of Electrical Engineers, U.K., 1945; Fellow, Royal Television Society, 1945; Fellow, British Kinematograph, Sound and Television Society, 1954.


Fellow Award “For accomplishments in the design and invention of electric measuring instruments, especially as applied to the aircraft field.”


Fellow Award “For contributions to the economic analysis of power distribution”; Second Paper Prize, Power Division, 1952. For “Evaluation of capacity differences in the economic comparison of alternative facilities.” Other Awards: Sigma Xi; McCarter Medal, 1940.


Fellow Award “For contributions to telephone switching”; Achievement Award of the Communications Society, 1972, “In recognition of his inventiveness and leadership in the field of telephone switching”; Achievement Award, IEEE Communications Society, 1972; Alexander Graham Bell Medal, 1976, “For the conception and development of Electronic Switching Systems and their effective introduction into a nation-wide telephone system” (with W. Keister and R.W. Ketchledge). Other Awards: Sigma Xi, 1940; Outstanding Patent Award (coreipient), New Jersey Research and Development Council, 1972; Stuart Ballantine Medal, Franklin Institute, 1981; National Academy of Engineering, 1981; 2nd Centenary Award, International Telecommunication Union, 1983.


Fellow Award “For the introduction of electronic switching into telephone systems and for contributions to digital switching.”


Fellow Award “For leadership and contributions to international research and standardization of high-voltage equipment and systems.” Other Awards: Best Contribution, Elektroteknisk Tidsskrift, 1955.


Other Awards: Tau Beta Pi; Raven Society, University of Virginia.


Fellow Award “For contributions to the field of control systems technology, numerically controlled machine tool systems, and automation.” Other Awards: Outstanding Young Engineer Award, Engineering Society of Detroit, 1955; Outstanding Young Alumnus Award, Georgia Institute of Technology, 1961; Outstanding Michigan Inventor Award, Michigan Patent Law Association, 1963.


Fellow Award “For contributions to gaseous electronics”; Editor’s Award, IRE, 1953. Other Awards: Eta
Kappa Nu.


Fellow Award "For contributions in inertial sensors and avionic systems." Other Awards: Charles A. Coffin Award, 1946, Charles Proteus Steinmetz Award, 1973, General Electric Co.


Fellow Award "For contributions to voltage-tuned microwave oscillators." Other Awards; Member, National Academy of Engineering, 1973; Cofounder, Watkins-Johnson Company, 1957.


Fellow Award "For leadership and contributions in the field of electric power system protection"; William M. Habirshaw Award, 1966, "For his contribution to the reliability and economy of electric power transmission, particularly as affected by insulation requirements, and to the understanding of surge voltage phenomena"; First Paper Prize, Power Division, 1956, for "Switching Surges and Arrester Performance on High-Voltage Stations"; First Paper Prize, Pittsfield Section, 1960, for "Project EHV-Insulation Design"; Prize Paper Award, Surge Protective Devices Committee, IEEE Power Engineering Society, 1979; Distinguished Service Award, IEEE, 1980. Other Awards: Graduate Fellow, Polytechnic Institute of New York, 1937-1939; Eta Kappa Nu, 1938; Tau Beta Phi, 1938; "Who's Who in the East," 1959; Sigma Xi, 1962; Registered Professional Engineer, New York, 1967; Steinmetz Award, General Electric Co., 1975; "Who's Who in Engineering," 1977; Outstanding Alumnus Award, Polytechnic Institute of New York, 1980; Member, National Academy of Engineering, 1980; Distinguished Alumnus Award, Polytechnic Institute of New York (Brooklyn), 1983.


Fellow Award "In recognition of his leadership in the design and manufacture of radio broadcast receivers."


Fellow Award "For contribution to engineering education." Other Awards: Honor Award, University of Missouri, 1966.


Fellow Award "For contributions to the development of electrical insulation, for high voltage generators"; Second Paper Prize, 1963, for "Insulation Failure Mechanisms on Large Rotating Machines."


Fellow Award "For contributions to phased-array radar theory and its applications."

JOHNSON, PAUL L., AIEE Fellow 1943.


Fellow Award "For contributions to and leadership in antenna measurements and rapid-scan microwave antennas." Other Awards: Sigma Xi Research Award, Georgia Institute of Technology Chapter, 1974.


Fellow Award "For leadership and management of pioneering technical projects in computerized banking, and system architecture"; Outstanding Contribution to Electronics, IRE Annual Award, Phoenix Section, 1962. Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Outstanding Young Electrical Engineer (Honorary Mention), Eta Kappa Nu, 1961; Fellow, Engineering Society.
of Detroit, 1980.


AIEE Fellow Award "For contributions as author, teacher and research worker in the field of electrical engineering"; IRE Fellow Award "For contributions to electrical engineering education"; Best Initial Paper Prize, AIEE, 1939. Other Awards: Western Electric Fund Award for Excellence in Engineering Education, American Society for Engineering Education, 1967.


JOLLY, ROBERT M., AIEE Fellow 1962. Degrees: B.S., 1932, University of Texas.

Fellow Award "For contributions to the design of regulation and control equipment and to the operation of a utility system."


Fellow Award "For contributions in the analysis and development of radio frequency circuit components and radiating structures." Other Awards: Sigma Xi, 1927; Presidential Certificate of Merit, 1946; Associate Fellow, American Institute of Aeronautics and Astronautics, 1946.


Fellow Award "For technical leadership and for pioneering contributions to compound semiconductor material and processing technology."

JONES, RICHARD W., Fellow 1965. Born: May 9, 1904, St. Paul, Minn. Degrees: B.S., 1926, University of Minnesota; M.S., 1941, Northwestern University.

Fellow Award "For contributions in the fields of physiological control systems and biomedical engineering education."


Fellow Award "For leadership in the application of electronics to the automobile"; Edison Lecture Medal, Cleveland Section, IEEE, 1983. Other Awards: Silver Medal, Electrical Contractors Association, U.K., 1950; IEE Hooper: Memorial Prize, 1951; SAE Arch T. Colwell Merit Award, 1974, 1975; Fellow, IEE, 1974; SAE Vin-


Fellow Award “For educational leadership in the field of solid-state device research.” Other Awards: Nato Senior Scientist Award, 1976; U.A. and Helen Whitaker Professor of Electronics and Electrical Engineering, 1972-1980; Member of the Board, Pennsylvania Science and Engineering Foundation 1981-.


Fellow Award “For his work in radio direction-finding and antenna development”; Education Medal, IEEE, 1968, “For leadership in bringing new technological developments into electrical engineering education, and in creating an integration of research with education in a major department”; Honorary Life Member, Administrative Committee, IEEE Antennas and Propagation Society. Other Awards: Centennial Award, Ohio State University, 1970; Eminent Member,Eta Kappa Nu.


Fellow Award “For his contributions in the application of electronics to musical instruments.” Other Awards: Engineer of the Year Award, Technical and Scientific Society of America, 1960.


Fellow Award “For contributions to military satellite systems communications.” Other Awards: Fulbright Scholar, 1956.


Fellow Award “For contributions to man-machine communication through work in natural language processing by computer and mathematical theory of languages”; “Distinguished Visitor,” IEEE Computer Group, 1970-1971. Other Awards: Guggenheim Fel-


Fellow Award “For the development of power engineering educational programs and the application of engineering principles to power systems and industrial developments in the Caribbean region.” Other Awards: Chaconia Medal of Trinity, Government of Trinidad & Tobago; Fellow, Association of Professional Engineers.


Fellow Award “For his teaching and comprehensive research contributions in Sampled-data Systems, and writing of authoritative books.” Other Awards: Scholar Award, Israel Institute of Technology; Higgins Fellow, Columbia University; National Science Senior Postdoctoral Fellow, Washington, D.C.; Honorary Member, Sigma Xi, 1976-1977; Senior Fulbright-Hays Fellow; Centennial Medal, American Society of Mechanical Engineers; Dr.Sc.Tecn.(honoris causa), Swiss Federal Institute of Technology, Zurich, Switzerland.


Awards: Citation, IRE, Professional Group on Broadcasting and Television Receivers, 1959. “In recognition of his outstanding contribution to the group’s progress and as an expression of our high esteem”; Director, IRE, 1939, 1948. Other Awards: U.S. Navy Commendation, World War II, 1947; Award, Radio and Television Manufacturers Association, 1957; Fellow, American Association for the Advancement of Science, 1959; Theta Tau; Tau Beta Pi; Chairman, Panel 6 NTSC (black & white)(color); Licensed Engineer, Calif., Conn., N.Y.; Chairman NTSC, Chairman, Television Committee IRE; Fellow, Amer. Inst. for the Advancement of Science; Hall of Fame, University of Utah.

Fellow Award “For contributions to the statistical theory of detection and estimation.”


Fellow Award “For contributions to audio, electroacoustics, and signal processing.” Other Awards: Moorhead-Patterson Highest Merit Award, 1977.


Fellow Award “For contributions to power cables.”


Fellow Award “For technical administrative achievements in the application of engineering principles to the fields of biology and medicine.” Other Awards: Charter Member, Biomedical Engineering Society; Founding Member, Neuroelectric Society; Member, International Federation for Medical and Biological Engineering; Member, American Medical Association; Member, Aerospace Medical Association; Member, Biophysical Society; Member, Association for the Advancement of Medical Instrumentation; Alliance for Engineering in Medicine and Biology; International Institute for Medical and Biological Engineering.


Fellow Award “For contributions to single sideband transmitting and receiving systems.” Other Awards: Armstrong Medal, Radio Club of America, 1980; Member, Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For original work in packet switching mobile radio telecommunications technology.”


Fellow Award “For significant original contributions to microwave networks theory and measurement”; Certificate of Achievement for Outstanding Contribution, IEEE, TRANSACTIONS on Antennas and Propagation, 1970, for “Theory of Mutual Coupling Among Minimum-Scattering Antennas.” Other Awards: Member, American Association for the Advancement of Science; Member, Optical Society of America; Member, Commissions B and C, International Scientific Radio Union; Sigma Xi; Eta Kappa Nu; Tau Beta Pi; Member, The Philosophical Society of Washington; Member, The Society of Photo-Optical Instrumentation Engineers; NATO Senior Fellow in Science, 1973; U.S. Navy Research Publication Award, 1976.


Fellow Award “For contributions to systems engineering and engineering education”; Distinguished Member, IEEE Control Systems Society, 1983. Other Awards: John A. Curtis Lecture Award, Computers in Education Division, American Society for Engineering Education, 1975; Fellow, American Association for the Advancement of Science, 1980; Case Centennial Scholar, 1980.


Fellow Award “For his contributions to semiconductor electronics, especially in the development of insulated-gate field-effect transistors and the high-speed Schottky barrier diodes.” Other Awards: Stuart Ballantine Medal, Franklin Institute, 1975.


Fellow Award “For contribution to the development of traveling wave tubes.”


Fellow Award “For contributions to advanced communication systems.”


Fellow Award “For development of traveling-wave tubes and for leadership in development of semiconductor memories for computers.” Other Awards: Award, Japan Society for Promotion of Machine Industry, 1969; Special Award, from the President of Toshiba Corp., 1970.

KALB, JOHN W., AIEE Fellow 1959. Born: June 16, 1918, Columbus, Ohio. Degrees: B.S., 1940, Swarthmore College.

Fellow Award “For contributions to lightning protection of electric power systems, particularly the development of the magnetic gap arrester”; First Paper Prize, AIEE, Power Division, 1962; Power Group Award, 1968; Prize Paper, Power Engineering Society, 1971. Other Awards: Member, National Academy of Engineering, 1980.


Fellow Award “For pioneering contributions in real-time information-processing applications, and for sustained service to the profession in this field”; Certificate of Appreciation, Communication Technology Group, 1968, “For services rendered in furthering the objectives of the IEEE.” Other Awards: Fellow, American Association for the Advancement of Science.


Fellow Award “For contributions to the design and production of commercial data processing systems.” Other Awards: Fellow, Institute for Advancement of Engineering, 1973.


Fellow Award “For contributions to instrumentation design and production.”


Fellow Award “For leadership in establishing postgraduate teaching and research facilities, and research contributions in microwave and quantum electronics.” Other Awards: Fellow, Institution of Engineers, India; Fellow, Academy of Sciences, India.


Fellow Award “For contributions to the science and application of electro-optic materials”; IEEE Quantum Electronics Award, 1983. Other Awards: Fellow, American Physical Society, 1975; Fellow, Optical Society of America, 1976; Distinguished Technical Staff Award, Bell Lab, 1982.


Fellow Award “For contributions to the theory of statistical pattern classification.” Other Awards: Fellow, American Association for the Advancement of Science, 1972.


Fellow Award “For his important contributions to the development of antennas and navigation systems”; Achievement Award, Group on Communication Technology, 1965, “For his leadership in the planning and engineering of vital, large-scale communication systems and for promoting and managing the organization
of important research and development teams in the field of systems engineering for global networks; IEEE Award in International Communication in Honor of Herrnand and Sosthenes Behn, 1980; Chairman, IEEE Telecommunication Policy Committee; Chairman, Editorial Board, Reference Data for Radio Engineers. Other Awards: Tau Beta Pi, 1933; Honorable Mention Award, Outstanding Young Electrical Engineer, Eta Kappa Nu, 1943; Professor Dikran Babakjian Science Award, Armenian Students Association, 1962.


Fellow Award "For contributions to and leadership in digital communication systems." Other Awards: Inada Memorial Prize, Institute of Electronics and Communication Engineers, Japan, 1962; Best Paper Award, Institute of Electronics and Communication Engineers, Japan, 1967; Kajji Memorial Prize, Electrical Communication Association, Japan, 1979.


Fellow Award "For contributions and leadership in the development of precise capacitance standards and research in precision electrical measurements." Other Awards: Prize of Progress, The Institute of Electrical Engineers of Japan, 1960.


Fellow Award "For contributions to the art of high voltage power transmissions." Other Awards: Eminent Member, Eta Kappa Nu, 1973.


Fellow Award "For his services as an educator, engineer, and administrator in the fields of radio and cable communication in India." Other Awards: Fellow, Institution of Telecommunication Engineers, 1964; Institution of Electrical Engineers, U.K., 1967.


Fellow Award "For contributions to the practical use of optical waveguides for communications"; Morris Liebmann Award, IEEE, 1978. Other Awards: Morey Award, American Ceramic Society, 1976; Stewart Ballantine Medal, Franklin Institute, 1977; Rank Prize, 1978; L.M. Ericsson Prize Award, 1979; Gold Medal, Armed Forces Communications and Electronics Association, 1980; Achievement Award, Chinese Engineers and Scientists Association of Southern California, 1981; U.S.-Asia Institute 1983 Achievement Technology Award.


Fellow Award "For contributions to the theory and development of shadow-mask color TV picture tubes"; Vladimir Z. Zwiorkin Award, 1978. Other Awards: IR-100 Award, 1970; Eugene McDonald Award, Zenith Radio Corporation, 1970; Electrochemical Society, Society for Information Display, Society of Motion Picture and Television Engineers.

KAPPEL, FREDERICK R., AIEE Fellow 1950. Born: January 14, 1902, Albert Lea, Minn. Degrees: B.S.E., 1924, University of Minnesota; LL.D.(Hon.), 1958, Lehigh University; LL.D.(Hon.), 1959, Knox College; D.C.L.(Hon.), 1959, Union College; LL.D.(Hon.), 1960, Ohio Wesleyan University; D.Eng.(Hon.), 1961, Rensselaer Polytechnic Institute; LL.D.(Hon.), 1962, Columbia University; LL.D.(Hon.), 1962, Williams College; LL.D.(Hon.), 1963, University of New Hampshire; LL.D.(Hon.), 1963, Michigan State University; LL.D.(Hon.), 1965, Pace College; D.Eng.(Hon.), 1966, University of Minnesota; LL.D.(Hon.), 1966, Butler University; LL.D.(Hon.), 1967, Colgate University; LL.D.(Hon.), 1967, Yale University.

Other Awards: Outstanding Achievement Award, University of Minnesota, 1954; Business Leaders Citation, FORBES Fifty Foremost, 1957; Gold Medal, Economic Club of New York, 1959; Annual Achievement Award, Deafness Research Foundation, 1961; Cross of the Commander of the Postal Award, Republic of France, 1962; Distinguished Life Member, American Society for Metals, 1962; Citation, SATURDAY REVIEW, 1962; Silver Quill Award, National Business Publications, 1963; President Medal of Freedom, 1964; Award of Merit, Institute of Consulting Engineers, 1964; Gold Medal Award, National Institute of Social Sciences, 1964; John Fritz Medal, 1965; Man in Management Award, Pace College, 1966; Michael I. Pupin Medal, Columbia University, 1966; Business Leadership Award, University of Michigan, 1966; Equal Opportunity Medal, National Urban League, 1966; Distinguished Public Service Award, Tax Foundation, 1967; Chair endowed at University of Minnesota, 1967; Henry L. Gantt Memorial Gold Medal, American Management Association and American Society of Mechanical Engineers, 1970; Herbert Hoover Medal, 1972; Captain of Industry Award, WALL STREET JOURNAL, 1973; Eta Kappa Nu; Phi Sigma Phi; Tau Beta Pi; Beta Gamma Sigma.

KAPRIELIAN, ELMER F., Fellow 1979. Born: January 12, 1922, Fresno, Calif. Degrees: B.E.(Electrical Engi-
neering), 1942, University of Southern California.

Fellow Award “For leadership and management of power-system operations”; IEEE Centennial Medal, 1984. Other Awards: Eminent Engineer Award, Tau Beta Pi, 1977.


Fellow Award “For advancement in the art of high-voltage dc transmission.”


Fellow Award “For contributions to engineering education and the achievement of effective college-industry cooperation in research”; IEEE Centennial Medal, 1984. Other Awards: Alfred Noble Robinson Award, 1948; Distinguished Professor of Electrical Engineering, 1961; Hillman Award, Lehigh University, 1962, 1981; Distinguished Engineer Award, Professional Engineers Society, Outstanding Teaching Award, 1968; Faculty Award for Outstanding Service, 1975.


Fellow Award “For contributions to the understanding and application of digital techniques in telecommunications.”


Fellow Award “For contributions to the advancement of optical communication theory and the development of the Blue-Green optical satellite communication system for submarine communications.” Other Awards: Scientist of the Year, Naval Ocean Systems Center, 1976; Tau Beta Pi; Sigma Xi; Eta Kappa Nu.


Fellow Award “For contributions to the theory and application of analog and hybrid computers and to engineering education.” Other Awards: Senior Scientific Simulation Award, Society for Computer Simulation, 1972; Silver Core Award, International Federation of Information Processing Societies, 1980.


Fellow Award “For contributions to planning and directing programs for utility expansion.” Other Awards: Award, Seattle World’s Fair, 1962; Award, Washington State Research Council, 1970; Award, Northwest Kidney Center, 1971; Member, Tau Beta Pi; Sigma Xi.


Fellow Award “For contributions to the theory of error-correcting codes, automata theory, and formal languages, and to engineering education.”


Fellow Award “For contributions to pattern recognition, and to the optimization of finite state systems.” Other Awards: Best Research Paper Award, National Electronic Conference, 1966.


Fellow Award “For contributions to and leadership in the design of digital switching systems for customer premises business communications systems.”


Fellow Award “For contributions and research leadership in radar reflection from the sea and from the atmosphere.”


Fellow Award: "For contributions to simulation and computer-aided design." Other Awards: Joseph and Sadie Riesman Professorship of Electrical Engineering, Technion- Israel Institute of Technology, 1978.


Fellow Award: "For contributions in design and operation of electric utility systems in Brazil."


Fellow Award: "For contributions to microwave electronics, and to education"; Annual Achievement Award, Phoenix Section, 1968, "For outstanding contributions to electrical engineering." Other Awards: Fulbright Senior Research Fellow, 1964-65, 1973-74; Alumni Award for Distinguished Career in Electronics, Electro-Physics Laboratory, University of Illinois, 1976; Sigma Xi; Eta Kappa Nu; Tau Beta Pi; Pi Mu Epsilon.


Fellow Award: "For contributions to improved insulation and design of large transformers"; Member Emeritus, IEEE Power Engineering Society Transformers Committee.


Fellow Award: "For contributions to the fields of switching networks and error-correcting codes, and to engineering education."


Fellow Award: "For developments in microwave communications and in satellite communications earth stations"; Leonard G. Abraham Prize Paper Award, IEEE, 1977. Other Awards: Achievement Award, Institute of Electronics and Communication Engineers of Japan (IECE), 1979; Technical Paper Prize, IECE of Japan, 1959; Purple Ribbon Medal, His Majesty the Emperor of Japan, 1971; Minister of Posts and Telecommunication Award, Minister of Posts and Telecommunication, 1979; Director-General Prize, Science and Technology Agency of Japan, 1965; Asahi News Paper's Prize of Invention, Japanese Association of Invention, 1965.


Fellow Award: "For contributions to the design of avionic systems for spacecraft and aircraft." Other Awards: Fellow, National Science Foundation, 1957-1960; Outstanding Young Men of America, 1965; Tau Beta Pi; Sigma Xi; Gano Dunn Medal, 1975; Cooper Union Citation, 1979.


Fellow Award: "For contributions to the field of storage and display tubes." Other Awards: Silver Medal, American RoentgenRay Society, 1957; Coolidge Award, General Electric, 1958.


Fellow Award: "For contributions to automatic control systems and engineering education"; First Paper Prize, AIEE 1960; Distinguished Member Award, IEEE Control Systems Society, 1983; IEEE Centennial Medal, 1984. Other Awards: Distinguished Alumnus Award, University of Cincinnati, 1981.

KEAR, FRANK G., IRE Fellow 1953. Born: October 18, 1903, Minersville, Pa. Degrees: E.E., 1926, Lehigh...
University; S.M., 1926, Sc.D., 1933, Massachusetts Institute of Technology.

Fellow Award “In recognition of his contributions in the fields of radio aids to air navigation and radio and television broadcasting.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1945.


Fellow Award “For contributions to the development of electronic reconnaissance systems and to student activities.”


Fellow Award “For leadership and contributions to communications satellite technology.” Other Awards: David Sarnoff Award, 1976.


Fellow Award “For contributions to spacecraft electromagnetics compatibility.”


Fellow Award “For contributions in the field of television transmitters and military electronic equipment.” Other Awards: Eta Kappa Nu, 1934; Tau Beta Pi, 1934; Navy E, U.S. Dept. of Navy, 1944; Certificate of Commendation, U.S. Dept. of Navy, 1947; Apollo Achievement Award, NASA, 1969; Public Service Award, NASA, 1969.


Fellow Award “For fundamental contributions to switching theory”; Alexander Graham Bell Medal, 1976, “For the conception and development of Electronic Switching Systems and their effective introduction into a nation-wide telephone system” (with A.E. Joel, Jr. and R.W. Ketchledge); Ben S. Gilmer Award, Auburn University School of Engineering, 1976.


Fellow Award “For contributions to electronic instrumentation.” Other Awards: Distinguished Civilian Service Award, U.S. Dept. of Navy, 1945.


Fellow Award “For his extensive contributions over many years in television for both civilian and military use”; Vladimir K. Zworykin Award, 1966, “For his extensive and significant contributions, papers, and inventions which have been fundamental in the development of both black-and-white and color television.” Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940; Certificate of Commendation, U.S. Dept. of Navy, 1946; Stuart Ballantine Medal, Franklin Institute, 1948; David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1954; David Sarnoff Outstanding Achievement Award, Radio Corporation of America, 1962; Certificate of Appreciation, National Association of Broadcasters, 1976. Sigma Xi, 1939; Certificate of Commendation, Bureau of Ships for Outstanding Service During WWII, 1947; College of Engineering Alumni Honor Award, 1974; Distinguished Alumnus Award, The Electrical Engineering Alumni Association, University of Illinois, 1973; N.Y. Academy of Science Recognition, 1979.


Fellow Award “For contributions to international radio regulations.” Other Awards: Department of Army Decoration for Meritorious Civilian Service, 1960; NASA Exceptional Service Medal, 1969.

KELLER, ARTHUR C., IRE Fellow 1961. Born: August 18, 1901, New York, N.Y. Degrees: B.S., 1923, Cooper Union; M.S., 1925, Yale University; E.E., 1926, Cooper Union; Columbia University, 1926-1930.


Fellow Award “For contributions to military and space guidance and control systems, and for leadership in space electronics research and technology.” Other Awards: Fellow, American Institute of Aeronautics and Astronautics; Armed Forces Communications and Electronics Association; Exceptional Service Medal, NASA, 1967.

Fellow Award “For contributions to the electrical utility industry with special emphasis on reliability of service and protection of the environment”; Chairman, Central Illinois Section, IEEE. Other Awards: President, Electrical Engineering Alumni Association, University of Illinois, 1969-1971; Distinguished Alumnus Award, Electrical Engineering Dept., University of Illinois, 1973; College of Engineering Award for Distinguished Service in Engineering, University of Illinois, 1974; Alex Van Praag, Jr. Distinguished Engineering Service Award, Central Illinois Chapter of Illinois Society of Professional Engineers, 1983; Member, Eta Kappa Nu; National Society of Professional Engineers; Illinois Society of Professional Engineers;


Fellow Award “For contribution to the development and design of numerical control for machine tools.”


Fellow Award “For his contributions to antenna theory and design and to the profession guiding youth and furthering equal opportunities.”


Fellow Award “For contributions in the fields of radio wave propagation and ionospheric physics.” Other Awards: Pi Mu Epsilon, 1944; Sigma Pi Sigma, 1944; Sigma Xi, 1949.


Fellow Award “For contributions to computer-aided design of semiconductor devices and to the quantitative design tools for devices and processes.”


Fellow Award “For contributions to the analysis of fading and dispersive communications channels and to the field of optical communication through the atmosphere.”


Fellow Award “For contributions to transistor circuitry and to micro-electronics.” Other Awards: Distinguished Colleague Award, Aerospace Industries Association, 1974; Grant, Visiting Professor, Cairo University; U.S. National Science Foundation, 1976; Professional Engineer in the State of New York, 1953; Member, N.Y. Academy of Science, 1978; The Explorers, 1982; The Circumnavigators, 1981.


Fellow Award “For distinction as a teacher of electrical engineering and as an author of textbooks in this field”; Award, IEEE, Kansas City Section, 1964, “For outstanding service and contributions toward the advancement of science and technology.” Other Awards: Tau Beta Pi; Phi Kappa Phi; Eta Kappa Nu.


Fellow Award “For contributions to the design, construction and administration of a large complex communication network.”


Fellow Award “For contributions to the theory and practical realization of active RC circuits.”


Fellow Award “For contributions to electromagnetic compatibility and interference measurement techniques”; Laurence G. Cumming Award, IEEE EMCS, 1981.


Fellow Award “For his inventions and leadership in electronic telephone switching”; Alexander Graham
Bell Medal, 1976, “For the conception and development of Electronic Switching Systems and their effective introduction into a nation-wide telephone system” (with A.E. Joel, Jr. and W. Keister). Other Awards: Member, National Academy of Engineering, 1970.


Fellow Award “In recognition of his contributions to the development of airborne radar equipment for the armed services during World War II.” Other Awards: Presidential Medal of Merit, 1946; Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1959; Award of Merit, Eta Kappa Nu; Sigma Xi; Tau Beta Pi.


Fellow Award “For contributions to the theory of modern radar and leadership in the development of military electronic systems.”


Fellow Award “For contributions to electrical system planning and engineering.”


Fellow Award “For contributions to the establishment of large scale hydro plants and associated power transmission.” Other Awards: Distinguished Service Award, U.S. Dept. of Interior, 1966.


Fellow Award “For contributions to amorphous semiconductor research and semiconductor devices.”


Fellow Award “For contributions to the field of integrated circuits through basic concepts, inventions and development”; Outstanding Electrical Engineer Award, Dallas Section, 1965; David Sarnoff Award, 1966; Cledo Brunetti Award, 1979; IEEE Consumer Electronics Award, 1980. Other Awards: Daedalian Minuteeman Electronics Award, 1965; Stuart Ballantine Medal, Franklin Institute, 1966; National Academy of Engineering, 1967; National Medal of Science, 1969; Alumni Achievement Award, University of Illinois, 1975; Zworykin Medal, National Academy of Engineering, 1975; Holley Award, ASME, 1982; National Inventors Hall of Fame, 1982.


Fellow Award “For pioneering work in high frequency electron tubes and for leadership in the field of military electronic devices.“

Awards: Lamme Medal, AIEE, 1960, "For meritorious achievement in the design of electrical machinery; for analysis of synchronous machine reactances; for invention of special armature windings, and for inventions and designs related to large adjustable speed ac motors." Other Awards: Order of Merit, Westinghouse Electric, 1952; Member, National Academy of Engineering.


Fellow Award "For contributions to investigation, planning and design of hydroelectric systems."


Fellow Award "For contributions to design of high voltage bus and switching apparatus"; Paper Prize, AIEE, 1951, for "Induced Currents in High Capacity Bus Enclosures." Other Awards: Member, U.S. Delegation to International Electrotechnical Congress, Stockholm, Sweden, 1958.


Fellow Award "In recognition of his contributions and leadership in applying electronic techniques to a wide variety of industrial uses"; IRE, Kansas City Section, 1960, "For outstanding service and contributions toward the advancement of science and technology." Other Awards: Mr. Kansas City, Greater Kansas City Chamber of Commerce, 1973; Chancellor's Medal, University of Missouri at Kansas City, 1976; Annual Trustees' Citation, Midwest Research Institute, 1975; Life Trustee, Menninger Foundation, 1976; Life Trustee, Committee for Economic Development, 1977; Chairman, Advisory Committee, Office of Technology Assessment, U.S. Congress, 1980; Greater KC Hall of Fame, 1982.


Fellow Award "For leadership in the advancement of reliability technology." Other Awards: Honorary Member of Faculty, Defense Weapons Systems Management Center, Wright-Patterson Air Force Base, Dayton, Ohio.


Fellow Award "For contributions to the development of surge-proof transformers, field researches of abnormal voltages of power circuits, and computer analysis of power network problems." Other Awards: Seventh Electric Power Prize, Institute of Electrical Engineers of Japan, 1958.


Fellow Award "For contributions to research in circuit and system theory and to engineering education." Other Awards: IBM Fellowship, 1952-53.


Fellow Award "For development of high-voltage measurement and test methods." Other Awards: Honorary Professor, Technische Universitat Braunschweig; Verband deutscher Elektrotechniker (VDE); Comite International des Poids et Mesures; International Electrotechnical Commission Technical Committee 42.


Fellow Award "For contributions to microwave technology and electronic countermeasures"; President-Elect, IEEE, 1985.


Fellow Award "For his many contributions to the theory of radiating systems." Other Awards: Guggenheim Fellow, 1937, 1958; Fellow, American Academy of Arts and Sciences, 1947; Corresponding Member, Bavarian Academy of Science, 1962; Distinguished Service Award, University of Wisconsin, 1973.

KING, SING-YUI, Fellow 1981. Born: September 25, 1919. Degrees: B.Sc. (Eng.) (with first class Honors), 1940, University of Hong Kong; Ph.D., 1947, Universi-
Fellow Award “For contributions to studies of electric fields and thermal environments near bundled conductors in power systems and to electrical engineering education.” Other Awards: Hon. Fellow Hong Kong Institution of Engineers, 1982.


Fellow Award “For contributions to the application of high speed protective relay systems and automatic controls to large power systems.”


Fellow Award “For contributions to the teaching of electrical engineering and to the theory of electrical machinery.”


Fellow Award “For contributions to solid state devices, particularly the solid state maser.” Other Awards: Fellow, American Physical Society, 1958; Fellow, Optical Society of America, 1980.


Fellow Award “For contributions to the design of electron guns and to high frequency behavior of gaseous plasmas.” Other Awards: American Physical Society; Guggenheim Fellow, University College, London, England, 1967, 1968; Fellow, American Institute of Physics, 1967; Member, National Academy of Engineering, 1976; Fellow, American Association for the Advancement of Science, 1982.


Fellow Award “For leadership in telecommunications research, and for contributions to radio propagation.” Other Awards: Gold Medals, U.S. Department of Commerce, 1955, 1967; Fellow, Radio Club of America, 1978; IEEE Communications Society, Don McLellan Meritorious Service Award, 1979; IEEE Award in International Communications in Honor of Hernand and Sosthenes Behn, 1981; Outstanding Achievement Award, University of Minnesota, 1983.


Fellow Award “For advances in the economic operation of large electric power systems”; IEEE Centennial Medal, 1984. Other Awards: Honorable Mention: Outstanding Young Electrical Engineer in the U.S.A., Eta Kappa Nu, 1954. Engineer of the Year Award, Schenectady Professional Engineering Society, 1966; Tau Beta Pi; Pi Mu Epsilon; Eta Kappa Nu; Sigma Xi; Fellow, American Society of Mechanical Engineers, 1969; Distinguished Service Citation, University of Wisconsin, 1972; National Academy of Engineering, 1979; ASME Centennial Medal, 1980.


Fellow Awards: “For contributions to the field of very-high-voltage electric energy transmission.” Other Awards: Member, Societe Francaise des Electriciens (S.F.E.); Member, Association Francaise de Cybernetique Economique et Technique (AF CET); Permanent Member, CIGRE.


Fellow Award “For developments in monopulse radar antennas and leadership in engineering.”


Fellow Award “For contributions in the development and application of analog computers, helical transmission-line theory, and to control of reactors and radio telescopes.” Other Awards: Member, Instrument Society of America.


Fellow Award “For contributions to the fields of oil-filled capacitors and high-voltage cables.” Other Awards: Prize for Extraordinary Achievement, Society of Electrical Engineering, 1974.

Fellow Award "For contributions to electronic exchange systems and digital computer technology."
Other Awards: Award, Minister of Postal Services, Japan, 1976; Award, Institute of Electronics and Communications Engineers of Japan, 1977.


Fellow Award "For keeping the technical community accurately informed of significant new avionics developments and business trends."


Fellow Award "For contributions in computer-communication networks, queueing theory, time-shared computer systems, and engineering education"; Leonard G. Abraham Prize Paper Award, IEEE Communications Society, 1959. Other Awards: Guggenheim Fellow, 1971-72; Lanchester Prize Paper Award, 1976; Prize Paper Award, ICC, 1978; Member, National Academy of Engineering, 1980; L.M. Ericsson Award, co-recipient, 1982; Townsend Harris Medal, 1982.


Fellow Award "For contributions to electrical reproduction of sound." Other Awards: Tau Beta Pi, 1934; Sigma Xi, 1934; Fellow, Audio Engineering Society, 1957; Distinguished Alumnus Award, N. Mex. State U., 1966; Silver Medal, Audio Engineering Society, 1978; Eta Kappa Nu, 1981.


Fellow Award "For contributions to lumped element microwave circulators." Other Awards: NATO Scholar, 1964.


Fellow Award "For contributions to increasing reliability and effectiveness in electronic and electromechanical systems; Annual Reliability Group Award, 1975." "For significant technical and management contributions to the reliability and maintainability of electronic equipment through extensive and continuing activity in the development and application of new techniques - as both an individual leader and team contributor"; President, Reliability Group, 1973-74; IEEE Centennial Medal, 1984.


Fellow Award "For contributions to the field of electronic generation and the reproduction of music." Other Awards: Tau Beta Pi, 1925; Sigma Xi, 1957; Distin-
guished Engineering Alumnus Award, University of Cincinnati, 1974.


KNOX, JAMES B., IRE Fellow 1951. Born: November 10, 1910, Winnipeg, Manitoba, Canada.

Fellow Award “For contributions to the development and design of radio transmitters and communication systems, and radio aids to air navigation in Canada.”


Fellow Award “For contributions to the development of extra-high-voltage transmission systems and equipment and to engineering education.”

KO, HSIEH C., Fellow 1971. Born: April 28, 1928, Taiwan, Formosa. Degrees: B.S., 1951, National Taiwan University; M.S., 1953, Ph.D., 1955, Ohio State University.

Fellow Award “For contributions to radio astronomy and radio astronomical measurements.” Other Awards: Distinguished Teaching Award, Eta Kappa Nu, Ohio State University, 1975; Charles E. MacQuigg Award, Ohio State University, 1977.


Fellow Award “For leadership and contributions in the field of microelectronics for biomedical instrumentation.” Other Awards: Best Technical Paper Award, CEC, 1970; Achievement Award, Chinese Engineer in America, 1978; Visiting Professor, Katholic University of Leuven, Leuven, Belguim, 1983.


KOBAYASHI, KOJI, Fellow 1968. Born: February 17, 1907, Yamanashi Prefecture, Japan. Degrees: B.S., 1929, Dr.Eng., 1939, Tokyo Imperial University; LL.D.(Hon.), 1968, Monmouth College; Dr.Eng.(Hon.), 1971, Polytechnical Institute of New York; Dr.(Hon.), 1980, Autonomic University of Guadalajara, Mexico.

Fellow Award “For contributions to multichannel carrier techniques and to leadership in the growth of the electronics industry”; Frederik Philips Award, IEEE, 1976. Other Awards: Distinguished Service Award, Institute of Electrical Communication of Japan, 1957; Purple Ribbon Medal, 1957; Meritorious Services Award for Export Promotion, Prime Minister of Japan, 1964; Blue Ribbon Medal, 1964; Mainichi Press' Prize for Development of Industrial Technology, 1965; Golden Plate Award, American Academy of Achievement, 1966; Grand Cross of the Peruvian Government, 1970; Medal of Honor from the Paraguayan Government, 1971; Jordan Star with Order of the Third Class from His Majesty The King of Jordan, 1972; The First Class Order of the Sacred Treasure from His Majesty the Emperor of Japan, 1978; “Orden Nacional del Merito” en el grado de Comendador, the Government of the Republic of Paraguay, 1978; The Order of Merit of the First Grade, the Government of the Arab Republic of Egypt, 1979; The National Order of the Southern Cross in the Grade of Commander, the Government of the Federative Republic of Brazil, 1979; Commander (Third Class) of the Most Exalted Order of the White Elephant from His Majesty the King of the Kingdom of Thailand, 1981; “Chevalier du Merite de Madagascar” from President of the Malagasy Democratic Republic, 1981.


Fellow Award “For application of electronic techniques to defense systems.” Other Awards: Fellow, American Association for the Advancement of Science,


Fellow Award "For his creative inventions and developments in radio and television circuitry." Other Awards: Modern Pioneer Award, National Association of Manufacturers; Tau Beta Pi.


Fellow Award "For contributions to the understanding of amplification and noise in electron-drift tubes and leadership in engineering education." Other Awards: VDE-Ehrennring des Verbandes Deutscher Elektrotechniker, 1972; Schrodinger-Preis der Oesterreichischen Akademie der Wissenschaften, 1976; Sibcrine Ehrennadel des Verbandes Deutscher Elektrotechniker, 1979.


Fellow Award "For contributions to the application of relay protection in power systems."


Fellow Award "For his original contributions to the understanding of spark, arc, plasma, and dielectric phenomena."


Fellow Award "For contributions to the understanding of the structure and coupling of modes in optical beams and resonators." Other Awards: Fellow, Optical Society of America, 1972; National Academy of Engineering.


Fellow Award "For contributions to closed-circuit television." Other Awards: Achievement Award, Institute of Television Engineers of Japan, 1978.


Fellow Award "For his research on methods of constructing vacuum tubes individually and in mass production." Other Awards: Fellow, American Ceramic Society, 1967.


Fellow Award "For leadership, planning, control technology, and management of efficient and reliable power systems." Other Awards: Gold Medal and Cash Award for Best Paper in Power System, Institution of Engineers, India, 1964, 1972; Gold Medal for Best Paper on Power System, Central Board of Irrigation and Power, 1970; Fellow, Institution of Engineers, India; Fellow, Institution of Electrical Engineers, U.K.; Fellow, Computer Society of India; Associate Member, Sigma Xi, MIT Chapter.


Fellow Award "For development of traffic theory in communication and the nationwide dialing system in Japan." Other Awards: Mainichi Industry Award, Mainichi Press, 1963; Advancement Award, IEEJ, 1963; Distinguished Achievement Award, IECEJ, 1969; Medal of Honor with Purple Ribbon, Japanese Government, 1971.


Fellow Award "For contributions to sensitivity analysis and singular perturbation theory."


Fellow Award "For innovations in technical and economic development of a major electric utility and for pioneering the computerized accounting of nuclear fuel"; Charles LeGeyt Fortescue Fellow of AIEE, 1949. Other Awards: Member: Eta Kappa Nu, Tau Beta Pi, Sigma Xi.


Fellow Award "For contributions to microwave component technology of particular significance to satellite
broadcasting.” Other Awards: Institute of Television Engineering, Japan, 1974; Institute of Electronics and Communication Engineers, Japan, 1975; Minister, Post Office Ministry, Japan, 1978; Ministry, Patent Bureau, Japan, 1977; Minister of State, Science and Technology, 1979; Medal with Purple Ribbon, Emperor, Japan, 1982.

KOOPMAN, RICHARD J. W., AIEE Fellow 1953. Born: June 24, 1905, St. Louis, Mo. Degrees: B.S., 1928, University of Missouri; M.S., 1933, Yale University; Ph.D., 1942, University of Missouri.

Fellow Award “For contributions to the theory and practice of servomechanisms and telemetering as well as his diversity of interest in the several fields of electrical engineering, through which he has become a well-rounded and inspiring teacher and educational administrator”; First Paper Prize, AIEE, 1937; Award of Honor, St. Louis Section IEEE, 1982. Other Awards: Tau Beta Pi; Sigma Xi; Eta Kappa Nu; First Samuel C. Sachs Professor of Electrical Engineering, 1972; Honorary Member, Engineers’ Club of St. Louis, 1972; Distinguished Service Award, St. Louis Electrical Board of Trade, 1973; Faculty Award, Alumni Association, Washington University, 1973.


Fellow Award “For contributions to the solution of problems of electromagnetic warfare.”


Fellow Award “For contributions in the field of radar fire control and missile guidance.” Other Awards: Sigma Xi, 1937; Charles A. Coffin Fellowship, General Electric, 1937; Award of Merit, RCA Victor, 1951.


Fellow Award “For contributions to the development of crossbar switching technology”; IEEE, Columbus (Ohio) Technical Council Award, “Technical Man of the Year,” 1970.


Fellow Award “For technical contributions to the field of computer simulation and to electrical engineering education.” Other Awards: Senior Prize for Advanced Simulation, 1968; Humboldt Foundation Prize, 1976.


Fellow Award “For contributions to the understanding and applications of acoustooptic interactions.”


Fellow Award “For contributions to the theory of traveling-wave tubes and klystrons leading to increased efficiencies”; Technology Advancement Award, IEEE/DoD, 1977; Associate Editor, IEEE Transactions on Electron Devices, 1983. Other Awards: Exceptional Scientific Achievement Award, NASA, 1974; NASA Major Inventor Award, 1980.


Fellow Award “For contributions to solid-state logic, memory, and imaging.” Other Awards: David Sarnoff Fellowship, 1958-1959; Achievement Award, RCA Laboratories, 1959, 1963, 1979; Honor Roll Award, NJIT Alumni Association, 1960; Fellow, Technical Staff, RCA Laboratories, 1979; David Sarnoff Award, RCA, 1981.

KOTELNIKOV, V.A., Fellow 1964.

Fellow Award “For contributions to the theory and practice of radio communications and radar astronomy.”


Fellow Award “For contributions to the geometrical theory of diffraction of electromagnetic waves.” Other Awards: Member, URSI Commission B; Sigma Xi; Eta Kappa Nu; Sigma Pi Sigma.


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Fellow Award “For contributions in the field of technical literature, particularly in the interpretation of highly technical material into simple understandable language.” Other Awards: Certificate of Appreciation for Outstanding Service to the Power Industry and the American Power Conference, Illinois Institute of Technology, 1975; Special Award for Services to the American Power Conference, American Nuclear Society, 1975.


Fellow Award “For contributions to radio and wire telephony”; Communications Switching Committee, 1969-1983; Chairman, AIEE Radio Committee, 1960; Philadelphia Section Award, AIEE, 1969. Other Awards: Fellow, Radio Club of America, 1978; Phi Kappa Phi; Eta Kappa Nu; Tau Beta Pi.


Fellow Award “For his leadership in antenna development, and his research contributions in radio astronomy”; IEEE Centennial Medal, 1984. Other Awards: Sullivant Medal, 1970; National Academy of Engineering, 1972; Outstanding Achievement Award, Univ. of Michigan, 1981.


Fellow Award “For contributions to electric machine theory and hybrid computer simulation of power system components.” Other Awards: Edward and Rosa Uhlig Foundation Award for Excellence in Teaching, University of Wisconsin, Milwaukee, 1964; Eta Kappa Nu Teaching Award, Purdue University, 1975.


Fellow Award “For pioneering in and extending the techniques of electrical engineering to the study of a wide range of human behavior-manual control dynamics, power production, vision and bioelectric potentials such as brain waves.” Other Awards: Louis E. Levy Gold Medal (corecipient), Franklin Institute; 1959; NATO Lecturer, 1968, 1971; Member, Philadelphia Mayor's Science and Technology Advisory Council.


Fellow Award “For contributions to the development of semiconductor devices”; IEEE Centennial Medal, 1984. Other Awards: David Sarnoff Award for Outstanding Technical Achievement, RCA, 1973; Bernard Revel Award, Yeshiva University Outstanding Alumni, 1981.


Fellow Award “For contributions to the design, control and literature of electric power apparatus”; Best District Paper Prize, AIEE, 1946. Other Awards: Outstanding Engineering Performance Award, Westinghouse Electric Corp., 1968.


Fellow Award “For contributions to the understanding of video signal transmission, and for leadership in the development of data communications systems.”


Fellow Award “For contributions in applying electronics to sound motion pictures, satellite meteorology, lunar exploration, and communications.” Other Awards: Life Fellow, Society of Motion Picture and Television Engineers.


Fellow Award “For contributions to electrical engineering education.”


Fellow Award “For contributions to plasma technology and pulsed power.” Other Awards: Spencer A. Wells Award, 1972; NATO Senior Fellowship in Science, 1975; P.W. Horn Professorship, 1977; Japan Society for Promotion of Science Fellowship, 1978; Distinguished Faculty Research Award, 1980; Fellow, American Physical Society, 1982.
Fellow Award "For the invention of the drift transistor and other semiconductor devices"; J.J. Ebers Award, 1973, "For outstanding technical contributions to electron devices including conception of the drift transistor, of wide-gap emitters, and of the double-hetero junction laser, and for contributions to the understanding of the Gunn effect"; GaAs Symposium Award, 1982. Other Awards: Fellow, American Physical Society, 1973.


KRONMILLER, CHARLES W., AIEE Fellow 1962. Born: September 14, 1903, Fort Wayne, IN. Degrees: B.S.E.E., 1927, Purdue University.
Fellow Award "For contributions to the art of lighting including the development of ballasts for fluorescent lamps." Other Awards: Eta Kappa Nu, 1926; Charles A. Coffin Award, General Electric, 1946; Citizen-Engineer Award, Fort Wayne Area, 1962; Numeron Awards, ARRL.

Fellow Award "For contributions to defense electronics." Other Awards: Distinguished Citizen Service Award, U.S. Dept. of Navy, 1956; Distinguished Citizen Service Award, U.S. Dept. of Defense, 1957.

Fellow Award "For contributions to signal processing antennas." Other Awards: Fellow, United States Steel, 1957-59; Lord Brabazon Award, Institution of Electronics and Radar Engineers, 1967, 1976; R. W. Thompson Award for Meritorious Achievement, Ohio State University, 1969; Commendation, Ohio House of Representatives, 1977.

KU, WEI SHING, Fellow 1982. Born: July 13, 1923, Wusih, Kiangsu, China. Degrees: B.S.E.E., 1944, Tatung University, Shanghai, China; M.S.(Eng.), 1948, Cornell University.
Fellow Award "For technical leadership in the application of advanced planning concepts to the development of high-voltage networks."

IRE Fellow Award "For contributions to nonlinear circuit analysis"; IEEE, Lamme Medal Award, 1972. Other Awards: Professional Accomplishment Award, Chinese Institute of Engineers, 1959; Gold Medal, Ministry of Education, Republic of China, 1960; Professional Accomplishment Award, Chinese Engineers and Scientists Association of Southern California, 1969; Gold Medal, Chinese Institute of Electrical Engineers, 1972; Fellow, Institution of Electrical Engineers, London; Fellow, Academia Sinica; Personal Member of General Assembly, International Union of Theoretical and Applied Mechanics (IUTAM); Gold Medal, Pro Mundi Beneficio, Brazilian Academy of Humanities, 1975; Honorary Member, United Poets Laureate International, 1977; American Society for Engineering Education; Sigma Xi; Eta Kappa Nu; Phi Tau Phi; U.S. National Committee of Theoretical and Applied Mechanics.

Fellow Award "For leadership in the communications and electronics industries of Japan and contributions to the development of mercury rectifiers." Other Awards: Medal of Honor with Purple Ribbon from Prime Minister of Japan, 1973; Third Class Order of the Rising Sun, Emperor of Japan, 1980.

Fellow Award "For contributions to the theory of antennas in plasmas." Other Awards: Teaching Excellence Award, University of Southern California Associates, 1964; Faculty Service Award, Archimedes Circle, University of Southern California, 1970; Outstanding Electrical Engineering Faculty Member Award, Eta Kappa Nu, 1977; Halliburton Award for Exceptional Service, University of Southern California, 1980.

Fellow Award "For contributions to the reliability of military and space electronic systems, and leadership in related professional activities." Other Awards: National Reliability Award.

Fellow Award "For contributions to active and passive circuit theory and engineering education"; Guillemin-Cauer Award, Circuits and Systems Society, 1973; IEEE Education Medal, 1981. Other Awards: Senior Postdoctoral Fellow, National Science Foundation, 1962-1963; Award, National Electronics Conference, 1966; Distinguished Alumni Award, University of Mich-
igan, 1970; Member, National Academy of Engineering, 1975; Member, Academia Sinica, 1975; Alexander von Humboldt Senior Scientist Award, 1977; Honorary Professor, Shanghai Jiao-tong University, 1979; Lamme Award, ASEE, 1981; Fellow, AAAS, 1981.


Fellow Award "For creative contributions to the teaching of electrical apparatus design."


Fellow Award "For technical leadership and contributions to solid-state device technology and its application in telecommunications systems."


Fellow Award "For contributions to the study of wave propagation in electromagnetics, optics, and acoustics." Other Awards: Special Award for outstanding contributions, Laser Society of Japan; Member, Laser Society of Japan; Member, Institute of Electronics and Communication Engineers, Japan; Member, Institute of Electrical Engineers, Japan; President, Microwave Theory and Techniques Society, Institute of Electronics and Communication Engineers, Japan, 1979-1981.


Fellow Award "For contributions to adaptive array antenna systems." Other Awards: Phi Beta Kappa; Tau Beta Pi; Eta Kappa Nu; Sigma Xi; Alpha Mu Gamma.


Fellow Award "For contributions to the field of solid-state generation and modulation of millimeter-wave signals."


Fellow Award "For contributions to the advancement of global communications systems." Other Awards: Tau Beta Pi; Sigma Xi; Eta Kappa Nu; Phi Kappa Phi; Armed Forces Communication and Electronics Association; Distinguished Alumnus, College of Engineering, University of Michigan, 1970.


Fellow Award "For contributions to computer-aided design and engineering education."


Fellow Award "For contributions to the application of analysis and computer-aided design to communication circuits and systems"; Darlington Award, IEEE Circuits and Systems Society, 1975.


Fellow Award "For his contributions to nucleonic instrumentation and health physics."


Fellow Award "For contributions to microwave solid-state circuits, oscillators, and devices." Other Awards: Okabe Memorial Prize, IEE of Japan, 1956; Progress Award, Institute of Electrical Engineers of Japan, 1959; Certificate of Appreciation, ISSCC, 1965; Certificate of Outstanding Contributor, ICCD, 1983.


Fellow Award "For contributions to the practical use of active filters and leadership in the application of digital signal processing to telecommunications systems"; Darlington Prize Paper Award (coreipient), IEEE Circuits and Systems Society, 1977; President, IEEE Circuits and Systems Society, 1980; IEEE Centennial Medal, 1984. Other Awards: Best Paper Award, NTG (German Communications Society), 1964.


Fellow Award "For contributions to power system operating practices and safety standards."


Fellow Award "For contributions to stochastic control theory."


Fellow Award "For contributions to education in pow-
er electronics and to the application of solid-state power devices to industry”; William E. Newell Power Electronics Award, IEEE, 1980.


Fellow Award “For leadership in the development and application of advanced devices and protection systems for motor control.” Other Awards: Gould Scientific Achievement Award, 1979; Professional Engineer, Pa, Md, La.


Fellow Award “For contributions to the theory of control systems and for educational leadership.”


Fellow Award “For contributions to the development of components for electric power distribution.”

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Other Awards: Order of the Rising Sun, 1922; Presidential Certificate of Merit, 1947; Medal of Honor, Electronic Industries Association, 1959; Tau Beta Phi.


Fellow Award “For contributions in electronics measurement by the design of phase and delay distortion instrumentation and by furthering the development of microwave signal sources and their application in electronic instruments.” Other Awards: Phi Kappa Phi, 1942; Sigma Xi, 1947; Sperry Fellow, 1948; Listed in American Men and Women of Science and Who’s Who in America.


Fellow Award “For his research contributions to microwave tubes and high-current density cathodes”; Lamme Medal, 1979. Other Awards: Naval Ordnance Development Award; Distinguished Alumnus Citation, University of Michigan, 1953; IR-100 Award (Triggered Vacuum Gap), 1968; National Academy of Engineering, 1981.


Fellow Award “For contributions to loss measurements of reactive components.” Other Awards: Fellow, Radio Club of America, 1957.


Fellow Award “For contributions to the theory and application of tropospheric radio wave propagation”; Scott Helt Award, IRE, Professional Group on Broadcasting, 1959, “For the most outstanding paper presented or published in the field of broadcast engineering.”


Fellow Award “For contributions in communications and weapon systems design.” Other Awards: Prize Essayist, Edison Lighting Institute, 1927; Certificate of Appreciation, Office of Scientific Research and Development, 1945.


Fellow Award “For contributions to filter design and microcircuit implementation”; President, IEEE Circuits and Systems Society, 1983; IEEE Centennial Medal, 1984. Other Awards: Eta Kappa Nu; Sigma Xi.


Fellow Award “For contributions to engineering of a state-wide communication system.”


Fellow Award “For his technical contributions to amateur radio activities, and for direction of radio and electronic circuitry development.” Other Awards: Fellow, Radio Club of America, 1958; Technical Merit


**LAMM, A. UNO,** AIEE Fellow 1962. Born: May 22, 1904, Gothenburg, Sweden. Degrees: M.S., 1927, Dr.Tech., 1943, Royal Institute of Technology, Stockholm; Dr.(Hon.), 1965, University of Technology, Copenhagen.

Fellow Award “For contributions to the development of high-voltage dc transmission and mercury-arc valves”; Lamme Medal, 1965, “For outstanding achievement in developing the high-power high-voltage mercury arc valve and a unique system of control and protection for its application as rectifier and inverter in high-voltage dc power transmission”; Uno Lamm High Voltage DC Award, IEEE Power Engineering Society, established 1981. Other Awards: Gold Medal, Royal Swedish Association of Engineers and Architects, 1940; Arnberg Award, Royal Swedish Academy of Science, 1947; John Ericsson Medal, American Society of Swedish Engineers, 1962; Medal, Swedish Society of Inventors, 1961; Honorary Fellow, Manchester University, England, 1962; Order of Merit, Société pour la Recherche et l’Invention, Paris, France, 1965; Member, Royal Academy of Science, Sweden; Member, Royal Academy of Engineering Sciences, Sweden; Member, Royal Society of Science, Uppsala; Foreign Associate, National Academy of Engineering, 1976; Member, National Academy of Engineering, 1979; Howard N. Potts Award, Franklin Institute, 1981.


Fellow Award “For contribution to the development of missile guidance systems and leadership in missile program management”; Leadership Citation, IRE, 1960; Leadership Citation, IRE, Los Angeles Section, 1962; Certificate of Appreciation, WESCON, 1966; Certificate of Appreciation, Los Angeles Council, 1967. “For his farsighted and distinguished leadership in technical and management responsibilities”; Citation, “For services rendered in furthering the objectives of the IEEE, Vice Chairman Region 6, 1981-82”; Director, Region 6, IEEE, 1983-84; IEEE Centennial Medal, 1984. Other Awards: Diploma, U.S. War Manpower Commission, 1943; Certificate of Appreciation, Office of Scientific Research and Development, 1945; Naval Ordnance Development Award, 1945; Presidential Certificate of Merit, 1948; Meritorious Service Award, U.S. Dept. of Commerce, 1949; Bronze Medallion, American Ordnance Association, 1969; Engineer of the Year, San Fernando Valley Engineers Council, 1970; All Ahead Bendix Award, Bendix Corporation, Electrodynamics Division, 1972; Founding Director, Electronic Conventions, Inc., 1973-1981; Founding Director & President, Missile Technology Historical Association, 1980-1981.


Fellow Award “For contributions to noise theory and absolute capacitance measurement.” Other Awards: Heaviside Premium, Institution of Electrical Engineers, U.K., 1957; Albert F. Sperry Award, Instrument Society of America, 1965; Fellow, Australian Academy of Science; Honorary Fellow, Faculty of Anaesthetists of the Royal Australasian College of Surgeons.


Awards: Citation, IEEE Student Section, Southeastern Region III, 1977. Other Awards: Sigma Xi, 1931; Citation, North Carolina Society of Engineers, 1954; Fellow, American Association for the Advancement of Science, 1958; Congressional Citation, 1958; Citation, Phi Kappa Phi, 1960; Citation, U.S. Dept. of Army, 1960; Distinguished Alumni Award, The Johns Hopkins University, 1963; Citation, Virginia Society of Professional Engineers, 1965; Citation, American Society for Engineering Education, 1966; Distinguished Alumni Award, Baltimore Polytechnic Institute, 1976.


Fellow Award “For contributions in understanding of injected currents in insulators and semiconductors.” Other Awards: Fellow, APS; Fellow, American Association for the Advancement of Science.


Fellow Award “For contributions to transmission design.” Other Awards: Meritorious Service Silver Medal, U.S. Dept. of Interior, 1960.

**LAND, CECIL E.,** Fellow 1974. Born: January 8, 1926, Lebanon, Mo. Degrees: B.S., 1949, Oklahoma State University; D.Sc.(Hon.), 1978, Oklahoma Christian
Fellow Award "For contributions in ferroelectric materials and devices"; IEEE Centennial Medal, 1984. Other Awards: Engineer of the Year, Albuquerque Chapter, New Mexico Society of Professional Engineers, 1973; Frances Rice Darne Memorial Award, Society for Information Display, 1976; Distinguished Scientist Award, New Mexico Academy of Science, 1976; Fellow Award, Society for Information Display, 1980; Fellow Award, American Ceramic Society, 1981; Japan Society for the Promotion of Science Fellow, 1983; Distinguished Member, Technical Staff Award, Sandia National Laboratories, 1983.


Fellow Award "For theoretical contributions to solid-state physics and technology and for technical management of research." Other Awards: National Academy of Engineering, 1978.


Fellow Award "For leadership in the application of remote sensing to enhance knowledge of the earth's resources." Other Awards: Medal for Exceptional Scientific Achievement, NASA, 1973; Certificate of Recognition and Cash Award, NASA, 1976.


Fellow Award "For the development of static excitation systems for large electric generators." Other Awards: Eta Kappa Nu; Tau Beta Pi; Phi Eta Sigma; Phi Kappa Phi.


Fellow Award "For contributions in engineering acoustics, noise control, digital processing of acoustic signals, and in establishing acoustical standards"; Achievement Award, IEEE Group on Audio and Electroacoustics, 1970, "For contributions to audio technology as documented in the publications of the IEEE." Other Awards: Fellow, Acoustical Society of America, 1967; Fellow, Audio Engineering Society, 1969; National Academy of Engineering, 1978; Fellow, American Association for the Advancement of Science, 1982; P.E., New York State.


Fellow Award "For contributions to the field of electrostatic propulsion."


Fellow Award "For contributions to the technology of power system protection." Other Awards: Kappa Kappa Psi, 1926; Eta Kappa Nu, 1927; Silver Medal, U.S. Dept. of Interior, 1965.


Fellow Award "For contributions in the field of electron optics, traveling-wave tubes, and particle acceleration." Other Awards: Medaille Blondel, 1958; Prix Petit d'Ormoy de l'Academie des Sciences, 1975.


Fellow Award "For contributions to the development of electroacoustic signal processing devices."

Colorado State University; M.S.E., 1953, Ph.D., 1956, University of Illinois; M.S.(Business Administration), 1967, George Washington University.

Fellow Award “For leadership in research and development of military electronics systems.” Other Awards: Distinguished Service Medal; Silver Star; Legion of Merit with Oak Leaf Cluster; Distinguished Flying Cross; Meritorious Service Medal; Air Medal with Eleven Oak Leaf Clusters; Air Force Commendation Medal; Vietnamese Cross of Gallantry with Gold Star; Fellow, American Association for the Advancement of Science; Sigma Xi; Eta Kappa Nu; Sigma Tau; Pi Mu Epsilon; Kappa Mu Epsilon; Registered Professional Engineer; Brigadier General, USAF (Retired).


Fellow Award “For contributions to real-time digital processing techniques applied to the spectrum analysis of radar”; IEEE Centennial Medal, 1984. Other Awards: Sigma Xi, 1974.


Fellow Award “For contributions to the applications and social implications of computer systems”; IEEE Centennial Medal, 1984. Other Awards: Eta Kappa Nu; Tau Beta Pi; Sigma Xi.


Other Awards: Citation of Honor, Purdue University, 1957; Award, National Electrical Manufacturers Association, 1965; Award, National Fire Protection Association, 1966.


Fellow Award “For contributions to the technology of monolithic and hybrid integrated circuits.” Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Army, 1959.


Other Awards: Charles A. Coffin Award, General Electric Co., 1938; Member: National Society of Professional Engineers, New York Society of Professional Engineers; Phi Kappa Phi.


Fellow Award “For contributions to ocean acoustic surveillance systems.”


Fellow Award “For contributions in the field of millimeteric measurements, and for leadership of microwave research and development facilities.” Other Awards: Member, Women's Engineering Society; Fellow, Institute of Electrical Engineers (U.K.); Fellow, Institute of Physics; Honorary Fellow, UMIST.


LAW, HAROLD B., IRE Fellow 1952. Born: September 7, 1911, Douds, Iowa. Degrees: B.S., 1934, Kent State University; M.S., 1936, Ph.D., 1941, Ohio State University.

Fellow Award “For his development of techniques and structural methods leading to practical storage-


Fellow Award “For contributions in the field of power transmission and distribution”; Paper Prize, 1946. Other Awards: Order of the Yugoslav Flag with Gold Wreath, presented by the President of Yugoslavia in New York City, 1977.


Fellow Award “For contributions to very high-speed computing systems.” Other Awards: Most Original Paper Award, 1980 International Conference on Parallel Processing; Editor, Communications of the ACM (1982); General Chairman, Fourth International Conference on Distributed Computing Systems (1984); Excellence in Teaching, University of Illinois, 1975-1979, 1982-1983;Eta Kappa Nu; Tau Beta Pi; Sigma Xi.


Fellow Award “For contributions to the electromagnetic measurements of the aurora and of the radar characteristics of nuclear explosions.” Other Awards: Member, RESA (Scientific Research Society of America); Member, American Association for the Advancement of Science; Member, American Geophysical Union; Sigma Xi; Board Member, AVUS (Association for Unmanned Vehicle Systems).


Fellow Award “For leadership in planning and development of power systems.”


Fellow Award “For his contributions to research and development of microwave electron tubes.”


Fellow Award “For leadership in the development of electronic data processing and communications.” Other Awards: Outstanding Engineering Alumnus Award, Ohio State University, 1960; Distinguished Service Award, Ohio State University, 1975; Distinguished Engineering Alumnus Award, Ohio State University, 1983.


Fellow Award “For contributions and leadership in the development and design of low-noise amplifiers”; Outstanding Engineering Manager Award, Long Island Section, IEEE, 1979. Other Awards: Tau Beta Pi; Phi Beta Kappa; Sigma Xi.


Fellow Award “For contributions to the field of low voltage electrical protection”; Outstanding Young Electrical Engineer Award, AIEE, St. Louis Section, 1947; Paper Prize, AIEE, St. Louis Section, 1952, 1958.


Fellow Award “For contributions to satellite communications technology.” Other Awards: Fellow, American Physical Society, 1957; Meritorious Executive, Senior Executive Service, 1980.


Fellow Award “For contributions to flat panel dis-


Fellow Award "For contribution to switching and automata, and for leadership in the use of computers for scientific and commercial applications."


Fellow Award "For contributions to the foundations of optimal control theory and to engineering education." Other Awards: Gold Medal Award, A.S.M.E.; Fellow, Sigma Tau; Tau Beta Pi; Sigma Xi.


Fellow Award "For contributions to research, engineering, and education in the field of digital systems." Other Awards: Hertz Fellow, 1964-66.


Fellow Award "For contributions in the development of subminiature components and production techniques."


Fellow Award "For contributions to engineering development of electrical connectors and connector tools."


Fellow Award "For contributions to reliability and safety of electric industrial distribution and utilization systems and components"; Achievement Award, IEEE Industrial and Commercial Power Systems Committee of the Industry Applications Society, 1975, "For leadership, counseling and technical contributions made through his long dedication to this Committee"; Outstanding Achievement Award, IEEE Industry Applications Society, 1976; IEEE Centennial Medal, 1984.


Fellow Award "For his contributions to the design and development of inductive components." Other Awards: Order of Merit, Westinghouse Electric, 1960.


Fellow Award "For contributions to phased array antennas, geometrical theory of diffraction, and engineering education."


Fellow Award "For contributions in the field of high temperature arc plasma and in research and development of high power circuit interrupters"; President, IEEE Power Engineering Society, 1964-1965; Haraden Pratt Award, IEEE, 1983; Power Life Award, IEEE. Other Awards: Member, National Academy of Engineering; Philip Spurn Professor of Energy Processing, Massachusetts Institute of Technology.

LEE, TIEN PEI, Fellow 1984. Born: September 8, 1933, Nanking, China. Degrees: B.S., 1957, National Taiwan University; M.S., 1959, Ohio State University; Ph.D., 1963, Stanford University.

Fellow Award "For contributions to semiconductor elements for lightwave communications." Other Awards: Distinguished Staff Award, Bell Laboratories 1983.


Fellow Award "For contributions to the analysis, modeling, and conceptual and practical design of mobile telephone systems."


Fellow Award "For contributions to the organization and administration of an engineering research center devoted to community betterment." Other Awards: Fellow, Acoustical Society of America; Fellow, American
Association for the Advancement of Science; American Physical Society; Sigma Xi; Tau Beta Pi.


Fellow Award “For contributions to computer control of industrial process systems.” Other Awards: NATO Post-Doctoral Fellow, 1962; American Automatic Control Council’s Control Heritage Award, 1982; Fellow, AAAS, 1982.


Fellow Award “For contributions to space electronics and telemetry”; Annual Award, IRE, Professional Group on Space Electronics and Telemetry, “For valuable contribution to the field of space electronics and telemetry.” Other Awards: Outstanding Merit Award, Mohawk Valley Engineers Executive Council, 1966; Member, National Academy of Engineering.


Fellow Award “For basic work in the field of semiconductor.” Other Awards: Fellow, American Physical Society, 1953.


Fellow Award “For contributions to overhead line materials and construction practices.”


Fellow Award “For his contributions to the fields of electronic navigation and information theory.” Other Awards: Pi Mu Epsilon, 1933; Sigma Pi Sigma; Sigma Xi; Scientific Research Society of America.


Fellow Award “For contributions to the theory of data complexity, the practice of data compression, and the algebraic analysis and synthesis of digital sequences”; Paper Award (coreipient), IEEE Information Theory Society, 1979.


Fellow Award “For advances in the concept, design and fabrication of x-ray tubes, image tubes, and electron beam welders.”


Fellow Award “For conceiving, developing, and implementing the use of sampled optical diffraction patterns for image analysis”; District First Prize, Best Paper, AIEE, 1959.


Fellow Award “For contributions to data communications”; Paper Award, 1968, “In recognition of his contribution to the technical literature as author of a paper entitled ‘Correlative Data Transmission with Coherent Recovery Using Absolute Reference’.” Other Awards: Stuart Ballantine Medal, Franklin Institute, 1983.


Fellow Award “For contributions in the field of electrical instruments and measurements”; Morris E. Leeds Award, AIEE, 1962, “For meritorious achievement in the field of electrical measurements.”


Fellow Award “For contributions to transit system electrification and engineering management.” Other Awards: Fellow, A.A.A.S., 1967.


PRESENT FELLOWS
Fellow Award "For contributions to circuit theory and engineering education"; IEEE Vice President, 1979-1980.


Fellow Award "For contributions to the theory and application of computer and control systems technology, and to the advancement of education in the field"; Baker Prize Award, 1970; Barry Carlton Honorable Mention Award, 1973. Other Awards: Guggenheim Fellow, 1962-63; Fulbright Research Scholar, 1962-63.

LEPAGE, WILBUR R., IRE Fellow 1959, AIEE Fellow 1962. Born: November 16, 1911, Kearny, N.J. Degrees: B.S., 1933, Cornell University; M.S., 1939, University of Rochester; Ph.D., 1941, Cornell University.

IRE Fellow Award "For contributions to electronic engineering education and literature"; AIEE Fellow Award "For contributions to electrical engineering education."


Fellow Award "For contributions to the advancement of transistor and integrated circuit arts"; Daniel C. Hughes, Jr., Memorial Award, ISHM; Jack A. Morton Award, IEEE, 1979. Other Awards: Member, American Society of Mechanical Engineers, 1948.


Fellow Award "For contribution to the scientific knowledge of long air-gap discharges and to the improvement of testing and measuring techniques of transient phenomena." Other Awards: Societe Francaise des Electriciens, 1963; Blondel Medal, France, 1974.


Fellow Award "For contributions to the advancement of semiconductor technology and device development." Other Awards: American Physical Society; Electrochemical Society; Sigma Xi; Eta Kappa Nu; Phi Kappa Phi; Pi Mu Epsilon.


Fellow Award "For leadership in the development of electronic devices and systems for the power industry." Other Awards: Wason Medal for Noteworthy Research, American Concrete Institute, 1950.


Fellow Award "For contributions to the standardization, design, and application of high-voltage power circuit breakers and to the understanding of transient switching of capacitor banks."


Fellow Award "For contributions to the field of luminescence as applied to electronic devices." Other Awards: Fellow, American Physical Society, 1941; Frank P. Brown Medal, Franklin Institute, 1954; Fellow, Optical Society of America, 1961; Fellow, American Association for the Advancement of Science, 1966; Member, National Academy of Engineering, 1970.


Fellow Award "For leadership in the development of military space systems, and for contributions to semiconductor technology."


Other Awards: Initial Chairman, Computer Application Subcommittee and PICA; Chairman, Power System Engineering Committee; Eta Kappa Nu; Tau Beta Pi; Prize Paper, "Lightning Protection in Extra-High-Voltage Stations."


Fellow Award "For contributions to missile guidance." Other Awards: American Rocket Society; San Fernando Valley, Engineer of the Year Award, Engineering Council, 1968; Institute for the Advancement of Engineering Fellow; "Who's Who in America"; "Who's Who in Finance and Industry"; Distinguished Service Award, ITT; 50 patents.


Fellow Award “For contributions to the applications of real time data processing systems”; IEEE Centennial Medal, 1984. Other Awards: Fellow, American Association for the Advancement of Science, 1968.


Fellow Award “For his contributions to and development of electronic control, welding circuits and electric equipment for aircraft.” Other Awards: 22 technical papers.


Fellow Award “For contributions to the theory and design of transmission line networks.”


Fellow Award “For contributions to radar signal processing.” Other Awards: Navy Distinguished civilian Service Award; Six Best Papers of the Year Awards, Radar Division of NRL; 180 Patent Awards.


Fellow Award “For contributions to the modeling of neurological processes and the understanding of neurological transducers.” Other Awards: Fellow, Neurosciences Research Program, 1966; Distinguished Teaching Citation, University of California, 1972.


Fellow Award “For contributions to the planning and design of a large hydro-electric power generation and transmission system.” Other Awards: Meritorious Service Award, Dept. of Interior, 1969; Privileged Member, Montana Society of Engineers, 1972.


Fellow Award “For contributions to sampled data control systems, optimal control, and digital and hybrid simulation.”


Fellow Award “For contributions to design and construction of large electrical plants and installations.”


Fellow Award “For contributions to switching theory, compiler design, and computer science and for leadership in professional activities.”


Fellow Award “For his contributions to research, particularly in the fields of microwave filters and switching systems.” Other Awards: Member, National Academy of Engineering (Council 1972-1978).


Fellow Award “For contributions to high power radio broadcasting.” Other Awards: Public Service Certificate, American Radio Relay League, 1937; Honorable Mention,Eta Kappa Nu Recognition, 1942; Naval Ordinance Development Award, 1946.


Other Awards: Order of Merit, Westinghouse Elec-
tric, 1966.

Fellow Award “For contributions to biocybernetics.”

Fellow Award “For contributions to laser resonator theory and the application of digital computation to the analysis of lasers and microwave antennas”; W.R.G. Baker Prize Award, 1975; David Sarnoff Award, 1979.
Other Awards: Achievement Award, Chinese Institute of Engineers(U.S.), 1978; Member, National Academy of Engineering, 1980; Merit Award, Northwestern University Alumni Association, 1981; Achievement Award, Chinese American Academic and Professional Association, 1983.

Fellow Award “For contributions to the application of computers to telecommunications and to the progress of microwave links.” Other Awards: Prix General FERRIE, France, 1953; Medaille d’or de e’industrie nationale, France, 1968.


LIED, FINN, Fellow 1968.
Fellow Award “For distinguished technical leadership and contribution in ionospheric research.”


Fellow Award “For contributions to efficient coding of color and monochrome video signals”; Leonard G. Abraham Prize Paper Award, IEEE Communications Society, 1973; Donald G. Fink Prize Award (with A.N. Netravali), 1982; Board of Governors, IEEE Communications Society, 1983-1985.

LIN, HUNG C., Fellow 1969. Born: August 8, 1919, Shanghai, China. Degrees: B.S.E.E., 1941, Chiao Tung University; M.S.E., 1948, University of Michigan; D.Eng., 1956, Polytechnic Institute of Brooklyn.

Fellow Award “For contributions to computer-aided analysis and applications of graph theory to circuits and systems.”

Fellow Award “For contributions in coding theory and engineering education.”

Fellow Award “For technical leadership in the design and product development of video tape recorders and color television cameras.” Other Awards: Fellow, Society of Motion Picture and Television Engineers, 1964.

Fellow Award “For his contributions in coordinating electrical development and cultivating engineering talent”; The Haraden Pratt Award, IEEE, 1976. Other Awards: Fellow, American Society of Mechanical Engineers; Fellow, AAAS, Distinguished Alumnus Award, University of Texas, 1962; Founding Member, National Academy of Engineering.

Fellow Award “For major contributions to the advancement of the philosophy and techniques used for the protection of electrical systems and apparatus.” Other Awards: Military Commendation, 1945; Tau Beta Pi; Eta Kappa Nu; Distinguished Service Award, Power System Relaying Committee, 1983.


Fellow Award “For leadership in the development of communications systems.” Other Awards: Senior Scholar, University of Arkansas, 1958; Philip Sporn Award, 1961; Outstanding Performance Award, Mariner Mars Project, 1969; Certificate of Recognition, NASA, 1971; Outstanding and Dedicated Service Award, International Telemetering Foundation, 1972; Tau Beta Pi; Eta Kappa Nu; Pi Mu Epsilon; Sigma Pi Sigma; Sigma Xi.

LINDVALL, FREDERICK C., AIEE Fellow 1943. Born: May 29, 1903, Moline, Ill. Degrees: B.S., 1924, University of Illinois; Ph.D., 1928, California Institute of Technology; D.Sc.(Hon.), 1963, National University of Ireland; D.Eng.(Hon.), 1966, Purdue University.

Other Awards: Lamme Medal, Honorary Member, American Society for Engineering Education, 1966; National Academy of Engineering.


Fellow Award “For contributions to mobile radio communications”; Member, Board of Directors, IEEE Vehicular Technology Society; IEEE Centennial Medal, 1984. Other Awards: Fellow and President, Radio Club of America, 1968-date; Honorary Life Member, Associated Public Safety Communications Officers, 1970; DeForest Audion Award, DeForest Pioneers Association, 1971; DeForest Award, Veteran Wireless Operators Association, 1973; Sarnoff Citation, Radio Club of America, 1976; Honorary Life Member IMSA, 1980; Honorary Life Member, ENTELEC Association, 1982; Allen B. DuMont Citation, Radio Club of America, 1983; Honorary Life Member, Society of Wireless Pioneers, 1983; Member: Tau Beta Pi; Eta Kappa Nu; Pi Kappa Alpha.


Fellow Award “For contributions to network theory and transistor circuits”; IEEE Education Medal, 1976, “For leadership as a teacher, author and administrator, and for contributions in solid-state electronics and technology.” Other Awards: Member, National Academy of Engineering, 1971; Member, American Academy of Arts and Sciences, 1974; John Scott Award, City of Philadelphia, 1980; Medal of Achievement, American Electronics Association, 1983.


Fellow Award “For contributions to theory, design, and application of electrical motors, generators, and drive systems.” Other Awards: Charles A. Coffin Award, General Electric, 1946; Citation, U.S. Dept. of Navy, 1946; Engineer of Year Award, Schenectady Professional Engineers Society, 1960; Eminent Member, Tau Beta Pi, 1967; Fellow, American Society of Mechanical Engineers; President, Tau Beta Pi Association, 1974-76, National Society of Professional Engineers, 1966-67.


Fellow Award “For contributions to the application of analysis and computer-aided design to communications circuits and systems”; Special Prize Paper Award, IEEE Circuits and Systems Society 1973; Darlington Prize Paper Award, IEEE Circuits and Systems Society, 1977.


Fellow Award “For developing new technical approaches in planning generating station and major transmission line additions, also for pioneering extra high voltage interconnections between large integrated electric power systems.” Other Awards: Distinguished Alumnus, Purdue University, 1965; National Academy of Engineering, 1978.


Fellow Award “For contributions in the field of air


Fellow Award "For contributions to the fields of radio propagation and atmospheric research." Other Awards: Fellow, Royal Astronomical Society; American Meteorological Society; American Association for the Advancement of Science; Member, National Academy of Engineering.

LITTLE, D.G., IRE Fellow 1929, AIEE Fellow 1950.


Fellow Award "For contributions to discrete-time signal and system theory and engineering education."


Fellow Award "For contributions to wave propagation in the ionosphere and to engineering education"; Outstanding Achievement Award, IEEE Antennas and Propagation Group, 1968. Other Awards: National Science Council "Special Chair" as Visiting Professor at National Taiwan University, Republic of China, 1981.


Fellow Award "For contributions to distributed processing, computer networking and education in computer science." Other Awards: Engineering Research Award, Ohio State University, 1982.


Fellow Award "For contributions to the analysis of nonlinear circuits and systems."


Other Awards: Charles A. Coffin Award, General Electric, 1932; Outstanding Engineer Award, Rutgers Engineering Society, 1973.


Fellow Award "For contributions to cyclotron focusing developments." Other Awards: Fellow, American Physical Society; Fellow, American Association for the Advancement of Science.


Fellow Award "For contributions to electrical engineering standards."


Fellow Award "For contributions to the field of digital devices and circuits, and to education."


Fellow Award "For contributions to electric power systems development." Other Awards: Fellow, American Society of Civil Engineers, 1960; Rickey Medal, American Society of Civil Engineers, 1976.


Fellow Award "For contributions to and supervision of the development of new communication systems and concepts."


Fellow Award "For his many contributions to broadcast engineering and in particular for his work in the field of frequency allocations." Other Awards: Society of Motion Picture and Television Engineers.

Fellow Award “For contributions to radiation damage in semiconductors, solar cell technology, and education”; IEEE William E. Cherry Award for Outstanding Contributions to Photovoltaic Science and Technology, 1981. Other Awards: Fellow, American Association for Advancement of Science; Freeman Award, Providencia Engineering Society, 1974; Fellow, U.S.-Poland Academies of Science Exchange Program, 1974-75.


Fellow Award “For his contributions to the development of automatic equipment for the direction of military weapons.” Other Awards: Charter Member, Academy of Electrical Engineers, UMR.


Fellow Award “For contributions to advanced solid-state techniques in the field of digital computation”; Certificate of Appreciation, IRE, 1957; Computer Society Honor Roll, 1974, “For his long, dedicated service as Chairman of the IEEE Computer Society Awards Committee.” Other Awards:Eta Kappa Nu, 1944; Sigma Xi, 1946; Phi Kappa Phi, 1949; IBM Fellow, 1971; Fifth Invention Achievement Award, IBM, 1974.


Fellow Award “For contributions to transistor technology applied to television and computers.”


Fellow Award “For leadership in the application of solid-state technology to computers and the establishment of data communications and computer standards.” Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Association for the Advancement of Science, 1981; Astin-Polk medalist, American National Standards Institute, 1982.


Fellow Award “For contributions to new methods of the simulation of turbine generators, power-system dynamics, and distribution engineering.” Other Awards: Eta Kappa Nu, 1950; Prime Movers Committee Award, American Society of Mechanical Engineers, 1979; U.S. Representative SC #11, CIGRE.


Fellow Award “For contributions to radar astronomy, artificial ion cloud communication, and far infrared radiometry.”


Fellow Award “For contributions in the field of low-noise wide-band receiver technology.”


Fellow Award “For leadership in the development and application of power transformer standards”; Distinguished Service, Transformers Committee, 1979; Charlotte Section Chairman, IEEE, 1965-66; Transformers Committee, 1969; PES Awards Committee, 1983; PES Fellows Committee, 1983; numerous Working Groups.


Fellow Award “For sustained contributions to and leadership in advancing the technology of radar systems and the understanding of electromagnetic scattering.” Other Awards: ABOU Research Award, Georgia Institute of Technology, 1960, 1971.


Fellow Citation “For contributions to research and development in solid-state metallurgy.” Other Awards: Fellow, American Physical Society, 1958.


Fellow Award “For development of transistorn-
transistor-logic integrated circuits, and other contributions to semiconductor technology.” Other Awards: Member, American Physical Society; Sigma Pi Sigma; Sigma Xi.


Fellow Award “For contributions to the understanding of nonlinear effects in plasmas and related areas.” Other Awards: Fellow, American Physical Society, 1980.


Fellow Award “For contributions to the development of a rapidly expanding electric power system.” Other Awards: Citation, Bureau of Ships, U.S. Dept. of Navy, 1946.


Fellow Award “For contributions to the design and application of electronically scanned antennas.”


Other Awards: Charles A. Coffin Award, General Electric, 1933.


Fellow Award “For leadership and contributions to countermeasures technology.” Other Awards: U.S. Navy Meritorious Civilian Service Award, 1948; U.S. Navy Distinguished Civilian Service Award, 1960; Distinguished Engineering Alumni Award, Iowa State University, 1970; U.S. Navy Capt. Robert Dexter Conrad Award for Outstanding Scientific Contributions, 1973.


Fellow Award “For contributions to color television, frequency modulation, and superregeneration”; Vladimir K. Zvarykin Award, IRE, 1952, “For his outstanding contribution to the theory, the understanding, and the practice of color television”; Award, Professional Group on Broadcast and Television Receivers, 1957, “For his significant contributions in the field of color television circuitry”; Consumer Electronics Award, 1972. Other Awards: David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1955; Modern Pioneer Award, National Association of Manufacturers, 1965; National Academy of Engineering, 1967; Cooper Union Professional Achievement Citation, 1969; Gano Dunn Medal, Cooper Union, 1970; International Television Symposium Citation, 1973; Special Commendation, Society of Motion Pictures and Television Engineers, 1977.


IRE Fellow Award “For his many valuable contributions to broadcast and television engineering and his untiring efforts to advance this profession”; AIEE Fellow Award, “For technical leadership in the electronic industry with major contributions toward standardization of color television”; Morris N. Liebmann Award, IRE, 1955, “For his leadership and technical contributions in the formulation of the signal specifications for compatible color television”; President, IRE, 1956; IEEE Consumer Electronics Group, Consumer Electronics Award, 1974, “For outstanding contributions to consumer electronics.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1947; David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1953; Egleston Medal, Columbia University, 1964; Fellow, Society of Motion Picture and Television Engineers; Edwin H. Armstrong Medal, Radio Club of America, 1981.


Fellow Award “For contributions to quantum statistical properties of radiation.” Other Awards: Alexander von Humboldt U.S. Senior Scientist Award, 1979-80; Fellow, American Physical Society.

1951, University of Toronto.


Fellow Award “For contributions to utilizing alternate fuel resources and to creating an effective interconnected system”; Electrical Engineer of the Year, Dallas Section, IEEE, 1974. Other Awards: Commended by Federal Aviation Administration for emergency service following Hurricane Beulah, 1967; Citation by Secretary Rogers Morton for outstanding service during Mississippi, Louisiana, and Texas hurricanes, 1971.

LOVETT, ISRAEL H., AIEE Fellow 1950. Born: March 1, 1890, Council Bluffs, Iowa. Degrees: S.B., 1914, Massachusetts Institute of Technology; E.E., 1924, University of Missouri at Rolla; M.S.E., 1928, University of Michigan.

Awards: AIEE, Student Branch, “For dedicated service to the electrical engineering profession and engineering education.” Other Awards: Award, Missouri Society of Professional Engineers, 1961; Outstanding Service to College Youth, Missouri School of Mines and Metallurgy, 1973.


Fellow Award “For contributions in the field of automatic controls and the use of digital computers in real time control systems.” Other Awards: Chevalier of the Legion of Merite Postal, France, 1962.


Fellow Award “For courageous pioneering work in television production and transmission”; Best Paper Prize, AIEE, Branch, 1930; Other Awards: Certificate, War Dept., 1946; Certificate of Commendation, U.S. Dept. of Navy, 1947; Founder Member, Society of Television Engineers (Los Angeles), 1938, President, 1942, Past President, Academy of Television Arts and Sciences, 1949; Award, Academy of Television Arts and Sciences, 1951; Fellow, American Association for the Advancement of Science, 1958; Pacific Pioneer Broadcasters Achievement Award, 1966; Fellow, Society of Motion Picture and Television Engineers, 1967; Phi Beta Kappa; Tau Beta Pi; Eta Kappa Nu; Sigma Xi; Diamond Circle Award, Pacific Pioneer Broadcasters, 1980.


Fellow Award “For contributions toward the theoretical understanding of magnetic properties and the practical utilization of this knowledge”; Distinguished Lecturer, IEEE Magnetics Society, 1979; Awarded the first IEEE Magnetics Society Achievement Award, 1981; IEEE Centennial Medal, 1984. Other Awards: Outstanding Achievement in Industrial Science Award, American Association for the Advancement of Science, 1956; Fellow, New York Academy of Science, 1968; Fellow, American Institute of Chemists; British Science Research Council Fellowship, 1977; Collidge Fellow, General Electric Corporate Research and Development, 1978.


Fellow Award “For contributions to electronic switching systems.”


Fellow Award “For contributions to the theory of sequential switching networks and for leadership in computer science education.”


Fellow Award “For contributions to the theory and practice of data communications”; Achievement Award, IEEE Communications Society, 1975. Other Awards: Honorable Mention, Outstanding Young Electrical Engineer, Eta Kappa Nu, 1967; Distinguished Engineering Alumnus, Purdue University, 1969.


Fellow Award “For contributions in microwave VHF mobile radio and carrier relaying in the utility field.” Other Awards: Commendation, U.S. Navy Submarine Service; Commendation, Office of Scientific Research and Development - National Defense Research Council; Commendation, Columbia University, 1945.

Fellow Award “For contributions to modern control theory.” Other Awards: Honorable Mention, Outstanding Paper Award, Joint Automatic Control Conference, 1970.


Fellow Award “For pioneering contributions in planning and design of extra-high-voltage transmission systems.”

Lunas, Lawrence J., AIEEE Fellow 1957. Born: September 2, 1905, Balfour, N.D. Degrees: B.S., 1926, University of North Dakota; M.S., 1939, University of Pittsburgh; E.E., 1941, University of North Dakota.

Fellow Award “For his contributions in the field of design and development of electrical instruments”; IEEE-North Jersey Section Award, 1970. Other Awards: Sigma Xi; Sigma Tau; Tau Beta Pi.


Fellow Award “For original contributions to systems for telephone dialing, and for satellite tracking and guidance.” Other Awards: Tau Beta Pi, 1928; Phi Kappa Phi; Eta Kappa Nu; Naval Ordnance Development Award, 1945; Certificate of Appreciation, Officers and Men of the USS Northampton, 1952; French Post Office Medal for Work on Telstar Earth Station at Pleumeur Bobou, 1962.


Fellow Award “For technical achievements and leadership in relating medicine and electronics.” Other Awards: Memorial Fund Lecture, 1959; Magna Cum Laude Award, Radiological Society of North America, 1964; Fellow, American College of Radiology; Fellow, New York Academy of Science; Fellow, AAAS; Sigma Xi; Listed in “Who’s Who in America,” 1979; Honorary Member, Japan Radiological Society, 1970; Editor, Medical Decision Making, 1980-.


Fellow Award “For contributions to electromagnetic compatibility technology.”


Fellow Award “For engineering contributions to the design of color television cameras and video tape recorders.” Other Awards: SMPTE Fellow, 1969; SMPTE David Sarnoff Gold Medal, 1973; RCA David Sarnoff Award, 1975; Sigma Xi; Eta Kappa Nu.


Fellow Award “For his contribution in the fields of electrical instrumentation and control.”


Fellow Award “For contributions to engineering education.”


Fellow Award “For contributions to engineering education.” Other Awards: Phi Kappa Phi, 1933; Sigma Xi, 1936; Eta Kappa Nu, 1950; Distinguished Alumnus Citation, University of Michigan, 1953; Tau Beta Pi, 1954; Fellow, American Association for the Advancement of Science, 1954; Honor Alumnus, Arthur Hill High School, Saginaw, Michigan, 1969; Western Electric Fund Award, 1970; Certificate of Appreciation, U.S. Army, 1970; S. S. Attwood Distinguished Engineering Achievement Award, University of Michigan, 1978; Prince Visiting Scholar, Arizona State University, 1982-83; Professor Emeritus, Electrical and Computer Engineering, University of Michigan, 1983.

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Ma, Mark Tsz-Han, Fellow 1982. Born: March 21, 1933, China. Degrees: B.S.E.E., National Taiwan Uni-
versity; M.S.E.E., University of Illinois at Urbana; Ph.D.(E.E.), Syracuse University.

Fellow Award “For contributions to the analysis and synthesis of antenna arrays”; Best Original Paper Award, IRE-NEC, Chicago, 1960; Best Paper Award, IRE Syracuse Section, 1961. Other Awards: Commerce Science and Technology Fellowship Award, 1971; Special Achievement Award, Office of Telecommunications, U.S. Dept. of Commerce, 1974, 1975; Superior Accomplishment Award, Office of Telecommunications, U.S. Dept. of Commerce, 1978.


Fellow Award “For contributions to the growth and improvement of telephone communications”; President, IEEE, 1967.


Fellow Award “For his contributions to overvoltage protective apparatus for electric power systems.”


Fellow Award “For contributions in the field of electrical measurements.” Other Awards: Sigma Xi, 1929; Phi Beta Kappa, 1936; Merit Award, Office of Scientific Research and Development, 1945; Naval Ordnance Award, 1945.


Fellow Award “For his contributions in the field of instrumentation and control.” Other Awards: Fellow, Instrument Society of America, 1975.


Fellow Award “For contributions to the field of medical electronics.” Other Awards: Guggenheim Fellow, Karolinska Institute, Stockholm, 1957, 1958; Erskine Fellow, University of Canterbury, Christchurch, New Zealand, 1969, 1980; Fulbright Lecturer, University of Cairo, Egypt, 1960-1961; Phi Beta Kappa; Sigma Xi; Phi Mu Epsilon; Apollo Award, American Optometric Association, 1962; Senior Scientist on Galapagos International Scientific Project, 1964; Distinguished Visitor, Antarctica, 1969; Opening Lecture at the 9th International Conference on Medical and Biological Engineering, Melbourne, 1971; Keynote Address at Biotelemetry Congress, Pretoria, 1971; Keynote Address at 20th Australasian Conference on Physical Science and Engineering in Medicine and Biology, Christchurch, 1980.


Fellow Award “For his technical contributions in Canada to the theory and design of transmitting antennas and the development of a coverage plan for a national network.”


Other Awards: 3 Patents.


Fellow Award “For contributions to research and teaching in the field of circuit theory”; Browder J. Thompson Award, IRE, 1951. Other Awards: Western Electric Fund Award, American Society for Engineering Education, 1968-69; Fellow, American Association for the Advancement of Science, 1980.

MACNEILL, JOHN B., AIEE Fellow 1942. Born: June 21, 1888, Summerside, Prince Edward Island, Canada. Degrees: S.B., 1913, Massachusetts Institute of
Technology.


Fellow Award “For contributions to medical electronics and to the physiology of vision”; Morlock Award, Professional Group on Biomedical Electronics, 1965. Other Awards: Member, American Physical Society; Member, Biophysical Society; Member, American Physiological Society; Honorary Life Member, Association for Research in Vision and Ophthalmology.


Fellow Award “For contributions to television engineering”; Award IRE Professional Group on Broadcast and Television Receivers, 1957, “For his contributions in the area of color television demodulators”; Vladimir K. Zwoykin Award, IEEE, 1973, “For contributions to single tube encoded color cameras and color television receiving circuits.” Other Awards: Award for Outstanding Work in Research, RCA Laboratories, 1952, 1954; Special Fellow, NIH, 1972; Fellow, OSA, 1977.


Fellow Award “For contributions to enhancing the performance of phased array antennas”; Special Achievement Paper Award, IEEE Antennas and Propagation Society, 1969; Best Paper Award, Honorable Mention, IEEE Antennas and Propagation Society, 1976; Boston Chapter Chairman, AdCom Member, IEEE Antennas and Propagation Society; Meetings Chairman, Distinguished Lecturer, Vice President and 1983 President, AP-S. Other Awards: Marcus O'Day Memorial Award for best paper published in a recognized journal, Air Force Cambridge Research Laboratories, 1972; URSI Commission B Technical Activities Chairman, 1979-82.


Fellow Award “For contributions to computer design languages and thin film deposition.”


MALEY, GERALD A., Fellow 1983. Born: March 5, 1929, Buffalo, N.Y. Degrees: B.S.E.E., Univ. of Buffalo.

Fellow Award “For contributions to logic design using gate arrays and to sequential switching circuits”; Outstanding Section Award, IEEE.


Fellow Award “For contributions to noise control engineering and to standardized methods of sound power measurements.” Other Awards: Fellow, Acoustical Society of America; Fellow, Audio Engineering Society; Member, Institute of Noise Control Engineering; Member, American Association for the Advancement of Science; Eta Kappa Nu; Tau Beta Pi; Sigma Xi.


Fellow Award “For the development and application
of simulation methods for reliability evaluations of complex electric power systems"; Section Chairman Certificate of Appreciation, IEEE, 1967; Energy Committee, IEEE. Other Awards: Member, CIGRE; Member, Pennsylvania-New Jersey-Maryland (PJM) Management Committee; Executive Board, Mid Atlantic Council (MAAC); Advisor, Gas Research Institute; Member, National and New Jersey Society of Professional Engineers; Advisor, Energy Group, Stevens Institute of Technology; Tau Beta Pi, 1948; Eta Kappa Nu, 1970; Executive Board of the Onsite Fuel Cell Users Group; Electric Power Research Institute, Research Advisory Committee; American Red Cross, Board of Trustees; Ethics Committee, District V - Essex County Bar Association.


Fellow Award “For contributions to the theory of magnetic recording”; Distinguished Lecturer, IEEE Magnetics Society, 1983-84.

MALSABRY, JAMES S., AIEE Fellow 1948. Born: June 17, 1905, Montgomery Co., Ind. Degrees: B.S.E.E., 1927, Purdue University.


Fellow Award “For contributions to electronic switching.”


Fellow Award “For contributions to information theory and its application, and to the understanding of 1/f and random noise processes.” Other Awards: Fellow, American Academy of Arts and Sciences, 1982; Fellow, John Simon Guggenheim Memorial Foundation, 1968; Fellow, Econometric Society, 1968; Fellow, Institute of Mathematical Statistics, 1968; Fellow, American Statistical Association, 1972; Elected Member, International Statistical Institute; IBM Fellow, T.J. Watson Research Center; Professor of the Practice of Mathematics, Harvard.


Fellow Award “For contributions to the development of measurement techniques used in the nuclear and environmental sciences.”


Fellow Award “For contributions to the theory of modulators and parametric amplifiers”; David Sarnoff Award (with H.E. Rowe), IEEE, 1977, “For their work on the properties of nonlinear devices resulting in the well-known Manley-Rowe relations.” Other Awards: Visiting Professor, University of Wisconsin at Madison, 1974-1981.


Fellow Award “For leadership in biomedical engineering research and education and in the application of technology to the problems of the handicapped.” Other Awards: Tau Beta Pi, 1949; Pi Tau Sigma, 1949; Sigma Xi, 1950; Alfred P. Sloan Award, 1957; Talbert Abraham Photogrammetry Award, 1962; Citation for Sensory Aids, Assoc. Blind of Massachusetts, 1969; Germeshausen Professor, M.I.T., 1970; Institute of Medicine, National Academy of Science, 1971; IR-100 Innovation Award, 1972; Fellow, American Academy of the Arts and Sciences, 1972; National Academy of Engineering, 1973; Whitaker Professor of Biomedical Engineering, M.I.T., 1974; M.I.T. Alumni Assoc., Bronze Beaver Award, 1975; Goldenson Award, 1976, H.R. Lissner Award, 1977; Gold Medal Award, American Society of Mechanical Engineers, 1977; Sigma Xi National Lecturer, 1979-1981; 37th New England Award, Engineering Societies of New England, 1979; ALZA Distinguished Lecturer, 1980; Fellow, American Association for The Advancement of Science, 1982; National Academy of Sciences, 1982; James R. Killian, Jr. Faculty Achievement Award, M.I.T., 1983; President, M.I.T. Alumni Assoc., 1983-1984.


Fellow Award “For contributions to fault diagnosis and simulation in digital systems.”


Fellow Award “For techniques in ionospheric measurements.”

MANNING, MELVIN L., AIEE Fellow 1948. Born: November 26, 1900, Miller, S.D. Degrees: B.S., 1927, Dr.Eng., 1978, South Dakota State University; M.S., 1932, University of Pittsburgh.

Awards: First Paper Prize, AIEE-NEMA Conference on Electrical Insulation, 1960, “In recognition of his efforts expended in the preparation and presentation of a technical paper designed to meet the high standard of AIEE relating to electrical insulation materials”; Member, IEEE Transformer Committee and WG’s, IEEE SCC 4.0 and 4.1 Committees; ANSI C57 Committee;
Other Awards: Sigma Xi; Sigma Tau; Eta Kappa Nu; Phi Kappa Phi; Life Member, American Society for Engineering Education; Award of Merit, "Dictionary of International Biography," 1968; Award of Merit, National Council of Engineering Examiners, 1971; Award, "Distinguished Engineer," Alumni, South Dakota State University, 1977; Certificate, American Society for Testing and Materials, 1980; Licensed Professional Engineer Pa. and S.D.; Prof. and Dean Emeritus, College of Engineering, S.D. State Univ. Harding Hall, E.E. Dept, Brookings, S.D., 57007.


Fellow Award “For contributions to the analysis and measurement of electrical contact phenomena and the development of electromechanical components.” Other Awards: Violet Ribbon Medal from His Majesty the Emperor, 1973; Ragnar Holm Scientific Achievement Award, 1975.


Fellow Award “For contributions to service engineering of aircraft electrical systems.”


Fellow Award “For contributions to the management of construction, operation and engineering of a major electric utility system.” Other Awards: Tau Beta Pi, 1960.


Other Awards: Order of Merit, Westinghouse Electric, 1942.


Fellow Award “For contributions to microwave circuitry; specifically for novel multimode, millimeter-wave filters”; W.R.G. Baker Prize Award (with S.E. Miller and T. Li), 1975, for paper, “Research Toward Optical-Fiber Transmission Systems.” Other Awards: Member, National Academy of Engineering.


Fellow Award “For contributions in communication principles, aerial navigation, and medical electronics.”

Other Awards: Fellow, American Association for the Advancement of Science; Eta Kappa Nu; Tau Beta Pi; Sigma Xi


Fellow Award “For technical and management contributions to the fields of large rotating machines and static power devices.”


Fellow Award “For contributions to the understanding of light guidance through gas lenses and imperfect optical fibers.”


Fellow Award “For fundamental contribution to the solution of microwave field problems.” Other Awards: Member, National Academy of Engineering, 1978.


Fellow Award “For leadership in feedback control, in professional society activities and significant contribution to management of engineering enterprises.” Other Awards: Eta Kappa Nu, 1940; Tau Beta Pi, 1940; Sigma Xi, 1941; Member, Instrument Society of America, 1963; Fellow, Instrument Society of America, 1977.


Fellow Award “For contributions to the application of modern communication techniques to the control and protection of power systems.”


Fellow Award “For contributions to the theory and applications of linear prediction of speech.”


Fellow Award “For contributions to digital communication transmission systems.” Other Awards: Prize, Nachrichtentechnische Gesellschaft, 1957.

Fellow Award “For contributions to the fields of radio-astrophysics, radio navigational, microwave propagation and radiometric techniques.” Other Awards: Phi Beta Kappa, 1948; Sigma Xi, 1953; Eta Kappa Nu, 1956; Distinguished Service Award, ION, 1968; Hays Award, 1969; Fellow Award, American Association for the Advancement of Science, 1968; Distinguished Alumni Award, Westmar College, 1970.


Fellow Award “For his contributions to the integration, interconnections, stable and economical operation of power systems.” Other Awards: War Production Board, Office of War Utilities.


Fellow Award “For his contributions to airborne television and radar research and development.” Other Awards: Distinguished Alumni Award, College of Engineering, Univ. of Cincinnati, 1983.

MARSTEN, JESSE, IRE Fellow 1957. Born: January 1, 1897, Budapest, Hungary. Degrees: B.Sc., 1917, City College of the City University of New York.

Fellow Award “For contributions to the design and manufacture of electronic components.”


Fellow Award “For contributions to the development of radar and communications satellite systems.” Other Awards: Tau Beta Pi, Sigma Xi, 1946; Member, New York Academy of Sciences, 1967; White House Citation for Outstanding Sustained Performance, 1972; Exceptional Service Medal, NASA, 1974; Group Achievement Award, NASA, ATS-6 Project Team, 1974; Citation for Outstanding Achievement in Research and Educational Development, Committee on Social Justice, International Women's Year, 1975; Apollo-Soyuz Project Space Medal, 1976; Professional Member, Eta Kappa Nu, 1976; National Advisory Board, National Energy Foundation; Licensed Professional Engineer, New Jersey.


Fellow Award “For contributions in the field of acoustics”; Audio Senior Award, IRE, 1958; Audio Achievement Award, IRE, 1959. Other Awards: Fellow, Acoustical Society of America, 1950; Fellow, Audio Engineering Society, 1963; Audio Engineering Society Award, 1969; Engineer of the Year, Technical and Scientific Societies Council of Cincinnati, 1972; Ohio Technical Engineer of the Year, OSPE, 1972.


Fellow Award “For leadership, management, and technical contributions in the development of international broadcasting and telecommunications.”


Fellow Award “For contributions to heavy ion cyclotron developments”; Special Merit Award, IEEE Nuclear and Plasma Sciences Society, 1977. Other Awards: Tau Beta Pi; Phi Kappa Phi; Sigma Xi.


Fellow Award “For leadership in graduate engineering education”; Electronic Achievement Award, IRE, Region 7, 1956, "For his leadership in engineering education and many contributions to the technical literature"; Engineer of the Year, IEEE, Dallas, Texas, 1968. Other Awards: Bronze Star, U.S. Dept. of Army, 1946; Outstanding Service Award, Florida Engineering Society, 1966; Member, National Academy of Engineering, 1972.


Fellow Award “For contributions to the development of electric rotating machinery, magnetic clutch, and arc welding equipment.”

MARTINDALE, ROY, AIEEE Fellow 1940. Born: February 2, 1884, Pine Village, Ind. Degrees: B.S.E.E., 1906, Purdue University.


Fellow Award “For contributions to engineering management, R&D planning, and R&D resource allocation”; Prize Paper Award, IEEE Engineering Management Society, 1973; IEEE Centennial Medal, 1984. Other
Awards: Air Force Systems Command Technical Achievement Award, 1971; Air Force Commendation Medal with Two Oak Leaf Clusters.


Fellow Award “For contributions to reliability, safety, and cost-effectiveness of electronic equipment subjected to surge voltages”; Surge Protective Devices Committee Paper Award, 1977; Surge Protective Devices Committee Paper Award, 1982. Other Awards: Industrial Research IR-100 Award, 1972.


Fellow Award “For research on the analysis and simulation of high frequency inverters and other power electronic circuits.”


Fellow Award “For contributions to the theoretical and experimental aspects of corona and radio interference performance of high-voltage ac and dc systems.”

MARYSSAEL, GUSTAVE J. C., AIEE Fellow 1961. Born: October 1, 1903, Verona, Italy. Degrees: Civil and Mining Eng., 1926, University of Brussels; E.E., 1927, University of Ghent.

Fellow Award “For contributions to the design and construction of a large public utility in Mexico.”


Awards: Lamme Medal, 1967, “For outstanding contributions in the fields of sonics and ultrasonics and for his original work in designs of and applications for electro-mechanical transducers.” Other Awards: Honorary Member, Audio Engineering Society, 1957; Arnold O. Beckman Award, Instrument Society of America, 1964; Distinguished Alumni Award, University of Kansas, 1965; C. B. Sawyer Award, Signal Corps Symposium, 1966; Gold Medal, Acoustical Society of America, 1971; Honorary Fellow (First Honorary Member, 1974), British Institute of Acoustics; Honorary Fellow, Institute of Acoustics of India; Dedication of First International Conference on Fatigue and Corrosion Fatigue up to Ultrasonic Frequencies to Warren P. Mason, Engineering Foundation Conference, 1981.


Fellow Award “For pioneering in electroacoustical engineering.” Other Awards: Swope Fellow, Massachusetts Institute of Technology, 1927-1928; Fellow, Acoustical Society of America.


Fellow Award “For contributions to coding theory, particularly to threshold decoding and its application, and to engineering education”; Annual Paper Award, IEEE Group on Information Theory, 1963, “For his valuable contribution of a practical yet efficient decoding algorithm as demonstrated in his monograph entitled 'Threshold Decoding' included as part of the Press Series of the Massachusetts Institute of Technology”; IEEE Centennial Medal, 1984. Other Awards: Best Tutorial Paper Award, National Electronics Conference, 1963; Thomas P. Madden Award, University of Notre Dame, 1969; Faculty Award, University of Notre Dame, 1970; ASEE Western Electric Fund Award, 1975; International Telemetry Conference Award, 1975; Special Presidential Award, University of Notre Dame, 1976.


Fellow Award “For contributions in the field of antennas and RF transmission systems.”


Fellow Award “For contributions to the understanding and application of electrostatic precipitation technology.” Other Awards: Achievement Award, Institute of Electrical Engineers of Japan; Paper Award, Institute of Electrical Engineers of Japan, 1974; Invention Award, Minister of Science and Technology, 1975; Technical Award, Association of Painting Technology, 1977; Contribution Award, Society of Industrial Pollution Control, 1977; Paper Award, Institute of Electrostatics Japan, 1978; Paper Award, Society of Industrial Pollution Control, 1980; Corresponding Member, Verein Deutscher Ingeniure, 1984.


Fellow Award “For contributions to understanding of high-frequency semiconductor devices, and crystal properties, and electronic effects of dislocations.” Other Awards: Electrochemical Society; Over 100 publications; 60 patents; Member, American Physical Society;


MATHES, R. E., IRE Fellow 1957. Born: April 1902, Minneapolis, Minn. Degrees: B.S., 1924, University of Minnesota.

Fellow Award "For contributions to the development of terminal apparatus for point-to-point radio service."


Fellow Award "For advances in the analysis, synthesis, and recognition of speech and the generation of musical sounds by computer and electronic methods"; Fellow, Acoustical Society of America, 1961; IEEE David Sarnoff Gold Medal Award, 1973, "For leadership in applying electronics to art and for his contribution to the production of musical sounds by computer." Other Awards: Member, National Academy of Sciences, 1975; National Academy of Engineering, 1979; Fellow, American Academy of Arts & Sciences, 1982; Fellow, Audio Engineering Society, 1983.


Fellow Award "For contributions to the fields of systems and aerospace electronics." Other Awards: Howard Hughes Fellowship in Science and Engineering, 1950-52; Honorary Member, Beta Gamma Sigma, 1969.


Fellow Award "For the invention and development of Josephson computer circuits"; Jack A. Morton Award, IEEE, 1978.


Fellow Award "For leadership in the application of computers in industrial control systems." Other Awards: New Invention Award, Japanese Association of Electrical Equipments Manufacturers, 1963; Special Contributor Award, Toshiba Corporation, 1980; All Japan Invention Award, Japan Institute of Invention and Innovation, 1981; Excellent Researcher Award, Japanese Government, 1982.


Fellow Award "For the development of chemically sensitive solid-state devices and their applications to biomedicine." Other Awards: 17th Achievement Award, IECE of Japan, 1980.


Fellow Award "For contributions to the theory and design of microwave networks and parametric am-
plifiers”; Microwave Prize, IRE, 1961; “For very significant contribution to the field of endeavor of the IRE-PGMTT.”


Fellow Award “For contributions to the development and design of electric motor controls.” Other Awards: Eta Kappa Nu; Phi Kappa Phi; Tau Beta Pi; American Association for the Advancement of Science; University of Wisconsin Citation, 1960.


Fellow Award “For original contributions and inventions of electrical connectors, precision fuses, and electrical switches, as well as numerous technical papers and publications concerning these products. Also for outstanding leadership of the engineering departments which he has headed.”


Fellow Award “For contributions to radar and to military weapons systems.” Other Awards: Fellow, Radio Club of America.


Fellow Award “For contributions to education and to solid-state and medical electronics research”; IEEE Education Society, Meritorious Service Award, 1982. Other Awards: Fellow, American Association for the Advancement of Science, 1972; Engineer of the Year Award, ASPE, 1978; Anderson Prize, University of Arizona, 1981.


Fellow Award “For contributions to radar and electrooptical technology.”


Fellow Award “For significant contributions in the field of acoustics and plasmas, and for leadership in the area of university education and research in plasma dynamics.” Other Awards: Fellow, Acoustical Society of America, 1950; Biennial Award, Acoustical Society of America, 1952; Guggenheim Fellow, 1954; Fellow, American Association for the Advancement of Science, 1959; Research Award, Sigma Xi, 1964; Fellow, American Physical Society, 1966; Member, Institute for Advanced Study, Princeton, 1970-71; CECON Medal of Achievement, 1979.


Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Army, 1947; Meritorious Civilian Service Award, U.S. Dept. of Navy, 1953; John Potts Award, Acoustical Society of America, 1954.


Fellow Award “For contributions to the integration of the engineering practices of several companies into a combined power system.” Other Awards: President's Award, Western Society of Engineers, 1960; Distinguished Service Award, American Nuclear Society, 1965; Honorary Member, Western Society of Engineers, 1969; Distinguished Alumnus Award, Electrical Engineering, University of Illinois, 1973.


Fellow Award “For contributions to radio-television broadcasting and standardization”; IEEE Centennial Medal, 1984.

MAXWELL, MARVIN V., AIEE Fellow 1951. Born: February 18, 1901, Carthage, Mo. Degrees: B.S., 1924, University of Missouri.

Other Awards: Life Fellow, American Society of Mechanical Engineers; Chairman, Chicago Section; Washington Awards Representative; Vice President and Trustee, Western Society of Engineers; President, Illinois Engineering Council; Eta Kappa Nu; Tau Beta Pi; Pi Mu Epsilon.


Fellow Award “For contributions to the theory of ferromagnetics and to the development of materials for the suppression of electromagnetic interference.” Other Awards: Vice President, Alliance Franceise, France; Vice President, Association France-United Kingdom.


Fellow Award “For contributions in the development of airborne radar systems.” Other Awards: Citation, U.S. Dept. of Navy, 1945.

Purdue University.

Fellow Award “For contributions to the development of semiconductor nuclear radiation detectors and to the understanding of ion implantation processes in semiconductors.” Other Awards: Fellow, American Physical Society; Scientific Member, Bohmische Physikal Society, 1975; Von Hippel Award, Materials Research Society, 1981; 1000 most-cited contemporary scientists, 1965-78.


Fellow Award “For contributions to instrumentation and control systems in the petrochemical process industry”; Philadelphia Section Award, IEEE Industrial Electronics and Control Instrumentation Society, Achievement Award. Other Awards: Sigma Xi.


Fellow Award “For contributions to the theory and development of the log-periodic antennas.”


Fellow Award “For contributions to optimal control and dynamic programming.” Other Awards: Research Fellowship, Harvard University, 1971; Research Engineer, University of California at Berkeley (summer), 1974, 1976, 1978, 1980; Senior Science Research Council Fellowship, 1979; FIEE, 1980.


Fellow Award “For the development of reliable instrumentation for the measurement and control of industrial processes in high-noise environments.”


Fellow Award “For his developments in the field of ultrahigh-frequency electron tubes.” Other Awards: Charles A. Coffin Award, General Electric, 1946; Certificate of Commendation, U.S. Dept. of Navy, 1947; Sigma Xi, 1948; Award, National Electronics Conference, 1954.


Fellow Award “For contributions to the development of microwave electron tubes and to the management of industrial research.”


IRE Fellow Award “For contributions to electrical engineering literature and education”; First Paper Prizes, AIEE, 1943, 1946. Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu; American Society of Mechanical Engineers; American Society for Engineering Education; Outstanding Electrical Engineer Award, Eta Kappa Nu, 1942.

MCCLELLAN, LESLIE N., AIEE Fellow 1938. Born: March 27, 1888, Middletown, Ohio. Degrees: B.S., 1911, University of Southern California; D.Eng.(Hon.), 1949, University of Colorado.

Other Awards: Gold Medal, Colorado Engineering Council, 1951; Gold Medal, U.S. Dept. of the Interior, 1952; Distinguished Alumnus Award, School of Engineering, University of Southern California, 1967; Sigma Psi; Tau Beta Phi; Eminent Member, Eta Kappa Nu.


Fellow Award “For contributions to design and ap-
plication of electrical equipment to power systems, industrial and nuclear plants."


Fellow Award “For contributions to mobile telephone communications systems engineering and the creation of new and more effective methods of spectrum utilization.”

**MCCLORE, J. BURNS**, AIEE Fellow 1960. Born: December 6, 1900, Thamesford, Ontario, Canada. Degrees: B.Sc., 1923, Queen’s University, Kingston, Ontario, Canada; M.S., 1927, Massachusetts Institute of Technology.

Fellow Award “For contributions to the field of electric utility generating stations and power transmission systems”; First Paper Prize, AIEE, 1953, for “Short Circuit Capabilities of Synchronous Machines for Unbalanced Faults.”


Fellow Award “For contributions to switching theory and engineering education”; IEEE Centennial Medal, 1984. Other Awards: Fellow, American Association for the Advancement of Science.


Fellow Award “For contributions and leadership in the planning and development of a high-voltage bulk power transmission system.”


Fellow Award “For contributions to design and application of power system protective relays.” Other Awards: Tau Beta Pi; Eta Kappa Nu; Phi Kappa Phi.


Fellow Award “For contributions to the research and development of power switchgear equipment.”


Fellow Award “For contributions to the understanding of electromagnetic wave propagation and scattering in precipitating atmospheres.”


Fellow Award “For contributions to atomic frequency standards and research management.” Other Awards: Member, American Physical Society; Sigma Pi Sigma.


Fellow Award “For contributions in the field of servo control systems and analog computers.”


Fellow Award “For contributions to the field of radio propagation.” Other Awards: Fellow, American Physical Society.


Fellow Award “For his pioneering contributions to power tube design.” Other Awards: Distinguished Public Service Award, U.S. Dept. of Navy, 1950.


Awards: Past Chairman, Committee on Management, AIEE; Operating Committee, AIEE. Other Awards: Member, National Academy of Engineering; Charter Member, American Nuclear Society; Member, American Society of Mechanical Engineers; Howard Cooley Medal, 1969; Past President and Honorary Director, Atomic Industrial Forum; Past President, American National Standards Institute; Member of the Corporation: Woods Hole Oceanographic Institute; Past Member, National Research Council.


Fellow Award “For research on the digital processing


Fellow Award “For contributions to and leadership in the design of integrated digital transmission and switching systems.” Other Awards: Tau Beta Pi, 1956; Sigma Xi, 1958; Teaching Fellowship, Stanford University, 1958, 1959.


Other Awards: Distinguished Alumnus Award, Purdue University, 1964.


Fellow Award “For contributions to information and coding theory research and applications.”

MCELRACTH, GEORGE, IRE Fellow 1956. Born: January 23, 1899, Marlboro, N.Y.

Fellow Award “For contributions in the development of broadcasting and television operating practices and techniques.”


Fellow Award “For contributions to the field of failure history recording and to the coordination of power systems.”


Fellow Award “For contributions to systems applications of electronic computers and for effective administrative activities during formative periods of technical advancement”; President, IRE, 1960; Member, IRE-AIEE Merger Committee, 1962; Director, IEEE, 1963.


IRE Fellow Award “For contributions in the development of facsimile and radar.” Other Awards: Fellow, American Association for the Advancement of Science, 1928; Certificate of Appreciation, War Dept., U.S. Dept. of Navy, 1947.


Fellow Award “For contributions to the theory and instrumentation of electro- and magneto-cardiography.”


Fellow Award “For contributions to the understanding of nonequilibrium transport and optical properties of semiconductors.” Other Awards: Fellow, American Physical Society.


Fellow Award “For contributions in electric power cable design and testing.” Other Awards: Sigma Xi, 1943.


Fellow Award “For theoretical work on the noise properties of avalanche photodiodes, and for leadership in their commercial development.” Other Awards: RCA David Sarnoff Award for Outstanding Technical Achievement, 1979.

MC KAY, KENNETH G., Fellow 1964. Born: April 8, 1917, Montreal, Quebec, Canada. Degrees: B.S., 1938, M.S., 1939, McGill University, Quebec; D.Sc., 1941, Massachusetts Institute of Technology; Dr.Eng.(Hon.), 1980, Stevens Institute of Technology.

Fellow Award “For fundamental advances in the physics and engineering of solid-state devices.” Other Awards: Anne Molson Gold Medal for Mathematics and Natural Philosophy, 1938; NASA Public Service Award, 1969; NASA Public Service Group Achievement Award, 1969; Member, National Academy of Sciences, National Academy of Engineering; Fellow, American Physical Society.


Fellow Award “For contributions to research, design, fabrication and testing of power and communication cables.”

M.A., 1935, Ph.D., 1938, University of Toronto.
Fellow Award “For his contributions to the development in Canada of radio aids to air navigation.” Other Awards: Fellow, American Physical Society; Fellow, Royal Society of Canada; Order of the British Empire; Engineering Institute of Canada.

Fellow Award “For his contributions to development of an extensive power system.” Other Awards: Sigma Xi, 1929; Award, Electric Club of Oregon, 1941; Award, Portland Agenda Club, 1944; Award, Northwest Electric Light and Power Association, 1970.

Fellow Award “For planning, engineering, and implementing significant advancements in international telecommunications.”


Fellow Award “For contributions to engineering education and research in acoustics, communication, and electrical measurements.” Other Awards: Sigma Xi, 1936; Eta Kappa Nu, 1952. Professor Emeritus, 1966, Cornell University.

Fellow Award “For contributions in aero-medical electronics.” Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Air Force, 1956.


Fellow Award “For contributions to understanding the mechanism of electrical breakdown in solid dielectrics called ‘treeing’”; Editor, IEEE Transactions on Electrical Insulation, 1970-76. Other Awards: Arnold H. Scott Award, ASTM, 1977.

Fellow Award “For contributions to information theory, circuit theory, and systems analysis.” Other Awards: Member, National Academy of Engineering, 1969.


Fellow Award “For contributions to the development of lasers and photodetectors and for technical leadership in electrooptic research,” Other Awards: Alfred Noble Prize, 1964.

MCNALLY, JAMES O., IRE Fellow 1957. Born: July 1, 1903, Fredericton, New Brunswick, Canada. Degrees: B.Sc., 1924, University of New Brunswick.
Fellow Award “For contributions in the field of industrial electronics.”

Fellow Award “For contributions to the design and standardization of test procedures of power transformers”; Chairman, Transformers Committee, 1981-1982.

Fellow Award “For many pioneering contributions to flight control technology and to systems engineering, and for the creation of a systematic technique for the design of complex man-machine systems.” Other Awards: Louis E. Levy Medal, Franklin Institute; Mechanics and Control of Flight Award, American Institute of Aeronautics and Astronautics, 1970; Alexander C. Williams Award, HFS, 1976.


Fellow Award “For contributions to control theory and its application to switch power systems and image processing”; Eugene Mittelmann Award, IEEE Industrial Electronics Society, 1982. Other Awards: Eta Kappa Nu Award (first recipient), Virginia Chapter.


Fellow Award “For outstanding contributions to the fundamental understanding and practical development of solid-state electronic devices”; David Sarnoff Award, 1971, “For outstanding contributions leading to a better understanding of semiconductor devices.”

MEADOR, JACK R., AIEE Fellow 1952.

Fellow Award “For outstanding ingenuity and creative ability in devising insulation structures which have contributed substantially to improvements in the design of transformers, particularly of very large high-voltage units.”


Fellow Award “For contributions to the development of high-speed computers.” Other Awards: Predoctoral Fellow, National Research Council, 1945-1948; Presidential Certificate of Merit, 1946; Fellow, American Physical Society.

MEDITCH, JAMES S., Fellow 1976. Born: July 30, 1934, Indianapolis, Ind. Degrees: B.S.E.E., 1956, Purdue University; S.M., 1957, Massachusetts Institute of Technology; Ph.D., 1961, Purdue University.

Fellow Award “For contributions to the development and application of estimation theory.”


Fellow Award “For contributions to the physics and technology of magnetic recording”; IEEE Audio Group Achievement Award, 1964, “For outstanding contributions to magnetic recording.” Other Awards: IBM Corporate Recognition Award, 1980; IBM Fellow, 1983.


Fellow Award “For contributions to the development of microwave communications and optical processing techniques.”


Fellow Award “For contributions to the research and application of computer methods to electromagnetic theory”; Best Paper Award, IEEE Antenna and Propagation Society, 1967; Honorable Mention, Best Paper Award, IEEE Antennas and Propagation Society, 1974.


Fellow Award “For contributions to piezoresistivity of thin films and leadership in electronics education.”


Fellow Award “For contributions to electrohydrodynamics.”
namic and its practical application.” Other Awards: First Mark Mills Award, American Nuclear Society; Western Electric Award, American Society for Engineering Education.


Fellow Award “For contributions in the field of ferrite microwave devices and for leadership in industry exploitation of such devices.” Other Awards: Science Centennial Award, University of Notre Dame, 1965.


Fellow Award “For educational leadership in the information and control sciences.” Other Awards: Western Electric Award, Gulf Southwest Section, American Society for Engineering Education, 1973.


Fellow Award “For contributions to system identification, state estimation, and their application to aerospace technology”; Distinguished Member, IEEE Control Systems Society, 1983. Other Awards: Outstanding Presentation Award, Society of Exploration Geophysicists, 1976.


Fellow Award “For leadership and technical contributions to the advancement of space programs and world-wide satellite tracking networks.” Other Awards: Outstanding Achievement Award, U.S. Naval Research Laboratory, 1951; Exceptional Service Award, NASA, 1965.


Fellow Award “For contributions to optimal control theory and its application.” Other Awards: Best Paper Award, JACC(with F.J. Ellert), 1962.


Fellow Award “For contributions in the field of guided missile systems, and in the management and technical development of automated test systems.” Other Awards: G. Edward Pendray Award, American Rocket Society; Distinguished Achievement Award, L.I. Universities; Commendation, Secretary of the Navy; Legion of Merit, Polaris Program, Secretary of the Navy; Associate Fellow, Institute of Aeronautical Science; Member, American Ordnance Association; Senior Member, American Rocket Society.


Fellow Award “For contributions to multidimensional digital signal processing”; Browder J. Thompson Memorial Prize Award, IEEE, 1976. Other Awards: Research Unit Award, Southeastern Section, ASEE, 1977.


Fellow Award “For major contributions to the design of television cameras for spacecraft.”


Fellow Award “For contributions to the determination of radiation damage to semiconductors and advances in semiconductor device technology.”

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MESSERSCHMITT, DAVID G., Fellow 1983.

Fellow Award "For contributions to the theory of transmitting digital waveforms on band-limited channels."


IRE Fellow Award "For his development work on vacuum tubes, and vacuum tube circuits and the successful coordination of many technical projects requiring broad scientific knowledge and sound judgement."


Fellow Award "For contributions to radar and ballistic missiles." Other Awards: Outstanding Young Electrical Engineer Award, Eta Kappa Nu, 1954; Ten Outstanding Young Men of America Award, National Junior Chamber of Commerce, 1955; Fellow, American Institute of Aeronautics and Astronautics, 1962; Southern California Engineer of the Year Award, 1964; Southern California Marketing Man of the Year Award, 1965; National Academy of Engineering, 1965; Alumni Distinguished Service Award, California Institute of Technology, 1966; Fellow, American Astronautical Society, 1967; Distinguished Public Service Medal, Department of Defense, 1969; National Human Relations Award, National Conference of Christians and Jews, 1979; Excellence in Management Award, Industry Week Magazine, 1979.


Fellow Awards "For contributions to military communications"; IEEE EASCON Aerospace Electronics Award, 1975; IEEE Award in International Communication, 1976; Member, Joint Telecommunications Advisory Committee, 1971-1979; Chairman, 1975-1977. Other Awards: Fellow, American Institute of Aeronautics and Astronautics, 1982; Member, National Academy of Engineering, 1976; Aeronautics and Space Engineering Board, National Academy of Engineering, 1981; Tau Beta Pi; Sigma Xi.


Fellow Award "For contributions to the analysis and design of high-frequency amplifiers."

MEYERAND, RUSSELL G., AIEE Fellow 1948. Born: April 6, 1902, Milwaukee, Wis. Degrees: B.S., 1925, M.S., 1926, Massachusetts Institute of Technology. Awards: "Engineer of the Year", CIGRE, IEEE, St. Louis Section, 1968. Other Awards: Edison Electrical Institute; Association of Edison Illuminating Companies; Member, N.S.P.E.


Fellow Award "For contributions to the development and administration of IEEE Standards on electrical power distribution"; Member Emeritus, IEEE Standards Board. Other Awards: Lt. Col. US Army Reserve Corps, Retired, Bronze Star Award.


Fellow Award "For his contributions to power systems engineering."

MIDDLEHOEK, SIMON, Fellow 1982. Born: September 12, 1931, Rotterdam, The Netherlands. Degrees:
M.(Physics), 1956, Delft University of Technology; Ph.D., 1961, University of Amsterdam.


Fellow Award “For his engineering contributions and technical leadership in the development of precision radar systems.”


Fellow Award “For contributions and technical leadership in the development of products and standards for industrial control systems.”


Fellow Award “For contributions to the theory of wave phenomena in electron beams.” Other Awards: Fortescue Fellow; Tau Beta Pi; Phi Beta Kappa; Sigma Xi.


Fellow Award “For contributions to basic knowledge in power circuit interruption and for leadership in research and development of high voltage interrupter switchgear.” Other Awards: Eta Kappa Nu; Tau Beta Pi; Fellow, Instrument Society of America, 1969.


Fellow Award “For contributions to the development of cellular mobile radiotelephone systems.” Other Awards: Tau Beta Pi; Sigma Xi; Dan Noble Fellow,
Motorola, Inc.


IRE Fellow Award “For administrative contributions to military communication, and for commercial application of microwave systems”; AIEE Fellow Award “For contributions to record communications systems and for their application to national defense”; Achievement Award, Communication Technology Group, 1967, “For outstanding contributions to engineering and development in telegraph and radio relay systems”; IEEE North Jersey Section Award, 1972, “For distinguished service to the Section.” Other Awards: Meritorious Service Citation, U.S. Dept. of Air Force; Distinguished Alumnus Award, Electrical Engineering Alumni of the University of Illinois, 1970; Fellow, Radio Club of America, 1973; Fellow, American Association for the Advancement of Science, 1980; Sarnoff Citation, Radio Club of America, 1982.


Fellow Award “For contributions to nuclear instrumentation and its innovative extension to measurements in other scientific fields.”


Other Awards: American Mathematics Association; Sigma Xi; Tau Beta Pi.


Other Awards: Organizer, Chattanooga Engineers Club, 1925; Tau Beta Pi, 1950; Distinguished Service Award, Charlotte Engineers Club, 1966.


Fellow Award “For contributions to the advancement of the theoretical understanding of computation through work in switching theory and theoretical models.”


Fellow Award “For contributions to design of metal rolling mill electrical systems.” Other Awards: Charles A. Coffin Award, General Electric, 1951; Vice President, Chairman Executive Board, International Federation of Automatic Control, 1981-1984; Secretary, American Automatic Control Council.


Fellow Award “For contributions to education in computer science and to university administration.” Other Awards: Faculty Citation Outstanding Alumnus, Vincennes University, 1962; Psc (honoris causa), Purdue University, 1972; Fellow, American Academy of Arts and Sciences, 1980.


Other Awards: Distinguished Service Citation, University of Wisconsin, 1967.


Fellow Award “For contributions to the understanding of environmental effects on radar propagation and to the field of ionospheric radio physics.” Other Awards: Phi Kappa Phi, 1947; Sigma Pi Sigma, 1948; Pi Mu Epsilon, 1949; Sigma Xi, 1952.


Fellow Award “For his contributions to the field of pulse circuits”; IEEE Education Medal, 1970. Other Awards: Fellow, American Physical Society, 1946; Citation, Office of Scientific Research and Development, 1947; Great Teachers Award, Columbia University, School of Engineering, 1967; Fulbright Lecture Grants, Italy, 1959-60, Uruguay, 1967-68, Israel, 1973-74; Author of eight textbooks on Electronics, 1941-79;
Charles Batchelor Professor of Electrical Engineering, Columbia University, Emeritus.


Fellow Award “For contributions in the field of magnetrons, traveling-wave amplifiers and backward-wave oscillators.”


Fellow Award “For contributions to research on nuclear fusion power reactors”; IEEE Centennial Medal, 1984. Other Awards: Phi Beta Kappa, 1944; Naval Ordnance Award, 1947; National Research Fellow, 1952; Sigma Xi, 1953.


Fellow Award “For contributions to design of high voltage substation, switchgear and heavy current buses.”


Fellow Award “For contributions to planning and design of higher voltage distribution systems in extensive rural areas.”


Other Awards: National Society of Professional Engineers; Ohio Society of Professional Engineers; Westinghouse Silver “W”, 1952; Certificate; American Standards Association.


Fellow Award “For research in radio wave propagation and radio noise interference and leadership in the Radio Regulatory Bureau of Japan.”


Fellow Award “For contribution to radio signal generating and measuring devices.” Other Awards: Armstrong Medal, Radio Club of America, 1968; Past President, Life Fellow, Radio Engineering Society; Past President, Fellow, Radio Club of America; Life Member, SMPTE; Life Member, Amer. Soc. for Metals.


Fellow Award “For contributions to long-distance communication systems”; Chairman, Awards Committee, IEEE Communications Technology Group, 1965-1967. Other Awards: Governors Award, Ohio, 1963; Fellow Award, American Association for the Advancement of Science, 1981.


Fellow Award “For contributions to active network theory and to engineering education.” Other Awards: F.E. Terman Award, American Society for Engineering Education, 1973; Visiting Professorship, Kobe University, Japan Society for Promotion of Science, 1973; Fellow, American Association for the Advancement of Science, 1982; Visiting Fellow, Australian National University, 1982.


Fellow Award “For contributions to optimization computation and control theory.”

MITTRA, RAJ, Fellow 1971. Born: July 1, 1932, Banares, India. Degrees: M.S., University of Calcutta; Ph.D., University of Toronto.


Fellow Award “For contributions to electrical machinery, power electronics, and leadership in electrical engineering education.” Other Awards: Paper Prize, Institute of Electrical Engineers, Japan, 1962; Author


Fellow Award "For contributions to the development of microwave tubes and solid-state image converters." Other Awards: Fellow, Society for Information Display, 1977.


Fellow Award "For contributions to maritime communications systems."


Fellow Award "For his contributions to the field of electronics"; Annual Award, IRE, Professional Group on Reliability and Quality Control, 1961, "For his part in the development of the publication "Parts Specification Management for Reliability."" Other Awards: Certificate of Commendation, US. Dept. of Navy, 1946; Kentucky State Board of Registration for Professional Engineers, 1975-1982; Professional Engineer, New York 1948, Kentucky 1949.


Fellow Award "For contributions to automatic control theory of bilinear systems." Other Awards: NATO Senior Scientist Award, 1978; USSR Exchange Visitor, National Academy of Science, 1980.


Fellow Award "For contributions to military electronic systems." Other Awards: Eta Kappa Nu.


Fellow Award "For contributions to theory and development of semiconductor devices"; Ebers Award, IEEE, 1971. Other Awards: Sigma Xi; American Physical Society; Postdoctoral Fellow, Guggenheim, 1964; Howard N. Potts Medal, Franklin Institute, 1967; Distinguished Alumnus Award, College of Engineering, Ohio State University, 1970; Member, National Academy of Engineering, 1974; 5 patents, 50 publications.


Other Awards: American Society of Mechanical Engineers; Award of Merit, Westinghouse Electric Corp.


Fellow Award "For contributions to the reliability engineering of space electronic systems"; Annual Reliability Award, IEEE Reliability Society, 1979; IEEE Centennial Medal, 1984.


Fellow Award "For contributions to electronic instrumentation."


Fellow Award "For contributions to medical electronics." Other Awards: Fellow, American Association for the Advancement of Science; Sigma Xi.


Other Awards: Donald P. Eckman Education Award, Instrument Society of America, 1969; Stephen S. Attwood Distinguished Achievement Award, College of Engineering, University of Michigan, 1970; Outstanding Citizen Award, Institute of Gerontology, University of Michigan, 1977.


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sity of Queensland, Australia; Ph.D., 1967, University of Santa Clara.

Fellow Award "For contributions to optimal estimation and control and leadership in electrical engineering education."


Fellow Award "For his contributions to the field of automatic inertial navigation systems." Other Awards: Outstanding Mechanical Engineering Graduate, Washington University, 1960; Meritorious Public Service Citation, U.S. Dept. of Navy, 1961; Thurlow Award, Institute of Navigation, 1962; Distinguished Alumni Award, Washington University, 1964; Outstanding Achievement Award, American Institute of Industrial Engineers, 1967; WEMA Medal of Achievement, 1969; UCLA Executive Program Award, Graduate School of Business Administration, Executive Program Association, 1969; National Academy of Engineering, 1978; Fellow Award, AIAA, 1982.


Fellow Award "For contributions to precise current comparators and the application of the comparator to industrial measurements."


Fellow Award "For contributions to microwave relay communication systems."


Fellow Award "For contributions to the design, testing, and application of station and transmission line insulators"; Prize Paper Award (coauthor), Transmission and Distribution Committee, IEEE, 1981.


Fellow Award "For contributions to generation control techniques for large-scale interconnected electric power systems." Other Awards: Registered Professional Engineer.


Fellow Award "For contributions to the art and practice of electric power metering."


Fellow Award "For contributions to aerospace research and development programs."


Fellow Award "For engineering contributions in the fields of air communication and navigation." Other Awards: Collier Award, Radio Technical Commission for Aeronautics, 1948.


Fellow Award "For contributions to engineering education"; IEEE Centennial Medal, 1984; Education Award, St. Louis Section, IEEE; Award of Honor, St. Louis Section, IEEE. Other Awards: Who's Who in America; Who's Who in Engineering; American Men and Women of Science; Who's Who Among Students in American Colleges & Universities; Outstanding Young Men of America; Community Leaders of America; Men of Achievement; Sigma Xi; Phi Kappa Phi; Tau Beta Pi; Omicron Delta Kappa; Eta Kappa Nu; Emerson Electric Professor of Electrical Engineering, University of Missouri-Rolla, 1976-present; Alcoa Foundation Professor of Electrical Engineering, University of Missouri-Rolla, 1973-75.


Fellow Award "For contributions to international radio science, to engineering, and to engineering education."


Fellow Award "For contributions to the theory and applications of microwave magnetics."


Fellow Award "For contributions to the development of high voltage instrument transformers." Other
Awards: Sigma Xi, 1923; Citation, American Legion, 1954; Silver Beaver Award, Boy Scouts of America, 1956; Citizenship Award, Westinghouse Electric, 1958; Citation, International Executive Service Corps, 1969; Citation, Shenango Valley Council of Churches, 1970; Distinguished Service Award, American Red Cross, 1976.


Fellow Award “For contributions to engineering education.” Other Awards: Asano Prize, Institute of Electrical Engineers of Japan, 1954; Medal of Meritorious Scientific Contribution, Institute of Electrical Communication Engineers of Japan, 1961; Honorary Member, Institute of Electrical Communication Engineers of Japan, 1965; Rising Sun Decoration of 3rd class, His Majesty the Emperor, 1971; Honorary Professor, Tokyo Institute of Technology.


Fellow Award “For contributions to microwave communications and leadership in development, manufacture, and installation of radio communication systems.” Other Awards: Medal of Honor with Purple Ribbon, Prime Minister of Japan, 1958; Imperial Invention Award, 1966; Medal of Honor, Institute of Electronic and Electrical Communication Engineers of Japan, 1967; Two Distinguished Paper Awards, Institute of Electronics and Communication Engineers of Japan; Commendations: Minister of Post and Telecommunication, Minister of Trade and Industry, Chairman of Nippon Telephone and Telegraph Public Corp., Japan Radio Association, Institute of Electrical Engineers of Japan; Honorable Member: Institute of Electronics and Electrical Engineers of Japan, Member, Institute of Electrical Engineers of Japan, Institute of Information Processing Engineers of Japan.


Fellow Award “For contributions to analyses of high-frequency and pulsed characteristics of electronic circuits.”


Fellow Award “For leadership in transforming the staff and facilities of a 25 Hz rural power system into a modern public utility.”


Fellow Award “For contributions to the development of electronic analog computing techniques.”

MORRILL, WAYNE J., AIEE Fellow 1957. Born: February 22, 1901, Lansing, MI. Degrees: B.S.E.E., 1923, Purdue University; Doctor of Engineering, 1974, Purdue University.

Fellow Award “For achievements in the design and manufacture of fractional horsepower motors.” Other Awards: Sigma Xi, Purdue, 1923; Charles A. Coffin Award, General Electric, 1942.


Fellow Award “For the administration of research in electronics.” Other Awards: Fellow, American Association for the Advancement of Science, 1961. Other Awards: Sigma Xi.


Fellow Award “For contributions towards control systems, medical electronics and pulsed generators.”


Fellow Award “For contributions in the field of radio and television broadcasting”; Scott Helt Award, Broadcasting Group, 1967. Other Awards: Exceptional Service Medal, War Dept., 1945; Engineering Achievement Award, NAB, 1967; Emile Berliner Award, Audio Engineering Society, 1967.


Fellow Award “For contributions to the understanding of radio noise and corona on high-voltage transmission lines.”

MORRISON, JOHN F., IRE Fellow 1951. Born: March 14, 1906, Buffalo, N.Y.

Fellow Award “In recognition of his contributions in the field of broadcast antenna and transmitter design.”


Fellow Award “For significant contributions to the fields of VHF, UHF, and color television.”

Fellow Award "For contributions to the development of space and tropospheric scatter communication systems"; IEEE Armstrong Award, 1976. Other Awards: Outstanding Achievement Award, President Julius A. Stratton, Massachusetts Institute of Technology, 1963; Member, National Academy of Engineering, 1978.


Fellow Award "For contributions to the field of microwave semiconductor devices and components, and to engineering education and management." Other Awards: Sigma Xi; Member, New York State Academy of Science.


MORTON, LYSLE W., AIEE Fellow 1951. Born: June 1, 1901, Blooming Prairie, Minn. Degrees: B.S.E.E., 1924, University of Minnesota.

Fellow Award "For the advancement of the theory and practice of electrical engineering and the allied arts and sciences, and the maintenance of high professional standards among its members"; Standards Board Award, IEEE, 1973. Other Awards: Citation, Eta Kappa Nu, 1952; Gold Key Award, General Electric, 1956; Citation, GOSAM, General Electric, 1966; Citation, I.E.C., 1970; Charles H. Tuttle Citation, Lake George Association, 1971; General Electric, Senior Elfun, Community Service Award, 1974-1975; Who's Who in Engineering.

MORTON, PAUL L., IRE Fellow 1955, AIEE Fellow 1962. Born: May 14, 1906, Silao, Mexico. Degrees: B.S., 1931, University of Washington; M.S., 1938, Massachusetts Institute of Technology; Ph.D., 1943, University of California at Berkeley; The Berkeley Citation, 1973, University of California at Berkeley.

IRE Fellow Award "For his contributions to the field of digital computers and the teaching of electronics"; AIEE Fellow Award "For contributions to the teaching of electrical engineering, to the direction of research and to the development of electronic digital computers."


Fellow Award "For contributions to the theory and the development of hybrid-integrated linear communication networks"; Chairman, Swiss Section, IEEE, 1981. Other Awards: Outstanding Paper Award, Electronic Components Conference, 1969; Swiss Electrotechnical Society; Eta Kappa Nu.

MOSELEY, FRANCIS L., IRE Fellow 1957. Born: August 2, 1908, St. Paul, Minn.


Fellow Award "For contributions to electrical engineering education in the United Arab Republic and for his work in analysis of nonlinear systems." Other Awards: Prize, Egypt, 1950; Prize, United Arab Republic, 1955; Top State Prize in Science, United Arab Republic, 1974.

Fellow Award “For his contributions to the design of radio and television broadcast receivers.” Other Awards: Modern Pioneer Award, National Association of Manufacturers.

MOURADIAN, H., AIEE Fellow 1926.


Fellow Award “For contributions to crossed-field microwave tubes and plasma science.”


Fellow Award “For accomplishments in the field of microwave antennas and tubes.”


Fellow Award “For contributions to the development of electronic tubes and solid-state devices”; J.J. Ebers Award, 1972, “For outstanding technical contributions to electron devices, spanning the evolution of modern electronics from grid-controlled tubes through the alloy transistor, the thyristor, and MOS devices to silicon vidicons and silicon storage vidicons.” Other Awards: David Sarnoff Outstanding Achievement Award, Radio Corporation of America, 1966; Engineering Honor Award, University of Notre Dame, 1975.

MUELLER, GEORGE E., IRE Fellow 1962. Born: July 16, 1918, St. Louis, Mo. Degrees: B.S.E.E., 1939, University of Missouri; M.S., 1940, Purdue University; Ph.D., 1951, Ohio State University; Honorary Doctorates: 1964, Wayne State University; 1964, New Mexico State University; 1964, University of Missouri; 1965, Purdue University; 1965, Ohio State University; 1979, Pepperdine University.


Fellow Award “For contributions to statistical communication and oscillator noise theory and its application to the solution of a broad spectrum of problems.”


Fellow Award “For contribution to the knowledge of the structure of galaxies.” Other Awards: Veder Award, Veder Foundation, The Netherlands, 1956; Member, Netherlands Radio and Electronics Society.


Fellow Award “For contributions to microwave tubes and to television and radio-communications systems.”


Fellow Award “For development of micromagnetic theory and applications to magnetic materials, and for contributions to noise theory of lasers and masers.” Other Awards: Fellow, American Physical Society, 1965; Humboldt Award, 1976; Fulbright Fellowship (h.c.), 1976.


Fellow Award “For contributions in the fields of network theory, feedback systems and engineering education”; Second Paper Prize, AIEE, District 3, 1961; Second Prize, AIEE, Communication Division, 1961; The Haraden Pratt Award, 1974.


Fellow Award “In recognition of his contributions in the field of high-frequency propagation and in the development of microwave components”; Morris E. Leeds Award, 1966, “For his outstanding contribution to the theory and technique of microwave measurements, including his invention and application of standard noise sources and directional couplers”; Microwave Career Award, MTT-S, 1973. “For a career of meritorious achievement and outstanding technical contributions in the field of microwave theory and techniques.” Other Awards: Burghardt Prize, Willamette University, 1926;
Mackay Visiting Professor of Electrical Engineering, University of California at Berkeley, 1955; Ford Foundation Visiting Professor of Electrical Engineering, University of Wisconsin, 1962; Honorary Life Member, MTTS, ADECOM, 1964; Alumni Citation Award, Willamette University, 1968; Engineer of Distinction, Engineers’ Joint Council, 1970; Outstanding Achievement Award, COMAR, 1980.


Fellow Award “For contributions in the design, construction, and use of primary cesium frequency and time standards.”


Fellow Award “For leadership in acoustics research and development, especially in the area of sonar signal processing.” Other Awards: Dept. of Navy Scholar, M.I.T.; Meritorious Civilian Service Awards, 1955, 1960; Superior Accomplishment Awards (Four Inventions); Major Invention Award (corecipitent), PUFFS, 1970.


Fellow Award “For contributions to switching theory, computer design, information theory, and engineering education.” Other Awards: Inada Award, Institute of Electronics and Communications Engineers of Japan, 1955.


Fellow Award “For contributions to the field of integrated circuits”; Program Committee, IEDM, ISSCC, ESSCIRC; Outstanding Paper Award, ISSCC, 1968; Best Invited Paper Award, ESSCIRC, 1982; Editorial Board, IEEE Spectrum; IEEE Field Awards Committee; IEEE G1O Committee. Other Awards: Over 70 papers and patents in the fields of integrated circuits, microwave devices, electron beam systems and medical physics.


Fellow Award “For contributions to education and research in the field of automatic control.” Other Awards: Chicago's Ten Outstanding Young Men Award, 1961.


Fellow Award "For pioneering leadership in the guided missile program." Other Awards: Lawrence Sperry Award, AIAA, 1946; Air Force Scientific Advisory Board, 1980-present.


Fellow Award “For contributions to nonlinear systems analysis as applied to communications, control, and military systems.”


Fellow Award “For contributions to linear antennas and self-complementary antennas.” Other Awards: Literature Prize, Institute of Electrical Engineers, Japan, 1957; Niwa-Takayanagi Award, Institute of Television Engineers of Japan, 1964; Hattori Hohokoh Award, Hattori Foundation, 1971; Literature Prize, Institute of Electronics and Communication Engineers of Japan, 1980; Medal of Honor, IECE of Japan, 1982; Commendation for Distinguished Service, Minister of Science and Technology, 1982.


Fellow Award “For significant contributions in the fields of large direct current machinery design and specialized applications.”


Fellow Award “For contributions in solid-state circuits and for leadership in related professional activities.” Other Awards: Rhodes Scholar, 1947-50; Sigma Xi, 1953; Fellow, American Association for the Advancement of Science, 1959.


Fellow Award “For contributions by invention and development of electrical controls for heavy industry”; Coauthor, IEEE Standard Handbook of Electrical Engineering; Coauthor, Switchgear and Control Handbook (by Robert W. Smeaton).

Tohoku University.
Fellow Award “For contributions to magnetic recording methods, the theory and design of electrical networks, and engineering education.” Other Awards: Honorary Member, Audio Engineering Society, 1973; Japan Academy of Science, 1977.

Fellow Award “For contributions to the development of phased array antennas.” Other Awards: Inada Memorial Scholarship Award, Institute of Electronics and Communication Engineers, Japan, 1954; Ichimura Prize, 1980; Niwa-Takayanagi Prize, Institute of Television Engineers, Japan, 1980; Achievement Award, Institute of Electronics and Communication Engineers, Japan, 1982. The Prize of Minister of State for Science and Technology, Science and Technology Agency, Japan, 1983.

Fellow Award “For distinguished service through technical contributions and administrative leadership in the planning, development and operation of large power systems”; William M. Habirch Award, IEEE, 1979. Other Awards: Member, National Academy of Engineering, 1973; Eta Kappa Nu; Tau Beta Phi.

Fellow Award “For contributions to industrial electronics, data acquisition, and control instrumentation.” Other Awards: Prize Paper, Sigma Xi, 1969; Professional Engineer Award, State of Alabama, 1973.

Fellow Award “For contributions to neutron modeling, medical electronics, human engineering, and nonlinear systems analyses.”

Fellow Award “For contributions to time domain metrology”; First Place, Student Paper Contest, IRE, South California Section, 1951; Recognition Award, IEEE Student Branch, Toledo Section, “For outstanding leadership as Chairman of Electrical Engineering, University of Toledo, 1973-75”; IEEE Instrumentation & Measurement Society: Adm. Committee 1982-1984; Transactions Editorial Review Committee, 1980-present. Other Awards: Dept. of the Army Commendation Pendant for research contributions, 1954; Sigma Tau, 1956; Eta Kappa Nu, 1958; Sigma Pi Sigma, 1959; URSI Commission A, 1966; Distinguished Alumnus Award, California Polytechnic State University, 1972; Tau Beta Pi, 1974; National Bureau of Standards Senior Scientist Fellowship, 1979-80.

Fellow Award “For contributions to electronic-communications switching systems and digital signal transmission.” Other Awards: Paper Award, Institute of Electronics and Communications Engineers of Japan, 1957, 1973; Achievement Award, Institute of Electronics and Communications Engineers of Japan, 1976; Scientific Contribution Award, Minister of Science and Technology of Japan, 1978; Medal with Purple Ribbon, 1983.

Fellow Award “For contributions to the development of microwave transmission lines, traffic control systems, and fiber optics”; Paper Award, IEEE Vehicular Technology Society, 1972. Other Awards: Inada Memorial Award, Institute of Electronics and Communication Engineers ( ICE ) of Japan, 1958; Okabe Memorial Award, IECE of Japan, 1959; Special Distinguished Service Award, Laser Society of Japan, 1983.

Fellow Award “For contributions to the understanding of switching phenomena in high-power switchgear.”

Fellow Award “For contributions in the development and standardization of insulation systems for electrical locomotives and cars.” Other Awards: Award, Governor of Tokyo Metropolis, 1969; Award, Railway Electrification Association Incorporation, Japan, 1971.

Fellow Award “For contributions to the understanding of ionospheric radio propagation.” Other Awards: Asano Award, Institute of Electrical Engineers of Japan, 1936; Distinguished Service Award, Institute of Electronics and Communication Engineers of Japan, 1943.

Fellow Award “For contributions to stability theory and its application to adaptive control systems.”


Fellow Award “For contributions to the basic knowledge and engineering of integrated circuits”; Outstanding Paper Award, International Solid-State Circuit Conference, 1963; Outstanding Paper Award, National Electronics Conference, 1967.


Fellow Award “For his contribution to research and development of sonar, both as a scientist and as a director of a major Navy laboratory.” Other Awards: Fellow, Acoustical Society of America, 1957; Distinguished Civilian Service Award, Dept. of the Navy, 1975.


Fellow Award “For contributions to the analysis of integrated navigation systems.”


Fellow Award “For contributions and leadership in the development of communication and geodetic satellite systems.”


Fellow Award “For contributions to the field of high-voltage engineering education and to the understanding of contaminated insulator breakdown.” Other Awards: Award, Minister of Education, Cairo, 1947; Award, Senate of West Berlin, 1957; Award and Grant, Office of Naval Research, 1961; Grant, National Science Foundation, 1966-69, 1974-76.


Fellow Award “For contributions to radar-system signal processing.” Other Awards: Eta Kappa Nu; URSI.


Fellow Award “For contributions to solid-state devices through the combination of micromechanics and semiconductor physics.” Other Awards: Outstanding Young Electrical Engineer Award (Honorable Mention), Eta Kappa Nu, 1966; Carnegie-Mellon Outstanding Alumnus Award, 1983.


Fellow Award “For contributions to engineering education”; “The Educational Award,” IEEE, St. Louis Section, 1982. Other Awards: Breast Order of Yun Hui, President of China, 1946; Outstanding Chapter President, Missouri Society of Professional Engineers, 1963; Life Member, Radio Club, University of Missouri at Rolla, 1963; Outstanding President, Dept. of Missouri Reserve Officers’ Association, 1964-65; Recipient of University of Missouri at Rolla, Outstanding Teacher Award, 1969; Sigma Xi; Phi Kappa Phi; Tau Beta Pi; Pi Mu Epsilon; Eta Kappa Nu; Sigma Tau; Kappa Mu Epsilon; Sigma Pi Sigma; Honorary Member, Blue Key National Honorary, UMR Student Body, 1983; “Honorary Professor of Military Science,” UMR Military Dept., 1983; Professor Emeritus of Electrical Engineering, 1983, Board of Curators of University of Missouri; Award “ATA Hall of Fame Trapshooting Instructor,” 1982, 83, 84; 5 textbooks, 64 technical papers.

NEILD, J.F., AIEE Fellow 1936.


Fellow Award: “For contributions to circuit theory, especially in the area of filter design.”

NELSON, A. L., AIEE Fellow 1929. Born: June 15, 1892, Charlottetown, Prince Edward Island, Canada. Degrees: B.S., 1915, Massachusetts Institute of Tech-

Fellow Award “In recognition of his contributions in the fields of ultra-high-frequency measurements, electron tubes and circuits”; Mervin J. Kelly Award, 1973, “For outstanding contributions and leadership in the introduction of very high and ultra high frequencies for telecommunications.” Other Awards: David Sarnoff Outstanding Achievement Award in Science, 1960.


Fellow Award “For leadership in and technical management of radar systems engineering.”


Fellow Award “For contributions to the engineering design and operation of electrical systems for large metropolitan areas.”

NEVITT, H. J. BARRINGTON, AIEE Fellow 1960. Born: June 1, 1908, St. Catharines, Ontario, Canada. Degrees: B.A.Sc., 1941, University of Toronto; M.Eng., 1945, McGill University, Quebec.

Fellow Award “For contributions to high quality international communication systems in Latin America.” Other Awards: Fellow, American Association for the Advancement of Science, 1961; Fellow, Institution of Electrical Engineers, U.K., 1966; Fellow, Engineering Institute of Canada, 1972; Discoveries International Symposia, Honda Foundation, Tokyo, Japan.


Fellow Award “For contributions to network synthesis, time-varying systems, and engineering education.” Other Awards: Fulbright Fellow, Australia, 1963-64; Professor Invite, Louvain University, 1967-68; Fulbright-Hays Fellow, Malaysia, 1976.


Fellow Award “For contributions in computing through list processing language development, and for texts on computers, digital systems, and artificial intelligence”; Computer Pioneer Award, Charter Recipient, IEEE Computer Society, 1982. Other Awards: Harry Goode Memorial Award, American Federation of Processing Societies, 1971; Member, American Academy of Arts and Sciences, 1972; Member, National Academy of Sciences, 1972; A.M. Turing Award (with H.A. Simon), ACM, 1975; Member, National Academy of Engineering, 1980; U.A. and Helen Whitaker University Professor of Computer Science, Carnegie-Mellon University.


Fellow Award “For his work in the fields of terrain clearance indicators, airborne communications, and military weapons systems”; Pioneer Award, Aerospace and Electronic Systems Group, 1967. “In recognition of his contribution to radar altimetry.” Other Awards: Guggenheim Fellow, 1929; Lawrence Sperry Award, 1938; Distinguished Alumnus Award, Ohio State University, 1959; Distinguished Public Service Plaque, Federal Aviation Agency, 1965.


Fellow Award “For contributions to magnetic and superconducting memory elements and their applications in computers”; Honorable Mention Award, IEEE Sonics and Ultrasonics Group, 1976. Other Awards: Robert C. Disque Professor of Electrical and Computer Engineering, Drexel University; Adjunct Professor of Radiology, Jefferson University.


Fellow Award “For contributions to aircraft lightning protection, and for development of techniques for the controlled study of natural lightning.”


Fellow Award “For contributions to semiconductor technology and for leadership in solid-state electronics research.” Other Awards: Fellow, American Physical Society, 1959.


Fellow Award “For contributions to the continuing

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development, testing, and manufacture of devices for high-voltage power cable.”


Fellow Award “For contributions to and leadership in the design of computer-control systems for electric power applications”; First Prize Paper, AIEE Power Division, 1952-53.


Fellow Award “For contributions to physical electronics, radio telemetry, and research in upper atmosphere phenomena”; IRE-PGSET Award, 1957; IEEE, S-AES Pioneer Award, 1972, "For pioneering contributions to the field of high-speed electronic time-division multiplex radio telemetry and early FM/FM telemetry." Other Awards: Phi Beta Kappa, 1936; Sigma Xi, 1939; National Telemetry Conference Award, 1963.


Fellow Award “For contributions to the theory and applications of automatic control.” Other Awards: Young Author’s Prize, Electrochemical Society, 1938; Fellow, Instrument Society of America, 1960; Excellence in Documentation Award, Instrument Society of America, 1963; Honorary Member, Instrument Society of America, 1979; Fellow, American Association for the Advancement of Science, 1966; Rufus Oldenburger Award, American Society of Mechanical Engineers, 1969; Alfred F. Sperry Medal Award (with J.G. Ziegler), Instrument Society of America, 1974; Control Heritage Award, American Automatic Control Council, 1980.


Fellow Award “For leadership in planning, design, and equipment applications to distribution systems.”


Fellow Award “For contributions to metal-oxide-semiconductor interfaces.”


Fellow Award “For contributions to the design of electrical generating plants of many types and of metropolitan substations.” Other Awards: Certificate of Appreciation, U.S. Army O.Q.M.G. Office, R&D Branch, 1944.


Fellow Award “For contributions to electrical and nuclear instrumentation and to engineering education.” Other Awards: Distinguished Service Award, Association of Applied Electrical Technique, 1944; Commendation, Minister of International Trade and Industry, 1969; Blue Ribbon Medal, Japanese Government, 1977; Professor Emeritus, University of Tokyo; Member, Institute of Electrical Engineers of Japan; Member, Institute of Electronics and Communication Engineers of Japan; Member, Physical Society of Japan; Meritorious Member, Japan Society of Applied Physics; Member, Society for Instrument and Control Engineers (Japan); Member, Atomic Energy Society of Japan; Member, Japan Society for Medical Electronics and Biological Engineering.


Fellow Award “For technical contributions to solid state electronics, and leadership in related professional activities”; Jack A. Morton Award, IEEE, 1983. Other Awards: Director’s Award, Japanese Science and Technology Agency, 1965, 1970; Imperial Invention Prize, 1966; Matsunaga Memorial Award, 1969; Okochi Memorial Technology Prize, 1971, 1980; Award of the Japan Academy, 1974; Meritorious Honor Award, Japanese Science and Technology Agency, 1975; Purple Ribbon Medal, Japanese Government, 1975; Achievement Award, Institute of Electronics and Communication Engineers of Japan, 1975; Inoue Harushe Awards, 1982; Person of Cultural Merits, 1983.


Fellow Award “For his leadership in development of radio communication services.”


Fellow Award “For contributions and leadership in the field of broadcasting and television engineering.” Other Awards: Niwa-Takayanagi Prize, Institute of Television Engineering, 1961; Minister’s Award, Ministry of Science and Technology, 1963; Silver Prize, Emperor of Japan, 1964; Mainichi Industrial Engineering Prize, 1964; Member, Institute of Electrical Engineers of Japan; Member, Institute of Electronic and Communication Engineers of Japan; Member, Institute of Television Engineers of Japan; Blue Ribbon Medal, Emperor of Japan, 1970; Third Order Medal of Sacred Treasure, Emperor of Japan, 1983.


Fellow Award “For a diversity of contribution in the field of measurements and manufacturing processes; particularly as applied to transformers and capacitors.” Other Awards: Charles A. Coffin Award, General Electric, 1948.


Fellow Award “For contributions to electrical equipment for the petroleum industry.”


Fellow Award “For his contributions to the knowledge of the fundamentals of vacuum tube performance, especially with regard to fluctuation phenomena and the effects of electron transit time.”


Fellow Award “For practical developments in the field of semi-conductors.” Other Awards: Fellow, American Physical Society; Medal Of Honor, Electronic Industries Association, 1966; Honorary Director, Electronic Industries Association, 1966.


Other Awards: Tau Beta Pi, 1938; Standards Council Award, American Standards Association (now ANSI), 1953.


IRE Fellow Award “In recognition of his work in applying his conclusions from the theory of radio wave propagation to the problems of frequency allocation”; AIEE Fellow Award “For his contributions in the field of radio wave propagation”; Harry Diamond Award, IRE, 1960. Other Awards: Fellow, American Association for the Advancement of Science, 1943; Fellow, American Physical Society, 1945; Stuart Ballantine Medal, Franklin Institute, 1954; Exceptional Service Award, U.S. Dept. of Commerce, 1962; Silver Medal, U.S. Dept. of Commerce, 1966.


Fellow Award “For basic contributions to atomic and molecular physics.” Other Awards: Alfred P. Sloan Research Fellow, 1958; American Astronomical Society; Fellow, American Physical Society; Tau Beta Pi; Sigma Xi; Fellow, American Association for the Advancement of Science; NASA Medal for Exceptional Scientific Achievement, 1980.


Fellow Award “For leadership in research develop-


Fellow Award "For contributions to the advancement and implementation of reliability technology"; Annual Award, IRE, Professional Group on Reliability and Quality Control, 1961, "For his part in the development of the publication 'Parts Specification Management for Reliability,' as a member of the ad hoc study group on parts specification management for reliability."


Fellow Award "For contributions to the theory of semiconductor device physics." Other Awards: Fulbright Visiting Professor, Hebrew University of Jerusalem, 1971-72.


Fellow Award "For contributions to the theory and the development of line switching and data transmission systems." Other Awards: IBM Fellow, 1975.

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Fellow Award "For contributions to nuclear power reactor control systems."


Fellow Award "For contributions to research in radar and electron optics, especially for development of the scanning electron microscope." Other Awards: Fellow, Royal Society, 1969; Member, Fellowship of Engineering, 1976; Foreign Associate, National Academy of Engineering, 1979.


Fellow Award "For contributions to the administration of scientific research."


Fellow Award "For contributions to cable technology for EHV and UHV electric energy transmission." Other Awards: Fellow, Institution of Electrical Engineers, 1978; Charted Engineer, 1978.


Fellow Award "For distinguished leadership in the field of military electronics"; Chairman, Joint Technical Advisory Committee, IRE & Elia, IEEE and Elia JMAC. Other Awards: Order of Leopold, Degree of Croix de Guerre with Palm, Belgium, 1940; Legion of Merit, 1945; Oak Leaf Cluster, 1945; Croix de Guerre, Order of the Army with Palm, France, 1945; Gold Medal, Franklin Institute, 1954; Silver Medal, Poor Richard Club, 1956; Distinguished Service Medal, 1959; Distinguished Service Award, Executive Office of the President, 1969.


Other Awards: Sigma Xi.

University.
Fellow Award “For pioneering contributions to machine language translation, to information retrieval, and to the use of computers in education.” Other Awards: Phi Beta Kappa; Sigma Xi; Fellow, American Association for the Advancement of Science; Fellow, American Academy of Arts and Sciences.


Fellow Award “For contributions to and leadership in telecommunications research and development.”

Fellow Award “For technical contributions to microwave and millimeter-wave transmission and for leadership in the research and the development of telecommunication.” Other Awards: Award, President of Nippon Telegraph and Telephone Public Corporation, 1954; Twenty-seventh and twentieth Mainichi Industrial Technology Special Awards, 1975, 1977; Achievement Award, Institute of Electronics and Communication Engineers of Japan, 1979; Achievement Award, Minister Award, Ministry of Post and Telecommunication, 1981; Achievement Award, Minister Award, Science and Engineering Agency, 1983.

Fellow Award “For contributions to electrical communications and leadership in the theoretical, development, and manufacturing fields.”


Fellow Award “For his contributions to the development of solid state point contact rectifiers.” Other Awards: Distinguished Alumnus Award, Pennsylvania State University, 1976.

Fellow Award “For contributions to circuit theory and computer-aided circuit analysis”; Guillimin-Causer Prize Award, IEEE Circuits and Systems Society, 1974. Other Awards: Best Paper Award, IECEJ (Institute of Electronics and Communication Engineers of Japan), 1969.

Fellow Award “For contributions to computer engineering.” Other Awards: Mainichi Communication Prize, 1943; Minister Prize of International Trade and Industry, 1974; Honorary Member, Information Processing Society of Japan, 1980; Professor Emeritus, Tohoku University; Member, Board of Trustees, Pacific Telecommunications Council.

Fellow Award “For contributions to air traffic control automation and navigational electronic engineering.” Other Awards: Distinguished Service Award, Institute of Electronics and Communication Engineers of Japan, 1968; Medal of Honor with Purple Ribbon, 1968; Commendation, Minister of Transport, 1972; Life Member, Institute of Electrical Engineers of Japan; Fellow, Institute of Electronics and Communication Engineers of Japan, 1973; Commendation, Ministry of Posts and Telecommunications, 1978; Second Class Order of the Rising Sun, 1980.

Fellow Award “For research on corona measurements and the effects of corona on the deterioration of electrical insulation.” Other Awards: Minister’s Prize, Science and Technology Agency, Government of Japan, 1971.

Fellow Award “For contributions to microwave theory and techniques and to engineering education.” Other Awards: Distinguished Service Award (Koseki-sho), Institute of Electronics and Communication Engineers of Japan, 1973.
Japan, 1974; Award for Scientific and Technological Development, Governor of Tokyo Metropolis, 1975; Broadcast Culture Prize, The Japan Broadcasting Corporation, 1979.


Fellow Award “For contributions to microwave integrated circuit techniques.” Other Awards: Cash Award for Invention, NASA; Phi Beta Kappa; Tau Beta Pi; Eta Kappa Nu.


Fellow Award “For contributions to information and systems sciences, and to engineering education.”


Fellow Award “For contributions to lightweight and microwave engineering and, in particular, for the development of techniques for the analysis and synthesis of propagation in multimode fibers.” Other Awards: Inada Memorial Award, IECE Japan, 1958; Okabe Memorial Award, IECE Japan, 1966; Hattori-Hoko Prize, Hattori Foundation, 1974; Paper Prize, IECE Japan, 1975; Book Prize, Institute of Television Engineers (ITE) of Japan, 1975; Book Prize, IECE Japan, 1978; Paper Prize, ITE Japan, 1979; Achievement Prize, IECE Japan, 1979; Achievement Prize, ITE Japan, 1981; Paper Prize, IECE Japan, 1983; Achievement Prize, IECE Japan, 1983.


Fellow Award “For contributions to microwave magnetron design.” Other Awards: Certificate of Commendation, Office of Scientific Research and Development; Certificate of Recognition, NASA; Three Special Patent Awards for Outstanding Inventions, Westinghouse Electric Co.; Member at Large, National Science Honorary Society of Sigma Xi; Fellow Award, American Physical Society; National Council of Engineering Examiners’ Award of Certificate; Registered Professional Engineer.


Fellow Award “For contributions to electron devices and large-scale integration technologies.” Other Awards: Senior Postdoctoral Fellowship, National Science Foundation, 1970-1971.


Fellow Award “For his contributions to communications, particularly in the field of information theory and coding systems”; Lamme Medal, IEEE, 1977, “For his contributions to the theory and practice of electronic instrumentation and measurements.” Other Awards: Distinguished Alumnus Award, California Institute of Technology, 1972; Wright Prize, 1984.


Fellow Award “For contributions to digital computer design, manufacturing, and marketing.” Other Awards: Young Electrical Engineer of the Year, Eta Kappa Nu, 1960.


Fellow Award “For contributions to the understanding of the breakdown mechanism of electrical insulation.” Other Awards: 3M Carlton Society, 1976; Sigma Xi.


Fellow Award “For contributions to information and communication theory as applied to communications systems design.”


Fellow Award “For leadership and technical administration in systems engineering.” Other Awards: Fellow, American Physical Society, 1958; Associate Fellow, American Institute of Aeronautics and Astronautics, 1966; Fellow, AAAS, 1967; Michigan Man of Science, 1973; Engineering Society of Detroit.


Fellow Award “For leadership in and management of innovative EHV projects.” Other Awards: Member, Institute for Management Sciences; Tau Beta Pi.


Fellow Award “For contributions and leadership in the engineering, development, and construction of international communication terminals and systems”; IEEE Award in International Communication in Honor of Hernand and Sosthenes Behn, 1971, “For outstanding technical innovations and management in the development of many key technologies underlying the present day international communications art, especially TELSTAR, the first operational telecommunications satellite, as well as his earlier contributions to transoceanic cable telephony.” Other Awards: Tau Beta Pi; Sigma Xi; Member, National Academy of Engineering.


Fellow Award “For contributions to the understanding of piezoelectric phenomena and the development of piezoelectric filters.” Other Awards: C.B. Sawyer Award, Frequency Control Symposium, 1975; Award for Distinguished Achievement, Institute of Electronics and Communication Engineers of Japan, 1976; Niwa-Takayanagi Paper Award, Institute of Television Engineers of Japan, 1977.


OPPELT, WINFRIED, Fellow 1967. Born: June 5, 1912, Hanau, Germany. Degrees: Dipl.Ing., 1934, Dr.Ing., 1943, Darmstadt; Dr.Ing.(Hon.), 1965, Technische Hochschule Munich.

Fellow Award “For outstanding accomplishments in engineering education and contributions to the theory and application of automatic control.


Fellow Award “For contributions to digital signal processing and speech communications”; Senior Award, IEEE Group on Audio and Electroacoustics, 1969, “For authoring a paper of exceptional merit”; Technical Achievement Award, IEEE Group on Acoustics, Speech, and Signal Processing, 1977, “In recognition of fundamental contributions in the development..."


Awards: Citation, 1966, "As a pioneer in the field of lightning and oscillography." Other Awards: Certificate, War Dept., 1945.


Fellow Award "For contributions to the theory and engineering design of passive and active circuits"; Outstanding Paper Award, IEEE Group on Circuit Theory, 1969.


Fellow Award "For contributions to network theory and to electrical engineering education." Other Awards: Award, Yale Engineering Association, 1953; Fellow, Timothy Dwight College, Yale University, 1959; Fellow, American Association for the Advancement of Science, 1959; Sorenson Fellow, 1962; Member, New York Academy of Science, 1975; Regent, California Lutheran College, 1975.


Fellow Award "For contributions to communication systems design." Other Awards: Akiyama and Shida Memorial Award (Prize Paper Award), Institute of Electronic and Communication Engineers of Japan, 1954; Member, Institute of Electronic Engineers of Japan; Honorary Member, Institute of Electronic and Communication Engineers of Japan; Member, Institute of Television Engineers of Japan; His Majesty Purple Ribbon Medal Award, Emperor of Japan, 1981.


IRE Fellow Award "For his contributions in the electrical communication field including outstanding leadership and direction in the application of new techniques to telephony." Awards: Edison Medal, AIEE, 1960. Other Awards: Fellow, Acoustical Society of America; Fellow, American Physical Society; Fellow, American Association for the Advancement of Science; Fellow, American Society for Engineering Education; Honorary Member, Tau Beta Pi, 1947; Steinmetz Lecturer, Steinmetz Memorial Foundation, 1953; Eminent Member, Eta Kappa Nu, 1955; Knight, Royal Order of Vasa, Sweden, 1955; Howard Coonley Medal, American Standards Association, 1956; 75th Anniversary Medal, American Society of Mechanical Engineers, 1956; Special Award, Joint Council of Municipal Planning Boards, Essex County, New Jersey, 1957; Special Award, Engineers Joint Council, 1958; Award, Regional Plan Association of New York, 1959; Honorary Member, Montclair Society of Engineers, 1960; Medalist, First Golden Plate Banquet of Academy of Achievement, 1961; Silver Medal Award, American Society of Planning Officials, 1962; Honorary Life Fellow, Standards Engineers Society, 1963; Certificate of Appreciation, Mayor of Graz, Austria, 1965; Honorary Member, Institute of Electronics and Communications Engineers of Japan, 1965; Community Service Award, Montclair Chamber of Commerce, 1965; Citizenship Award, Service Clubs Council of Montclair, 1976.


Fellow Award "For engineering development and coordination of the design of rotating electric machinery to the changing requirements of industry and national defense."


Fellow Award "For contributions to magnetic thin-film memory, and for leadership in the field of electrical communications." Other Awards: Prize of Science and Technology Agency Minister, 1965; Cultural Decoration of the Purple Ribbon, 1966; Prize of the Governor of Tokyo, 1966; Achievements Prize of the Institute of Electronics and Communication Engineers, 1972; Services Prize of the Institute of Electronics and Communication Engineers, 1975.


Other Awards: Illuminating Engineering Society; Institution of Electrical Engineers, U.K.


Fellow Award “For leadership in the application of semiconductor devices and in the development of VLSI technology.” Other Awards: Special invention Prize, Kanagawa Branch, Invention Society of Japan, 1962; All Japan Invention Prize, Invention Society of Japan, 1963; First Prize, Machine Development Society, Japan, 1966; Okochi Memorial Grand Production Prize, Okochi Memorial Foundation, 1969; Japan Industrial Technology Grand Prize, The Prime Minister, 1974.


Fellow Award “For contributions to high-voltage testing and measuring techniques, and to statistical insulation testing.”


Fellow Award “For contributions in magnetic measurements, materials and components, and leadership in national and international standards on magnetics.”


Fellow Award “For significant contributions to the science of circuit protection, and for guidance and contributions on the formulation of U.S. and International Standards.”


Fellow Award “For contribution to circuit theory and engineering education.” Other Awards: Paper Award, 1975, Achievement Award, 1976; Distinguished Services Awards, 1983, Institute of Electronics and Communications Engineers of Japan.


by the American Society of Civil Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, American Society of Mechanical Engineers and IEEE, 1975; Award (with William R. Hewlett), Scientific Apparatus Makers Association, 1975; Gold Medal Award, National Football Foundation and Hall of Fame, 1975; Vermilye Medal (with William R. Hewlett), Franklin Institute, 1976; Award for International Achievement, World Trade Club of San Francisco, 1976; Award of Merit, American Consulting Engineers Council Fellows, 1977; Achievement in Life Award, Encyclopedia Britannica, 1977; Founders Award, National Academy of Engineering, 1979; 1980 Engineering Award of Distinction, San Jose State University, 1980; Thomas D. White National Defense Award, United States Air Force Academy, 1981; Distinguished Information Sciences Award, Data Processing Management Association, 1981; "1981 Citizen of the Year," Police Activities League, San Jose; John Fritz Medal, Founders Society, WESCON, 1982; Sylvanus Thayer Award, United States Military Academy, West Point, New York, 1982; Environmental Leadership Award, Natural Resources Defense Council, 1983.


Fellow Award "For engineering and management activities which led to the development of large-scale military electronic systems." Other Awards: Air Force Legion of Merit; Sigma Xi; Tau Beta Pi; Eta Kappa Nu.


Fellow Award "For contributions to military electronic research and development"; Harry Diamond Memorial Award, 1974, "For outstanding technical leadership and contributions to ordnance electronics, metrology and international standardization of electrical quantities and symbols." Other Awards: Exceptional Service Certificate, Bureau of Ordnance; Gold Medal Award, U.S. Dept. of Commerce; Certificate of Appreciation, War Dept., Office of Scientific Research and Development; Fellow, American Physical Society.


Fellow Award “In recognition of his pioneering achievements in solving some of the early problems of basic importance to radar”; Harry Diamond Award, IRE, 1953, “For outstanding contributions to the development of radar through pioneering work and through sustained efforts over the years”; Pioneer Award, IEEE Aerospace and Electronic Systems Society, 1977. Other Awards: Distinguished Citizen Award, U.S. Dept. of Navy, 1954; Presidential Certificate of Merit, 1946; Sigma Xi, 1950; Scientific Research Society of America, 1951; Fellow, American Association for the Advancement of Science, 1952; Stuart Ballantine Medal, Franklin Institute, 1957; Sigma Tau, 1959; Capt. Robert Dexter Conrad Award, U.S. Dept. of Navy, 1959; Centennial Award, Wheaton College, 1960; Federal Distinguished Civilian Service Award, 1960; Fellow, American Scientific Affiliation, 1960; Fellow, Washington Academy of Sciences, 1962; W. Randolph Lovelace II Award, 1967; Alumni Achievement Award, George Washington University, 1967; Bloomington (Minnesota) Bicentennial Distinguished Citizen Award, 1976; Book of Golden Deeds Award, National Exchange Club, 1979; Minnesota Inventors Hall of Fame, 1979.


Other Awards: Tau Beta Pi; Eta Kappa Nu; Sigma Xi; Sigma Tau.


Fellow Award “For contributions to applying systems engineering and systems sciences techniques to the study of large-scale socioeconomic systems.”


Fellow Award "For his contributions to the advancement of radio broadcast and television receiver design." Other Awards: Professional Merit Awards, China Ministry of Communications, 1936, 1937; Merit Award, Office of Scientific Research and Development, 1944; Professional Achievements Award, C.I.E., 1961; Best Conference Paper Award, Electronic Components Conference, 1966, 1968; Best Paper Award, RCA, DCSD, 1968; Patent Recognition Award, RCA, 1974; Seminar Award on Engineering and Technology, 1976; Telecommunications Management Award, 1977; Contribution to Science Award, National Science Council, ROC, 1979; Outstanding Achievement Award, Industrial Technology Research Institute, ROC, 1980; Most Outstanding Service Award, United Microelectronics, 1982; Distinct Contributions Award, ERSO/ITRI, 1983.


Fellow Award "For leadership in the management of research and development."


Fellow Award "For contributions to the development of transmission and distribution systems capable of serving adequately a load of exceptionally rapid growth."


Fellow Award "For contributions to electron devices and quantum electronics." Other Awards: Senior Member, Sigma Xi, 1955; Fulbright Award, 1965; Fellowship Grant, Science Research Council of the United Kingdom, 1976.


Fellow Award "For contributions to laser and electroptic research and for leadership in engineering education." Other Awards: "Nuclear USA" Commendation, Atomic Energy Commission, 1970; Merit Award, CECON, Inc., 1978.


Fellow Award "For pioneering the engineering development of the magnetic-core memory and for continuous leadership in the evolution of a series of advanced high-speed digital computers."

PAPOULIS, ATHANASIOS, Fellow 1967.

Fellow Award "For contributions to the understanding of probability and stochastic processes in engineering education."


Fellow Award "For contributions to single sideband communications and to multichannel frequency control systems."


Fellow Award "For leadership in engineering education and for the advancement of electromagnetic theory"; Achievement Award, IEEE Education Society, 1980; IEEE Centennial Medal, 1984. Other Awards: First Prize Paper by Member of Georgia Tech Faculty, Sigma Xi, 1965.


Fellow Award "For contributions to the design of electric transmission systems and for leadership in their research."


Fellow Award “For contributions to the theory of synchronous machinery and the stability of high voltage transmission systems”; National First Paper Prize, AIEE, 1930, for “Circuit Breaker Recovery Voltages”; Lamme Medal Award, 1972, “In recognition of his outstanding contributions to analysis of the transient behavior of ac machines and systems.” Other Awards: Distinguished Civilian Service Award, U.S. Dept. of Navy, 1945.

PARKER, DON, Fellow 1982. Born: January 14, 1933, Ogden, UT. Degrees: B.S.E.E., 1956, Brigham Young University; M.S., 1957, Harvard University; D.Sc., 1964, Massachusetts Institute of Technology.

Fellow Award “For technical direction of the development of high-power solid-state sources.”


Fellow Award “For contributions to the field of electrooptical engineering.” Other Awards: Member, Optical Society of America, 1949; Member, Society of Motion Picture and Television Engineers, 1950; Member, American Physical Society.


Fellow Award “For achievements in inertial navigation and leadership in engineering management.” Other Awards: Merit Award, Carnegie-Mellon Alumni Association, 1969; Member, National Academy of Engineering, 1976; Fellow, American Institute of Aeronautics and Astronautics, 1980.


Fellow Award “For contributions to the design of color television receivers”; IEEE Consumer Electronics Award, 1971, “For outstanding contributions to consumer electronics”; Two First Prize Papers, Consumer Electronics Group.


Fellow Award “For contributions to circuit and system theory”; Harry Diamond Memorial Award, IEEE, 1984. Other Awards: Carl E. Menneken Research Award, Sigma Xi, 1977; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For contributions to the conception, design and development of missile and spacecraft systems.” Other Awards: Man of the Year Award, La Canada, 1958; Public Service Award, NASA, 1963; Louis W. Hill Space Transportation Award, American Institute of Aeronautics and Astronautics, 1963; Fellow, American Institute of Aeronautics and Astronautics, 1965; Man of the Year Award, California Air Force Association Aerospace Industry, 1966; Exceptional Service Medal, NASA, 1967; Member, National Academy of Engineering, 1973; Distinguished Service Medal, NASA, 1980; AIAA Goddard Astronautics Award, 1980.


PARZEN, BENJAMIN, Fellow 1970. Born: April 5, 1913, Poland. Degrees: B.S.E., 1936, City College of The City University of New York.

Fellow Award “For contribution to the theory and practice of wide-range frequency synthesizers and to the precision measurement of signals of high spectral purity.”


Fellow Award “For contributions to the development of the carbon dioxide and spin-flip Raman lasers”; Lamme Medal, IEEE, 1976, “For the invention and development of the carbon dioxide and spin-flip Raman lasers and for contributions to infrared spectroscopy of solids and gases.” Other Awards: Ranade Prize, Poona University, 1956; P.T. Bastikar Memorial Prize, Poona University, 1958; Adolph Lomb Medal, Optical Society of America, 1966; Fellow, American Physical Society, 1966; Ballantine Medal, Franklin Institute, 1968; Coblentz Award, Coblentz Society, American Chemical Society, 1974; Member, National Academy of Sciences, 1974; Honor Award, Association of Indi-
ans in America, 1975; Zworykin Award, National Academy of Engineering, 1976; Fellow, American Academy of Arts and Sciences, 1976; Fellow, Optical Society of America, 1976; Member, National Academy of Engineering, 1978; Founders’ Award, Texas Instruments, 1978; Fellow, American Association for the Advancement of Science, 1980; Honorary Member, Gynecologic Laser Society, 1981; Townes Award, Optical Society of America, 1982; NY Section Award, Society for Applied Spectroscopy, 1982; Honorary Fellow, Institution of Electronics and Telecommunications Engineers (India), 1983; Honorary Fellow, Indian National Science Academy, 1983.


Fellow Award “For contributions to power system reliability analysis and assessment”; Prize Paper Award, Industrial & Commercial Power Systems Department, IEEE Industry Applications Society, 1975. Other Awards: Outstanding Young Engineer, Brazos Chapter, TSPE, 1970; Eta Kappa Nu; Tau Beta Pi; Sigma Xi.


Fellow Award “For contributions to the development of phased-array antenna technology.” Other Awards: Eta Kappa Nu, 1950; Tau Beta Pi, 1951; Phi Kappa Phi, 1952; Sigma Xi, 1962; RCA MSRD Annual Technical Excellence Award, 1966; David Sarnoff Outstanding Technical Achievement Award, RCA, 1975.


Fellow Award “For contributions to nuclear electronics, data-handling systems, and instrumentation.” Other Awards: National Award for Engineering Technology (Citation and Cash Award), FIE Foundation, India, 1977; Dr. A. N. Khosla National Award (Citation, Gold Medal, and Cash Award), University of Roorkee, 1977; Federation of Indian Chambers of Commerce and Industries National Award for 1979; Fellow, Maharashtra Academy of Sciences, 1977; National Representative of the IERE (UK) Council in India; Member, National Council of Institution of Engineers (India) and Institution of Electronic and Telecommunication Engineers, (India); Chairman, Technology Transfer Group, Bhabha Atomic Research Centre and Head, Computer Centre, Bhabha Atomic Research Centre; Member, High Level Committee for Technological Research and its Utilization of the Government of Maharashtra.


Fellow Award “For contributions to the theory and application of pattern recognition.”


Fellow Award “For his contributions in Canada to the field of International Communications.” Other Awards: Institution of Electrical Engineers, (U.K.).


Fellow Award “For contributions to development of multi-generator automatic-parallelling ac electrical power systems for large aircraft.” Other Awards: Registered Electrical Engineer, California.


Fellow Award “For contributions to spacecraft technology and electronic instrumentation.” Other Awards: Eta Kappa Nu, 1942; Sigma Xi, 1953.

PEARCY, NOAH C., AIEE Fellow 1943. Born: December 5, 1898, Jeffersonville, Ind. Degrees: B.S.E.E., 1922, Purdue University.


Fellow Award “For contributions to semiconductor physics and to the development of the silicon solar cell.” Other Awards: John Scott Award, City of Philadelphia, 1956; John Price Wetherill Medal, Franklin Institute, 1963; Gold Plate Award, American Academy of Achievement, 1963; Member, National Academy of Engineering, 1968; Member, National Academy of Sciences, 1970; Marian Smoluchowski Medal, Polish Physical Society, 1975; Fellow, American Physical Society; Sigma Xi; Solid State Science and Technology Award, Electrochemical Society, 1981; Gallium Arsenide Symposium Award, 1981; Alfred Krupp von Bohlen und Halbach Energy Research Prize, Krupp Foundation, 1981; Heinrich Welker Medallion, Siemens AG, 1983.


Fellow Award “For contributions to the theory of multivariable control systems.”

Fellow Award “For contributions to microwave tubes.” Other Awards: Phi Beta Kappa; Sigma Xi.


Fellow Award “For contributions to coordinated design of thermal and hydraulic generation.”


Fellow Award “For contributions to gaseous electronics and to semiconductor device reliability.”


Fellow Award “For contributions to radio science in the polar regions, and for leadership of women in engineering”; IEEE Antennas and Propagation Society “Man of the Year” (sic) 1979. Other Awards: Achievement Award, Society of Women Engineers, 1973; Distinguished Engineering Alumnus Award, University of Colorado, 1974; ABET Engineering Accreditation Commission Special Award, 1983; Who’s Who in Engineering; Who’s Who in America.


Fellow Award “For contributions to the breakdown mechanism of compressed gas insulation.” Other Awards: Member, Danish Academy of Technical Sciences, 1970.

PEDERSON, DONALD O., Fellow 1964. Born: September 30, 1925, Hallock, Minn. Degrees: B.S., 1948, North Dakota State University; M.S., 1949, Ph.D., 1951, Stanford University; Dr. (Applied Science) (Hon.), 1979, Katholieke University of Leuven, Belgium.


Fellow Award “For leadership in the planning and design of electrical transmission systems for Brazil and for applications of analytic approaches in equipment specification.”

PENDLETON, WESLEY W., AIEE Fellow 1962. Born: April 2, 1914, Providence, R.I. Degrees: B.S.E.E., 1936, University of Rhode Island; M.S.E.E., 1940, Massachusetts Institute of Technology.

Fellow Award “For contributions to the development of ultra high-temperature electrical insulation”; Paper Prize, Electrical Insulation Conference, 1963; Various Offices in E/EIC; 22 patents.


Fellow Award “For contributions to varactor theory and to the electrodynamic theory of moving media.”


Fellow Award “For contributions to the development of very-high-temperature insulation systems”; President, IEEE Electrical Insulation Society, 1981, 1982.


Other Awards: Order of Merit, Westinghouse Electric, 1937; John Price Wetherill Medal, Franklin Institute, 1951; Frank A. Chambers Award, Air Pollution Control Association, 1978; Professional Achievement Citation, Iowa State University, 1979.


Fellow Award “For contributions to sensitivity and feedback control theory.”


Fellow Award “For contributions to air navigation and traffic control.” Other Awards: Public Service Award, Arizona Council of Engineering and Scientific


Fellow Award “For his leadership in the development and application of radars to air traffic control.” Other Awards: Pioneer Award, (co-recipient), 1983.


Fellow Award “For contributions to the theory and application of optical fiber transmission systems.”


Fellow Award “For his contributions to the reduction of fluctuation noise in traveling wave tubes”; Founding Member, IEEE Society on Social Implications of Technology. Other Awards: American Physical Society; Sigma Xi; Founding Member, 1974, Honorary Member, Swiss Solar Energy Society, 1980.


Fellow Award “For contribution to the theory of microwave radiation and scattering.


Fellow Award “For contributions to propagation aspects of communications.” Other Awards: Scientific Research Society of America; Sigma Xi; Society for Industrial and Applied Mathematics.


Fellow Award “For his contributions to the design of new audio frequency devices and acoustic measuring instruments.” Other Awards: Fellow, Acoustical Society of America, 1951; John H. Potts Memorial Award, Audio Engineering Society, 1968.


Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940.


Fellow Award “For contributions to coding theory.”


Fellow Award “For pioneering in aero-medical instrumentation and for technical direction of national defense projects.” Other Awards: Northrop Patent Award, 1950; WESCON Award, 1960; Certificate of Appreciation, California State Board of Registration for Professional Engineers, 1971; Fellow, Institute for the Advancement of Engineering, 1974; Service Award for Conference Advisor to 1982 Auto Test Con.


Fellow Award “For contributions in the development, production, supply, and quality control of military signal equipment.” Other Awards: Legion of Merit, U.S. Dept. of Army, 1945.


Fellow Award “For contributions to semiconductor physics, fluctuation phenomena, and surface physics”; Browder J. Thompson Award, IRE, 1954. Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Navy, 1954; Fellow, Texas Academy of Sciences; Fellow, American Physical Society.


Fellow Award “For engineering management in military and space electronics, and incorporation of integrated electronics in aerospace systems.” Other Awards: Order of Merit, Westinghouse, 1965; Society of Manufacturing Engineers, Region I Award of Commendation, 1982.


Fellow Award “For his outstanding work as engineer and educator in the field of high-frequency and microwave communications”; Electronic Achievement Award, IRE, Region 7, 1952; Founders Medal, IEE, 1983. Other Awards: Presidential Certificate of Merit, 1949; Fellow, American Association for Advancement of Science, 1965; National Academy of Engineering, 1967; Engineering Educator of the Year, Engineers Week Committee of Atlanta, 1973; Honorary Member, American Society for Engineering Education, 1976; National Science Board, 1977-1982; Distinguished Engineering Alumnus Award, University of California, Berkeley, 1979; Distinguished and Unusual Service Award, American Society for Engineering Education, 1979; Archdiocesan Medal of St. Paul, Atlanta, 1980; Academia Nacional de Ingenieria, Mexico, 1981.


Fellow Awards “For contributions to electrified production of automobiles.”


Fellow Award “For contributions to the application of digital computers to power systems”; Outstanding Paper Award, Power System Relaying Committee, IEEE, 1978. Other Awards: Gold Medalist, Madhya Pradesh, India, 1955.


Fellow Award “For contributions to the development and applications of instrumental methods in environmental radionuclide detection and behavior”; IEEE Centennial Medal, 1984.


Fellow Award “For his contributions to engineering in the fields of power generation and transmission.”


Fellow Award “For management and leadership of aerospace vehicle and space programs”; Simon Ramo Medal, IEE, 1984. Other Awards: Thomas D. White Space Trophy, National Geographic Society; Langley Medal, Smithsonian Institution; Astronautics Engineer Award, National Space Club; Flying Tiger Pilot Trophy; Distinguished Service Medal, awarded twice, National Aeronautics and Space Administration; Distinguished Service Medal with Oak Leaf Cluster; Legion of Merit; Distinguished Flying Cross with Oak Leaf Cluster; Air Medal with 7 Oak Leaf Clusters, U.S. Air Force; Army Commendation Medal; Croix de Guerre, France; Order of National Security Merit, Republic of Korea; Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Astronautical Society; Member, National Academy of Engineering; Member, National Space Club; Member, Alpha Kappa Psi.


Fellow Award “For contributions in the fields of power circuit breaker design, performance, and power system interaction.”


Fellow Award “For contribution to logical design methods, to the advancement of computer education, and to the application of computers to real-time control of processes.”


Fellow Award “For leadership in the development and implementation of large phased array radars.” Other Awards: Sigma Epsilon Rho Honor Fraternity.


Fellow Award “For his contributions as teacher of electronics, and his leadership in missile guidance, control and instrumentation”; Annual Award, IRE, Professional Group on Reliability and Quality Control, 1958; Golden Omega Award, IEE, 1968; Edison Medal, IEE, 1972. Other Awards: Meritorious Civilian Service, U.S. Dept. of Army, 1945; James Wyld Memorial Award, American Rocket Society, 1957; Scientific


Fellow Award “For contributions to the design of digital communications systems and to engineering education”; IEEE Centennial Medal, 1984. Other Awards: Research Award, RCA Laboratories, 1955.


Fellow Award “For outstanding contributions to navigational electronics.” Other Awards: Citation, New Jersey Council for Research and Development; 38 patents and 2 pending.


Fellow Award “For contributions to the engineering and direction of vital national projects, to the professional and educational furtherance of engineering.” Other Awards: Engineer of the Year, FES, 1957, 1966; Outstanding Service to Society, FES, 1959; Outstanding Technical Achievement, FES, 1961; Citation for Work at Cape Canaveral, Dept. of the Army, 1960; University of Florida Significant Alumnus Award, 1966; Engineering Distinguished Service Award, University of Florida, 1967; Award, National Society of Professional Engineers, 1968.


Fellow Award “For his contributions to the development of Loran, a radio aid to navigation”; Morris N. Liebmann Award, IRE, 1953, “For his pioneering and sustained outstanding contributions to radio navigation, and his related fundamental studies of radio wave propagation”; Pioneer Award, Professional Group on Aeronautical and Navigation Electronics, 1961, “In recognition of his basic contributions to the early development and implementation of the Loran radio navigation system; his basic conceptions in allied types of systems including sky-wave synchronized Loran, Loran C. Radux and Omega; and his basic studies and experimental researches on radio propagation as related to radio navigation systems.” Other Awards: Thurlow Award, Institute of Navigation, 1947; Presidential Certificate of Merit, 1948; Fellow, American Academy of Arts and Sciences, 1952; Honorary Member, Audio Engineering Society, 1956; Capt. Robert Dexter Conrad Award, U.S. Navy, 1975; Honorary Member, International Omega Association, 1977; Honorary Member, Institute of Navigation, 1979; Honorary Member, Wild Goose Association, 1980.


Fellow Award “For contributions to communication systems and to the theory of diversity combining and algebraic coding.”

PIERCE, JOHN R., IRE Fellow 1948. Born: March 27, 1910, Des Moines, Iowa. Degrees: B.S., 1933, M.S., 1934, Ph.D., 1936, California Institute of Technology; D.Eng. (Hon.), 1961, Newark College of Engineering; D.Sc. (Hon.), 1961, Northwestern University; D.Sc. (Hon.), 1963, Yale University; D.Sc. (Hon.), 1963, Polytechnic Institute of Brooklyn; D.Eng. (Hon.), 1964, Carnegie Institute of Technology; D.Sc. (Hon.), 1965, Columbia University; D.Sc. (Hon.), 1970, University of Nevada; LL.D. (Hon.), 1974, University of Pennsylvania; E.E. Eng. (Hon.), 1974, University of Bologna; D.Sc. (Hon.), University of Southern California, 1977.

Fellow Award “For his many contributions to the theory and design of vacuum tubes”; Morris N. Liebmann Award, IRE, 1947, “For his development of a traveling-wave amplifier tube having both high gain and very great bandwidth”; Edison Medal, 1963, “For his pioneering work and leadership in satellite communications and for his stimulus and contributions to electron optics, traveling wave tube theory and the control of noise in electron streams”; Medal of Honor, 1975, “For his pioneering concrete proposals and the realization of satellite communication experiments, and for contributions in theory and design of traveling wave tubes and in electron beam optics essential to this success.” Other Awards: Stuart Ballantine Medal, Franklin Institute,

PIERCE, ROBERT E., AIEE Fellow 1947. Born: January 12, 1897, Indianapolis, Ind. Degrees: B.S., 1918, Purdue University.


Fellow Award "For his contributions in the field of ground and aerospace telecommunications." Other Awards: 12 U.S. patents; Member, Sigma Xi; Charter Member, American Rocket and Marine Technical Societies.


Fellow Award "For contributions to transistor technology."


Awards: section and IEEE national committees; chairman, former AIEE General Industry Practices Committee (now Industry Applications Society) in 1949-50; first chairman, Delaware Bay Section predecessor, the Wilmington Subsection, 1944-5; member, National Electric Code Panels No. 8 & 14 in 1963-5; and a Registered Professional Engineer in the State of Delaware; presented 30 papers at IEEE Section and National meetings; IEEE Red Book and Green Book; IEEE Centennial Medal, 1984. Other Awards: Tau Beta Pi.


Fellow Award "For his many contributions in the fields of engineering and physical sciences, and for outstanding service in enhancing the national effort in basic research." Other Awards: Distinguished Civilian Service Award, U.S. Dept. of Navy, 1955; Medal, Industrial Research Institute, 1967; Morris J. Kaplin International Prize for Distinguished Research and Scholarship, Hebrew University of Jerusalem.


Fellow Award "For contributions to the theory and development of microwave ferrite devices"; Outstanding Engineer, Region III, 1971. Other Awards: Engineer of the Year in Industry, Engineers of Greater Atlanta, Engineers Week Committee, 1973.

PLISKIN, WILLIAM A., Fellow 1981. Born: August 9, 1920, Akron, OH. Degrees: B.S., 1941, Kent State University; M.S. (Physics), 1943, Ph.D. (Physics), 1949, Ohio State University.

Fellow Award "For creative contributions to the development of thin-film insulators and glasses used in microelectronic devices." Other Awards: Annual Award, Mid-Hudson Section, American Chemical Society, 1964; IBM Corporate Invention Award, 1966; Annual Electronics Division Award, Electrochemical Society, 1973; IBM Corporate Recognition Award, 1979; IBM General Technology Division Invention Award, 1981; Sigma Pi Sigma, 1942; Sigma Xi, 1949; Pi Mu Epsilon, 1949.


Fellow Award "For contributions to the application of electromagnetic field theory to problems in electrocardiography and electrophysiology"; Morlock Award, IEEE Engineering in Medicine and Biology Society, 1979. Other Awards: Sigma Xi, 1957; Eta Kappa Nu, 1963; NIH Senior Postdoctoral Fellow, 1980-1981.


Fellow Award "For contributions in the development and design of television studio equipment."


Fellow Award "For his significant contributions in the development of thin magnetic films as computer memory elements and for his inspired leadership as an effective researcher and teacher." Other Awards: Western Electric Award for Engineering Teaching, 1965; Cleveland State University Distinguished Service Award, 1967; Anston Marston Distinguished Professor
of Engineering, 1971; NASA $1,000 Certificate of Recognition (Patent), 1980; Outstanding Engineering Alumnus Award, Cleveland State University, 1982.


Fellow Award “For contributions to the theory and implementation of numerical algorithms in optimal control and nonlinear programming.” Other Awards: Guggenheim Fellow, 1969; Senior Postdoctoral Fellow, United Kingdom Science Research Council, 1972, 1976, 1979, 1982.


Awards: North Jersey Section Award, 1961, 1969, 1975. Other Awards: Honorary Member, Institute of Electronics and Communication Engineers of Japan, 1952; Fellow, AAAS; Certificate of Achievement, Supreme Command Allied Powers, 1950; Appreciation, Institute of Electrical Engineers, Japan, 1950; Tau Beta Pi; Eta Kappa Nu; Sigma Xi; Phi Beta Kappa.


Fellow Award “For contributions to flexible printed circuits and their application.” Other Awards: Tau Beta Pi, 1948; Eta Kappa Nu, 1948.


Fellow Award “For the pioneering design and development of communication satellite earth terminals, employed in moon reflection relaying.” Other Awards: Sigma Xi; Assoc. Fellow, Amer. Inst. Aero. and Astronautics.


POLOUJADOFF, MICHEL E., Fellow 1982. Born: 1932, France. Degrees: Ingenieur Diplome, Ecole Superieure d'Electricite, France; M.S., Harvard University; Dr.Sc.Physiques, Sorbome, France.

Fellow Award “For contributions to the theory of electrical machinery, especially single-phase and linear induction motors, and for leadership in advancing engineering education.” Other Awards: Member Laureate, Societe de Electriciens; Electroniciens et Radio-electriciens, France; Fellow, Institution of Electrical Engineers, London; Dr. Honoris Causa, Universite de Liege, Belgium, 1983.


Fellow Award “For contributions to the design and development of computing systems.” Other Awards: Tau Beta Pi, Sigma Xi, 1942; IBM Fellow, 1976.


Fellow Award “For outstanding contributions to computer hardware and graduate education.”

POPPELE, J. R., IRE Fellow 1950. Born: February 4, 1898, Newark, N.J.

Fellow Award “For his long and continued leadership in the broadcasting field, and in particular for his recent contributions to television broadcasting.” Other Awards: Citation, American Television Society, 1951; Sarnoff Citation Award, Radio Club of America, 1974; Gold Medal Award, Veteran Wireless Operators Association, 1940, 1951; DeForest Service President Award, 1974; Chairman, Tele. Measurements, Electronics.


Fellow Award “For contributions and leadership in coherent optics and synthetic aperture radar programs.”


Fellow Award “For contributions to solid-state elec-


Fellow Award "For contributions to and leadership in the development of deep space communication systems."


Fellow Award "For contributions to aeronautical electronics." Other Awards: Outstanding Young Electrical Engineer, Honorable Mention, Eta Kappa Nu, 1945; Citation, Radio Technical Commission for Aeronautics, 1950, 1976; Commendation, Federal Aviation Administration, 1976.


Fellow Award "For contributions as an engineer and educator"; First Paper Prize, AIEE, Science Division, 1954. "For development of magnettor current standard." Other Awards: Professor Emeritus, Rutgers University, 1975.


Fellow Award "For original engineering work and executive direction in a large electric utility."


Fellow Award "In recognition of his contributions to the engineering development and production design of radar apparatus in Canada."


Fellow Award "For development in instrumentation and test techniques for the evaluation of high-voltage insulation." Other Awards: Arnold H. Scott Award, American Society for Testing and Materials, 1976.


Fellow Award "For development of high-power switching equipment and advancement of high voltage power systems." Other Awards: Tau Beta Pi, 1936; Associate Member, Sigma Xi, 1937; Certificate of Commendation, U.S. Dept. of Navy, 1947.


Fellow Award "For contributions to the analysis of data relating to nonlinear phenomena in materials such as controlled thermonuclear plasmas."


Fellow Award "For contributions to and supervision of the development of new communication systems and concepts." Other Awards: Achievement Award, RCA Laboratories, 1960; Forty-One for Freedom Award, U.S. Navy, 1967.


Fellow Award "For outstanding contributions in the development of improved methods and equipment essential to the efficient operation of a major electric distribution system." Other Awards: Outstanding Man in Engineering and Science, Syracuse HERALD JOURNAL, 1967; Engineer of the Year Award, Central New York Chapter, New York State Society of Professional Engineers, 1968.


Fellow Award "For contributions to the application of graphical constructions, video amplifier theory, and technical education"; Patron Award, Washington Section, IEEE, 1969. Other Awards: Engineering Vice President, Capitol Radio Engineeering Institute, 1945-1959; Member, Sigma Xi.


Fellow Award "For contributions in extending the limits on power and frequency in communications and radar." Other Awards: Fellow, Institution of Electrical Engineers (U.K.).


Fellow Award "For contributions to coding theory." Other Awards: Remington-Rand Thesis Award, 1959; Libera Docenza, Italian University System, 1969.


Fellow Award "For contributions in the fields of syn-


Fellow Award "For contributions to distribution standardization in a new area." Other Awards: Citation, Ministry of Labor, Industry, and Commerce, Brazil, 1954.


Fellow Award "For contributions to communication system theory and its use in radar contact with Venus"; Edwin Howard Armstrong Achievement Award, IEEE Communications Society, 1981.


Awards: Lamme Medal, AIEE, 1946. Other Awards: Modern Pioneer Award, National Association of Manufacturers; Eta Kappa Nu; Tau Beta Pi; Sigma Xi; American Society of Mechanical Engineers; Society of Automotive Engineers; American Association for the Advancement of Science; American Helicopter Society; New York Society of Professional Engineers; Emeritus Member, American Nuclear Society.


Fellow Award "For outstanding leadership in the application and use of computers in the design of aerospace structures and systems." Other Awards: Citation, Institute of Aerospace Sciences, 1962; 4 Patents; Engineer/Scientist of the Year Award, Lockheed-Georgia Company, 1981; Chairman, CAM-I (Computer-Aided Manufacturing, Inc.) Electronics Automation Program, 1982-1983.


Fellow Award "For contributions to semiconductor devices and leadership in the development of the silicon solar cell." Other Awards: Marconi Premium, British Institution of Radio Engineers, 1958.


Fellow Award "For contributions in the field of electrical standardization." Other Awards: Fellow, Standards Engineers Society, 1961; James H. McGraw Award, Manufacturers Medal, 1962.


Fellow Award "For contributions to the development and improvement of color television"; Vladimir K. Zworykin Award, IEEE, 1977, "For significant contributions to color television technology." Other Awards: Fellow Technical Staff, RCA Laboratories, 1975; Fellow, Society for Information Display, 1976; Eduard Rhein Prize, 1980; David Sarnoff Award, 1981; National Academy of Engineering, 1983.


Fellow Award "For contributions in the field of transistor circuits." Other Awards: Sigma Xi, 1947; Tau Beta Pi, 1952; Award, Electronic Industries Association, 1963, 1967.


PRESENT FELLOWS
Fellow Award “For contributions and leadership in the development of military communication satellite systems.” Other Awards: Systems Command Award for Outstanding Achievement, U.S. Air Force, 1967; 50th Anniversary Commemorative Medal, City College of the City University of New York, 1969; Fellow, American Institute of Aeronautics and Astronautics; Aerospace Communications Award, American Institute of Aeronautics and Astronautics, 1972; Townsend Harris Medal, City College of the City University of New York, 1976; Lloyd Berkner Award, American Astronautical Society.


Fellow Award “For contributions to decision-directed measurement techniques and adaptive equalization techniques to digital communication over various channels.”


Fellow Award “For contributions in developing large-scale high-speed computers, educational programs in computer and information sciences, and computer applications to information storage and retrieval.”


Fellow Award “For contributions to the modeling of microwave solid-state devices and leadership in their application”; Microwave Prize (co-recipient), IEEE Microwave Theory and Techniques Society, 1976; National Lecturer, IEEE Microwave Theory and Techniques Society, 1980-1981.


Fellow Award “For contributions to the development of digital techniques and multiple access methods for satellite communications”; IEEE Award in International Communication in Honor of Hernand and Soethones Behn, 1975.


Fellow Award “For his technical contributions and leadership in the development and design for production of commercial and military electronic equipment.”


Fellow Award “For contributions through research and literature to design of control and information-gathering systems for missiles.” Other Awards: Marconi Memorial Award, VWOA, 1982.


Fellow Award “For contributions to design, operation and management of electric power systems.” Other Awards: Florida Engineering Society.


Fellow Award “For contributions to the theory of ferro electricity and its applications to digital storage devices.” Other Awards: Industrial Research 100 Award, 1963; Americaism Medal, DAR, 1975; Professor Emeritus of Electrical Engineering, Catholic University of America; Fellow, New York Academy of Sciences; Fellow, American Ceramic Society; Sigma Xi; Tau Beta Pi; Past Chairman, Crystral Committee; Visiting Professor, Korea Advanced Institute of Sciences; 75 Patents.


Other Awards: Listed in "Who's Who in America," 1951-1965; Regional Award, American Society of Mechanical Engineers, 1962; Letter of Commendation, Dr. Werner von Braun, NASA, 1963; Letter of Com-


Fellow Award “For contributions to circuit design, radio control, and communication systems.”


Fellow Award “For contributions to high-power traveling-wave tubes, and for leadership of microwave electron device engineering.”


Fellow Award “For contributions to information theory and spread-spectrum communications”; President, IEEE Information Theory Group, 1983.

PUTNAM, RUSSELL C., AIEE Fellow 1951. Born: March 27, 1898, Jacksonville, Ill. Degrees: A.B., 1919, Butler University; B.S., 1923, E.E., 1928, University of Colorado; M.S., 1933, Case Institute of Technology.


IRE Fellow Award “For his contributions in the field of engineering education, particularly in the teaching of communication and circuit theory”; AIEE Fellow Award “For contributions to engineering education and nuclear engineering.” Other Awards: Fellow, American Nuclear Society, 1965.


Fellow Award “For contributions to the theory and design of low noise amplifiers”; Morris N. Liebmann Memorial Award, IRE, 1981. Other Awards: Tau Beta Pi; Sigma Xi; American Physical Society; Member, National Academy of Engineering, 1970; Member, National Academy of Sciences, 1975; Appointed Member, Editorial Board, Journal of Applied Physics and Applied Physics Letters, 1981-1984; Rank Prize, 1982; Fellow, American Academy of Arts and Sciences, 1982; Fellow, Acoustical Society of America, 1982.


Fellow Award “For contributions to application of gas turbines and associated electrical equipment to gas pipeline pumping.” Other Awards: Charles A. Coffin Award, General Electric, 1955.


Awards: First Paper Prize, AIEE, 1930.

Fellow Award “For leadership in development of pulse Doppler radar and digital signal processing.” Other Awards: Bronze Tablet Honors, University of Illinois, 1954; Tau Beta Pi; Eta Kappa Nu; Phi Kappa Phi.


Fellow Award “For contributions to the theory and practice of nuclear detector signal processing.”


Awards: IEEE Centennial Medal, 1984. Other Awards: Distinguished Service Award, California Institute of Technology, 1966; Virginia Engineering Foundation Award, 1982; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Beta Gamma Sigma.


Fellow Award “For contributions to the improvement and expansion of world-wide communication services.”


Fellow Award “For contributions to the physical understanding of the electric arc and its interaction with gas flow in electric circuit breakers.”


IRE Fellow Award “For his contributions in the fields of computers and control systems and as a teacher of these subjects”; AIEE Fellow Award “For contributions to engineering education and to the theory of random noise and control systems”; AIEE Education Medal, 1962; IEEE Education Medal, 1979. Other Awards: Rufus Oldenburger Award, American Society of Mechanical Engineers, 1970.


Fellow Award “For basic contributions to nuclear science.” Other Awards: Ernest Orlando Lawrence Award, Atomic Energy Commission, 1963; Nobel Prize in Physics, 1975; Fellow, American Physical Society; Fellow, N.Y. Academy of Sciences; Fellow, AAAS; Member, National Academy of Sciences; Optical Society of America; Fellow, 1982 Honorary Member, Swedish Royal Academy of Sciences.


Fellow Award “For contributions and leadership in research on communication theory, transmission line theory, and transistor circuits.” Other Awards: Rhodes Scholarship, 1947; Fellow, Acoustical Society of America, 1979.


Fellow Award “For contributions to computer architecture and software engineering”; Honor Roll Award.
RAMBERG, EDWARD G., IRE Fellow 1955. Born: June 14, 1907, Florence, Italy. Degrees: A.B., 1928, Cornell University; Ph.D., 1932, University of Munich.

Fellow Award "For his theoretical analyses of electronic devices"; IEEE David Sarnoff Award, 1972, "For meritorious achievement in electronics." Other Awards: Fellow, American Physical Society, 1957; Fulbright Fellow, 1960; David Sarnoff Outstanding Team Award, 1961; David Sarnoff Outstanding Individual Achievement Award in Science, 1972.


Fellow Award "For contributions to the development of high-power high-frequency transmitters for radar systems."


Fellow Award "For contributions to military electronics."


Fellow Award "For his contributions to magnetic amplifier theory and design."

RAMO, SIMON, IRE Fellow 1950. Born: May, 1913, Salt Lake City, Utah. Degrees: B.S., 1933, University of Utah; Ph.D., 1936, California Institute of Technology; D.Eng.(Hon.), 1960, Case Institute of Technology; D.Sc.(Hon.), 1961, University of Utah; D.Sc.(Hon.), 1963, Union College; D.Eng.(Hon.), 1966, University of Michigan; D.Sc.(Hon.), 1968, Worcester Polytechnic Institute; D.Sc.(Hon.), 1969, University of Akron; D.Law(Hon.), 1970, Carnegie-Mellon University; D.Eng.(Hon.), 1971, Polytechnic Institute of New York; D.Law(Hon.), 1972, University of Southern California; D.Sc.(Hon.), 1976, Cleveland State University; D. Law (Hon.), 1983, Gonzaga University.

Fellow Award "For his many contributions to the analysis of electromagnetic phenomena and for his leadership in research"; Electronic Achievement Award, IRE, 1953; Golden Omega Award, IEEE-MENA, 1975; IEEE Founders Medal, 1980. Other Awards: Paul T. Johns Award, Arnold Air Society, 1960; American Academy of Achievement Award, 1964; Air Force Association Award, 1964; Eminent Member, Eta Kappa Nu, 1966; Distinguished Service Gold Medal, AFCEA, 1970; Outstanding Achievement in Business Award, University of Southern California, 1971; Kayan Medal, Columbia University, 1972; Award of Merit, American Consulting Engineers Council, 1974; Delmar S. Fahnrey Award, The Franklin Institute, 1978; Honorary Fellow, American Institute of Aeronautics and Astronautics, 1979; Business Statesman, Harvard Business School Association, 1979; Member, National Academy of Sciences; Member, American Philosophical Society; Member, International Academy of Astronautics, France; Fellow, American Physical Society; Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Association for the Advancement of Science; Fellow, Institute for the Advancement of Engineering; Fellow, American Academy of Arts and Sciences; Founding Member, National Academy of Engineering; Outstanding Achievement in Engineering Management Award, University of Southern California, 1979; National Medal of Science, 1979; Midwest Research Institute Board of Trustee's Citation, 1980; Distinguished Alumnus, University of Utah, 1981; The UCLA Medal, 1982; The Medal of Freedom, United States of America, 1983; Arthur M. Bueche Medal, National Academy of Engineering, 1983.


Fellow Award "For contributions to the development of antennas and historical research into the origins of electronics technology." Other Awards: Ambrose Fleming Premium, Institution of Electrical Engineers, U.K., 1941; Premium, Institution of Electrical Engineers, U.K., 1953.


Fellow Award "For contributions to the theory and applications of arithmetic codes, unidirectional error-correcting codes, and fault-tolerant computing." Other Awards: Tamma Sambiah Gold Medal, Andhra University, 1952.

RAPPAORT, GEORGE, IRE Fellow 1956. Born: December 7, 1919, New York, N.Y. Degrees: B.S., 1941, City College of the City University of New York; M.S., 1947, Ph.D., 1949, Ohio State University; D.Sc.(Hon.), 1965, Parsons College.

Fellow Award "For contributions and leadership in the electronic countermeasures research and develop-


Fellow Award “For his outstanding contributions to radio propagation research and to education.” Other Awards: Fellow, Royal Society; Fellow, Institution of Electrical Engineers, U.K.


Fellow Award “For contributions to international radio communications systems.” Other Awards: Commendation Ribbon, U.S. Dept. of Navy, 1946; Achievement Award, Communications Technology Group, 1969.


Fellow Award “For contributions to the theory and practice of radio telemetry”; Special Award, IRE, Professional Group on Telemetry and Remote Control, 1957, “For valuable contribution to the field of telemetry.” Other Awards: War and Navy Dept.’s Award, 1947; National Telemetering Conference Award, 1960; Donald P. Eckman Education Award, Instrument Society of America, 1966.


Fellow Award “For contributions to the field of transmission line conductor dynamics.”


Fellow Award “For contributions to the design and operation of electric power system”; William M. Habirshaw Award, IEEE, 1969, “For developing the first 500 kV. transmission line in the U.S. and the free world.”


Fellow Award “For his contributions to communication theory.”


Fellow Award “For contributions to the development of power system relaying and control systems.”


Fellow Award “For contributions to communication theory and space communication”; Electronic Achievement Award, IRE, Region, 1960, “For research in communications systems and leadership in setting up deep space communications stations”; Alexander Graham Bell Medal, IEEE, 1977, “For pioneering and lasting contributions to deep-space-vehicle communications technology and for leadership in defense telecommunications.” Other Awards: Fellow, American Institute of Aeronautics and Astronautics, 1962; Exceptional Scientific Achievement Medal, NASA, 1965; Academician, International Astronautics Academy, 1965; Member, National Academy of Engineering, 1968; Aerospace Communications Award, American Institute of Aeronautics and Astronautics, 1970; Distinguished Public Service Medal, Dept. of Defense, 1973; Distinguished Public Service Medal, U.S. Navy, 1983.


Fellow Award “For contributions in automatic speech recognition, artificial intelligence, and robotics.”


Fellow Award “For contributions to the field of electron devices and to ultrahigh vacuum technology.” Other Awards: Fellow, Royal Society of Canada, 1968; Honorary Member, American Vacuum Society, 1970; Medard W. Welch Award, American Vacuum Society, 1975.


Fellow Award “For contributions to semiconductor device research”; David Sarnoff Award, IEEE, 1969. Other Awards: Fellow, American Physical Society; Sigma Xi.


Fellow Award “For contributions and leadership in the development of microwave tubes and solid-state components.” Other Awards: Member, National Academy of Engineering, 1971.


Fellow Award “For contributions to automatic detection and processing of radar data, multiple error-correcting communication codes, and digital computer design”; Shannon Lecturer, IEEE Information Theory Group, 1982. Other Awards: Sigma Xi; National Acade-

Fellow Award "For contributions to the field of medical diagnostic ultrasound." Other Awards: Fellow, Acoustical Society of America, 1975; Ernest N. Calkhoun Chair of Biomedical Engineering, Drexel University, 1982-date.


Fellow Award "For contributions to the fields of radar and automation."

Fellow Award "For contributions to proof tested applications of power and electronics for aircraft."

chusetts Institute of Technology.
Fellow Award "For contributions in the application of systems engineering to telecommunications for government and industry." Other Awards: Bronze Star Medal, Citation Ribbon, World War II; Fellow, Radio Club of America, 1973.

Fellow Award "For his many contributions in the development of color television receivers." Other Awards: Outstanding Contribution Award, Consumer Electronics Groups, 1965.

Fellow Award "For contributions to biomedical and rehabilitation engineering." Other Awards: Honors Award for Paper, American Society of Mechanical Engineers, Instruments and Regulators Division, 1955; Product Engineering Master Designer Award, 1969; Member, Institute of Medicine, National Academy of Science, 1972; Isabel and Leonard Goldenson Award, United Cerebral Palsy, 1974; Member, National Academy of Engineering, 1976.

Fellow Award "For advancement in the art of mobile communications."

Fellow Award "For contributions to satellite communications and microwave mobile radio systems."

Fellow Award "For contributions to antenna theory and in electrical engineering education."

Fellow Award "For contributions to network and information theory." Other Awards: Special Award, Teheran University, 1962; Honorary Professor, Polytechnic Institute of New York, 1975; Honorary Professor, Carleton University, Ottawa, Canada, 1976; Fellow, AAAS, 1976; Life Member, New York Academy of Science; Member, American Mathematical Society; Member, Society for Industrial and Applied Mathematics; Honorary Professor, McGill University, 1978.

Fellow Award "For contributions to the engineering and operation of a major electric utility system and to the advancement of the engineering profession"; IEEE Centennial Medal, 1984. Other Awards: Outstanding Service Award, Arkansas Society of Professional Engineers; Unselfish Service Award, National Society of Professional Engineers; Certificate of Merit, National Council of Engineering Examiners; Arkansas Traveler Award, Governor of Arkansas; Outstanding Engineer, Arkansas Society of Professional Engineers; Distinguished Service Award, Kiwanis International; Presbyterian Elder Emeritus; Member, Tau Beta Pi; President, National Society of Professional Engineers, 1956-1957; Who's Who in Engineering; Who's Who in the South and Southwest; Governor, Mo-Kan-Ark District of Kiwanis International; Chairman, Last Man Club, Veterans of World War I; Commander, American Legion Post.

RHODES, CHARLES W., Fellow 1980. Born: August 1, 1929, Buffalo, NY.
Fellow Award "For contributions to measurement techniques and instrumentation for television." Other Awards: Fellow, Society of Motion Pictures and Television Engineers.

Fellow Award "For contributions to the theory and techniques of antenna synthesis"; John T. Bolljahn Award, IEEE, 1963. Other Awards: Fellow, American Association for the Advancement of Science, 1967; Benjamin G. Lamme Medal, Ohio State University, 1975.


Fellow Award "For contributions in the fields of guided missile telemetry and space telecommunications.


Fellow Award “For advances in the theory and design of microwave components.”


Fellow Award “For contributions to the theory and design of microwave antenna systems for communication satellites and deep space radar applications.”


Fellow Award “For his mathematical investigations of communication problems of noise, non-linear circuits, and efficient coding of information”; Mervin J. Kelly Award, 1965, “For his outstanding and fundamental contributions in the field of communications, particularly in the understanding of the effects of noise”; NTC ’74 Award “For outstanding contributions to the theory and practice of communications”; Alexander Graham Bell Medal, IEEE, 1983.


Fellow Award “For contributions to national and international standardization of insulated wire and cable for power systems.”


Fellow Award “For contributions and leadership in the development of radio direction finders.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy; Award, National Defense Research Council.


Fellow Award “For contributions to atomic frequency and time interval standards.” Other Awards: Gold Medal Award for Exceptional Service, U.S. Dept. of Commerce, 1964.


Fellow Award “For contributions to protection and communication for electric power systems.”


Fellow Award “For contributions to color television”; Vladimir K. Zworykin Award, IRE, 1957, “For contributions to the theory of synchronization, particularly that of color subcarrier reference oscillator synchronization in color television.”


Fellow Award “For contributions to the theoretical analysis, development, and manufacture of large-scale integrated circuits”; Region 1 Award, IEEE, 1979. Other Awards: Annual Achievement Award, Electronics Magazine, 1978.


Fellow Award “For many contributions to the precision measurement and generation of AC voltages and currents.”


Fellow Award “For contributions to the theory of antennas and scattering.” Other Awards: Tau Beta Pi; Phi Beta Kappa; Sigma Xi; Pi Mu Epsilon; Eta Kappa Nu.

RICHTER, WALTER, AIEE Fellow 1942, IRE Fellow 1953. Born: May 17, 1900, Heidelberg, Germany. Degrees: B.S., 1923, Technische Hochschule Karlsruhe,

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IRE Fellow Award “In recognition of his contributions in the field of industrial electronics.”


Fellow Award “For contributions in the fields of microwave and computer education.” Other Awards: Reynolds Award, University of Wisconsin, 1960; Professor Emeritus, Department of Electrical and Computer Engineering, Madison, Wisconsin.


Fellow Award “For achievements in the technology of facsimile transmission.” Other Awards: F. E. d’Humy Award, Western Union, 1953.


Fellow Award “For contributions to theory and practice in microwave solid-state devices”; Section Award, IEEE, 1971. Other Awards: Atwater Kent Award, University of Pennsylvania, 1943.


Fellow Award “For contributions to the improvement of analog/hybrid computers and to the development of computer engineering curricula”; IEEE (Spokane Section) Engineer of the Year, 1980. Other Awards: FIER (Foundation for Instrumentation Education and Research) Fellow, 1961-63; SWE (Society of Women Engineers) Achievement Award, 1982; 1983 “Distinguished Engineering Service Award”, The University of Kansas School of Engineering, Lawrence, Kansas.


Fellow Award “For contributions to radar and microwave communication techniques.”


Fellow Award “For significant contributions in the development and design of large rotating electrical machines.” Other Awards: $5000 Engineering and Scientific Award, Allis-Chalmers, 1960.


Fellow Award “For his creative contributions to radio engineering in Holland, and his leadership in the field of television”; IEEE Award in International Communication, 1970. Other Awards: Member, Koninklijke Nederlandse Akademie van Wetenschappen, 1947; Officer of the Order of Orange, Nassau, Netherlands, 1955.


Fellow Award “For contributions to telephone network switching and signaling development.”


Fellow Award “For contributions to engineering education and to vacuum switching techniques.”


Fellow Award “For contributions to photoconductors and semiconductors.” Other Awards: Fellow, Massachusetts Institute of Technology, 1941, 1942; Fellow, American Physical Society, 1953.


Fellow Award “For leadership in the application of microwave technology and for contributions to the profession.”


Fellow Award “For contributions to the science of
high-voltage technology and for technical leadership in the advancement of the electrical power industry.” Other Awards: Egyptian National Prize in Engineering Science, 1971; Egyptian Order of Worthiness, Third Class, 1972; Egyptian Order of Science, First Class, 1973; Chairman, Technical Committee No. 28 “Insulation Coordination”, International Electrotechnical Commission (IEC), 1983.


Fellow Award “For contributions to the development, design, and construction of complex test facilities.” Other Awards: Fellow, American Association for the Advancement of Science; National Society of Professional Engineers.

ROAD, RICHARD A., AIEEE Fellow 1961. Born: August 17, 1907, Peru, Ind. Degrees: B.S.E.E., 1929, Purdue University.

Fellow Award “For contributions to invention, development and production of watt-hour meters.”


Other Awards: Engineer of the Year, Society of Professional Engineers, 1964.


Fellow Award “For contributions and administrative leadership in the field of microwave tubes.” Other Awards: Phi Beta Kappa, 1963, 1965; Certificate of Appreciation, NASA, 1970; Apollo Achievement Award, 1970, NASA; Secretary’s Appreciation Award, 1975, Secretary’s Silver Medal for Meritorious Achievement, 1976. U.S. Dept. of Transportation; Outstanding Achievement Award, 1978, University of Michigan.


Awards: Vice President, AIEEE, 1945-1947; Director, AIEEE, 1956-1960; Special Task Committee of five Societies, AIEEE to Locate Headquarters, 1955-1956; Committee on Merger of AIEEE with IRE-IEEE, 1962; William M. Habirshaw Award, 1963. “For his vigorous leadership and unique contributions in the field of high voltage transmission, particularly including lightning, corona and radio influence studies at high altitudes and at extra-high transmission voltages”; Power Group Award, IEEE, 1969; Prize Paper Award, IEEE, 1969.


Fellow Award “For leadership in microwave antenna measurement instrumentation”; Outstanding Engineer, Region 3, IEEE, 1978. Other Awards: Young President’s Organization, 1960; Georgia’s Outstanding Small Businessman, SBA, 1965; Georgia Entrepreneur Award, 1981.


Fellow Award “For contributions to economical design and protection of an electric power system.”


Fellow Award “For contribution to the understanding of microwave solid-state devices.” Other Awards: Fellowship of Engineering, 1983; OBE, 1983.


Fellow Award “For contributions to the planning, design, and development of modern electric utility sys-
tems"; Dallas Chapter, IEEE, National Engineers Week, 1970, "In recognition of outstanding achievements in the field of electrical engineering." Other Awards: Engineer of the Year, Dallas Chapter, Texas Society of Professional Engineers, 1975.


Fellow Award "For development of spacecraft information systems, in particular, pulse-frequency modulation; and for contributions to advancements in spacecraft electronics." Other Awards: La Medaille du CNES, France, 1965, 1972; Outstanding Engineering Alumnus, University of Tennessee, 1974.


Fellow Award "For his work in the logical design of calculating machines." Other Awards: IBM Fellow, 1965.


Fellow Award "For technical leadership in the application of protective relaying."

ROCKWELL, EDWARD W., AIEE Fellow 1948. Born: March 9, 1898, Syracuse, N.Y. Degrees: B.S., 1919, University of Southern California.


Fellow Award "For contributions to the characterization and application of ferrimagnetic garnets in microwave devices."


Fellow Award "For contributions in the development of electronic components." Other Awards: Meritorious Civilian Service Award, U.S. Dept. of Army, 1966; Founder, Electronic Component Parts Group, 1953.


Fellow Award "For planning, engineering and construction of electric utility system."


Fellow Award "For contributions to the planning, engineering, and management of electric utility opera-


Fellow Award "For research on scatter propagation and for contributions to military communications systems." Other Awards: Civil Service Outstanding Performance Award, U.S. Dept. of Air Force, 1957; Certificate of Commendation, Secretary of the Navy, 1961; Meritorious Civilian Service Award, Secretary of Defense, 1967; Engineering News Record Award: Construction Man of the Year, 1969.

ROHDE, LOTHAR, IRE Fellow 1956. Born: October 4, 1906, Leverkusen, Germany. Degrees: Dr.phil., 1931, University of Jena; Dr.-Ing.E.h., 1953, Technische Hochschule Munich, Germany.

Fellow Award "For contributions to electronic measurement techniques and for technical administration."


ROMAN, WALTER G., AIEE Fellow 1958.

Fellow Award "For contributions to the development of nuclear reactors for naval and land power."


Fellow Award "For leadership and inspiration in the
exploration and applications of space technology.”
Other Awards: Missouri Honor Award, University of Missouri, 1979.


Fellow Award “For contributions to education and research in communications random processes, and radar detection theory.” Other Awards: Senior Post-Doctoral Fellow, National Science Foundation, 1970.


Fellow Award “For contributions to the theory, development, manufacture, and application of high-voltage and specialty cable”; Best Initial Paper Prize, AIEE, 1939, for “Current Carrying Capacity of Rubber-Insulated Electrical Conductors”; Citation, AIEE, 1961, “For Chairmanship (twelve years) of Subcommittee on Voltage Utilization Wiring.” Other Awards: Three Citations, U.S. Navy Bureau of Ships; President, Insulator Power Cable Engineering Association, 1955-1958; Honorary Life Member, Insulated Power Cable Engineering Association, 1959; Honorary Life Member, American Society for Testing and Materials, 1959; Honorary Life Member, IAEI, Eastern Section, 1959; Honorary Life Member, Minnesota Electrical Association, 1959.


Fellow Award “For his contributions in the field of television camera tubes and associated equipment”; Awards: Morris N. Liebmann Award, IRE, 1945; Edison Medal, 1979, “For contributions to television camera tubes, photoconductivity and human vision.” Other Awards: Television Broadcasters Award, 1945; Journal Award, Society of Motion Picture and Television Engineers, 1946; David Sarnoff Gold Medal, Society of Motion Picture and Television Engineers, 1958; Mary Shepard Upson Distinguished Visiting Professor, Cornell University, 1967; Fairchild Distinguished Scholar, California Institute of Technology, 1975; Fellow, American Physical Society; Member; Societe Suisse de Physique; Member, National Academy of Engineering; SID Award, 1976; University Professor, Boston University, 1977, 1978; Leo Friend Award, American Chemical Society, 1982; Honorary Member, Society of Photographic Engineers and Scientists; Visiting Professor: Stanford University, 1976, Hebrew University (Jerusalem), 1976-77; Distinguished Visiting Professor: Polytechnic Institute, Mexico City, 1978, University of Delaware, 1979.


Fellow Award “For contributions to the utilization of electrical products in the lumber, pulp and paper industries.” Other Awards: Fellow, American Society of Mechanical Engineers, 1970.


Fellow Award “For contributions to solid-state physics and the development of computer-controlled robots.” Other Awards: Member, Scientific Research Society of America, 1956; Member, American Physical Society, 1958.


Fellow Award “For leadership in and technical contributions to military satellite communications systems.” Other Awards: Sigma Xi; American Psychological Association.

ROSENBACH, SAMUEL, AIEE Fellow 1948. Born: April 5, 1901, New York, N.Y. Degrees: B.S.E.E. (highest honor), 1921, University of New Mexico.

Other Awards: Graduate Fellow, Carnegie Institute of Technology, 1921-1922.

Fellow Award "For contributions to the analysis and design of microwave ferrite and semiconductor components."


Fellow Award "For contributions to speech and speaker recognition." Other Awards: Fellow, Acoustical Society of America.


Fellow Award "For contributions to the design and development of large steam turbine driven generators"; First Paper Prize, AIEE, District 5, 1959, for "A New Sator Coil Transposition for Large Machines"; First Nikola Tesla Award, 1976, "For his half century of development and design of large steam turbine driven generators and his important contributions to literature." Other Awards: Eta Kappa Nu, 1949; Tau Beta Pi, 1949; Sigma Xi, 1949; Yugoslav Nikola Tesla Medal, 1976.


Fellow Award "For contributions in the field of electron physics." Other Awards: Fellow, American Association for Advancement of Science, 1943; Talbert Abrams Award, American Society of Photogrammetry, 1955; Associate Fellow, American Institute of Aeronautics and Astronautics, 1961; Fellow, American Institute of Chemists, 1968; Member, National Academy of Engineering, 1970; Fellow, Explorers Club, 1979; Honorary Member, Institute of Navigation, 1982.


Fellow Award "For leadership and contributions to the field of computer processing of pictorial information."


Fellow Award "For contributions to theory, design, and manufacture of power converters and for leadership and research in engineering education."


Fellow Award "For achievement in spectroscopy, optics, and mathematical techniques and their application to electronic engineering."


Fellow Award "For contributions to automatic generation control and the operation of interconnected power systems."


Fellow Award "For his contributions in the field of picosecond pulse technology and its applications to microwave-distributed network theory and high-resolution electromagnetic sensors"; K.C. Black Best Paper Award, NEREM Meeting, 1974. Other Awards: Tau Beta Pi, 1951; Eta Kappa Nu, 1951; Sigma Xi, 1961; Member, Commission B, URSI.


Fellow Award "For contributions in the development of high vacuum switching equipment."


Fellow Award "For contributions to the design theory and development of transistors", Morris N. Leibmann Award, IRE, 1963, "For contributions to the development of the epitaxial transistor and other semiconductor devices." Other Awards: Certificate of Award, Pennsylvania Society of Professional Engineers, 1964; NASA Public Service Award, 1969; Public Service Group Achievement Award, 1969; National Academy of Engineering, 1973; National Academy of Science, 1982; President's Commission on Industrial Competitiveness, 1983.


Fellow Award "For contributions to the development of commutation at high altitudes." Other Awards: O.S.R.D. Citation, 1946; Fort Wayne Citizen Engineer, 1958; National Senior Eifun of the Year, G.E., 1979;
George B. Morgan Award, Massachusetts Institute of Technology, 1981.


Fellow Award “For leadership and contributions to the development of high-data-rate optical communications systems.” Other Awards: “Technical Contributions” Award, American Institute of Aeronautics and Astronautics, St. Louis Section, 1976.


Fellow Award “For contributions to the understanding and application of the transistor, and to real-time topographic mapping”; Region 1 Citation 1974, “For services rendered in furthering the objectives of the IEEE through distinguished leadership in the area of professional activities in Region 1 and nationally”; USAB Award, IEEE, 1979; IEEE Centennial Medal, 1984. Other Awards: Registered Professional Engineer (by eminence), New York, 1972; Citation, American Institute of Aeronautics and Astronautics, Long Island Section, 1974; First Leaders in Long Island Technology Award, Long Island Forum for Technology (LIFT), 1979.


Fellow Award “For development of mathematical methods for computer design.” Other Awards: ONR Fellowship, 1952-53; 141 papers; 8 U.S. patents, 64 patent publications.


Fellow Award “For developments in superconducting magnet technology and discoveries in plasma instabilities and turbulence.”


Fellow Award “For his contributions to ultrasonics and instrumentation.” Other Awards: Fellow, Acoustical Society of America, 1959.


Fellow Award “For contributions to the development and application of electrical system analysis.”


Fellow Award “For contributions to antenna technology and to the better understanding of the interaction of electromagnetic waves with plasmas”; Chairman, Boston Chapter, IEEE Microwave Theory and Techniques Group, 1956; IEEE Centennial Medal, 1984. Other Awards: Decoration for Exceptional Civilian Service, U.S. Air Force, 1948-80.


Fellow Award “For contributions in teaching and research in the field of electromagnetic theory, communication theory, and applied mathematics.” Other Awards: Blondel Medal, Societe Francaise des Electroniciens; Member, Societe Francaise de Physique; Blondel Medal, Societe Francaise Des Electriciens, 1953; Gen. Ferrre Prize, Academie Des Sciences, 1974.


Fellow Award “For contributions to the understanding of nonlinear microwave circuits and noise in communications systems and media”; Microwave Prize (with Dale T. Young), 1972, “For significant contributions to the theory of millimeter waveguides and optical fibers in their companion papers entitled Transmitted Distortion in Multimode Random Waveguides, and Optimum Coupling for Random Guides with Frequency-Dependent Coupling”; David Sarnoff Award (with J.M. Manley), 1977, “For their work on the properties of nonlinear devices resulting in the well-known Manley-Rowe relations.”


Fellow Award “For contributions to electronics and engineering education.” Other Awards: Curtis W. McGraw Research Award, American Society for Engineering Education, 1964; Fellow, American Association for the Advancement of Science, 1968; Distinguished Faculty Achievement Award, University of Michigan, 1970; Member, National Academy of Engineering, 1977.


Awards: IRE Professional Group on Communications Systems, Special Award, 1961, “For his leadership and guidance as Chairman of the Professional Group on Communications Systems”; IEEE Centennial
Medal, 1984. Other Awards: Sigma Xi, 1925; Silver Beaver, Boy Scouts of America, 1956.


Fellow Award "For his contributions to the improvement of disk and tape recording"; Achievement Award, IRE, Professional Group on Audio, 1956, "For contribution to technology as documented in publications of the IRE." Other Awards: Fellow, Audio Engineering Society, 1953; Fellow, Acoustical Society of America, 1954; Emile Berliner Award, Audio Engineering Society, 1957; Distinguished Alumnus Award, University of Colorado, 1967; Gold Medal Award, Audio Engineering Society, 1973.


Fellow Award "For contributions to the management of research and engineering." Other Awards: Meritorious Civilian Service Award, 1960; Distinguished Civilian Service Award, 1963.


Fellow Award "For outstanding contributions in the applications of magnetics to computer technology." Other Awards: Sigma Xi, 1939; Meritorious Civilian Service Award, U.S. Navy Dept., 1945.


Fellow Award "For contributions to cryogenic temperature and high-strength magnetic field measurement technology." Other Awards: Fellow, American Physical Society, 1972.


Fellow Award "For contributions to the performance of radar systems by signal processing techniques"; M. Barry Carlton Award for Best Paper, 1962. Other Awards: Eta Kappa Nu, Sigma Xi.


Fellow Award "For contributions to electronic computer developments and education"; Award, IRE, Electronic Computers Group, 1955, "For the most significant contribution to the electronics field for the year."


Fellow Award "For contributions to the development of techniques for power combining of microwave semiconductor devices"; Vice President, IEEE MTT-S, 1982; Member, IEEE MTT-S Administrative Committee, 1976-present; President, IEEE MTT-S, 1983; IEEE Centennial Medal, 1984.


Fellow Award "For contributions to the design and analysis of reflector antennas." Other Awards: Polytechnic Governors Medal, 1964; Sigma Xi, 1970; Electronics Letters Premium, 1975; Fellow, Institution of Electrical Engineers UK, 1979.


Fellow Award "For contributions to the analysis of computer communication network performance and protocols."


Fellow Award "For contributions to and leadership in satellite navigation technology."


Fellow Award "For contributions to the development and construction of very large electrical rotating machines." Other Awards: Ampere Medal and Mascart Medal, French Society of Electrical Engineers, 1953; Blondel Medal, France, 1966; Montefiore Medal, Belgium, 1976; Doctor Honoris Causa, Liege Universite, 1980.


Other Awards: Talbot G. Martin Award.

Fellow Award "For contributions to the development of high resolution radar systems and outstanding technical direction of defense research and development programs." Other Awards: Fleming Award, Junior Chamber of Commerce, 1962; Meritorious Civilian Service Award, Secretary of Defense, 1963.


Fellow Award "For contributions to antenna theory and practice"; Morris N. Liebmann Award, IRE, 1962, "For basic contributions to the development of frequency independent antennas." Other Awards: Guggenheim Fellow, 1964; Outstanding Teachers of America Award, 1971; National Academy of Engineering, 1980; George Sinclair Award, Ohio State University, 1982.


Fellow Award "For early leadership in microwave techniques." Other Awards: Dr.Ing.E.H., Technische Universitaet Berlin, 1966; V.D.E. Ehrenring, 1968.


Fellow Award "For contributions to reflector antennas and to engineering education." Other Awards: Class Valedictorian, Princeton University, 1954; National Science Fellow, California Institute of Technology, 1954-1958; Fulbright Scholar, Technische Hochschule Aachen, Germany, 1959-1960; Teaching Excellence Award, University of Southern California Associates, 1965; National Science Foundation Faculty Fellowship, 1966; Award for Contributions to Space Science, NASA, 1970; Distinguished Faculty Award, University of Southern California Engineering Alumni Association, 1970; Santa Fe International Professional Ethics Award, 1974; Senior U.S. Scientist Prize, Alexander von Humboldt Foundation, Max Planck Institut fuer Radioastronomie, Bonn, Germany, 1980-1981.


Fellow Award "For contributions to dynamic balancing of rotating electrical apparatus." Other Awards: Fellow, American Society of Mechanical Engineers, 1967.


Fellow Award "For leadership in electrical engineering education." Other Awards: Senior Scientific Simulation Award, 1966; Member: Sigma Xi, Tau Beta Pi, Eta Kappa Nu; Allan R. Cullimore Distinguished Service Award, New Jersey Institute of Technology, 1981.

RUSSO, PAUL M., Fellow 1983.

Fellow Award "For developments in microprocessor technology and its applications to consumer and industrial automation products."


Fellow Award "For contributions to design automation for large-scale integrated circuitry"; IEEE Computer Society, Certificate of Appreciation, 1978; IEEE Centennial Medal, 1984. Other Awards: IBM Invention Achievement Award, 1978; IBM Outstanding Contributions Award, 1968; Pennsylvania State University Outstanding Writing Award, 1967.


Fellow Award "In recognition of his outstanding contributions to geophysics and communications engineering pertaining to the petroleum industry."


Fellow Award "For developing a power engineering graduate education program, and for contributions to subsynchronous resonance phenomena in power systems." Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu.


Fellow Award "For contributions to microwave radio system design."


Fellow Award "For contributions to the theory of antenna design." Other Awards: Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Other Awards: Registered Professional Engineer,
New York, 1924.


IRE Fellow Award "For his contributions in industrial applications of electronic circuits and to education in radio and allied fields"; The Haraden Pratt Award, IEEE, 1979. Other Awards: Man of the Year, National Electronics Conference, 1970.


Fellow Award "For contributions to the development of microwave tubes and applications of transistors."


Fellow Award "For contributions to plasma engineering and the conception and the construction of the first Q machine." Other Awards: Fellow, American Physical Society; Senior Fulbright Fellow, France, 1978.

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Fellow Award "For contributions to the microwave field through technical publications and industrial leadership."


Fellow Award "For contributions to filter design and engineering education." Other Awards: Best Paper Award, Nachrichtentechnische Gesellschaft, 1959.


Fellow Award "For contributions to the development of fault locators and gas-insulated switch gears." Other Awards: The Development Award, Institute of Electrical Engineers of Japan, 1950.


Fellow Award "For contributions to the development and advancement of economically and environmentally compatible power systems using EHV transmission."


Fellow Award "For pioneering investigations in semiconductor junction devices"; IEEE Centennial Medal, 1984.


Fellow Award "For contributions to computer applications for power system analysis and protection." Other Awards: Fellow, Institution of Engineers, India, 1972; Fellow, Institution of Electrical Engineers, U.K., 1981.


Fellow Award "For contributions to control systems and pattern recognition, and for his vigorous leadership in the integrated circuit field." Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1959; Fellow, Polytechnic Institute of New York, 1981; Alumni Merit Award, Carnegie Mellon University, 1981.


Other Awards: Member, Electric Club of Greater Los Angeles, 1946; Life Member, Tau Beta Pi, Delta of California, 1953; Life Member, Pacific Coast Electrical Association, 1959.


Fellow Award "For contributions to circuit and system theory." Other Awards: Member, Society for Industrial and Applied Mathematics; Member, American
Mathematical Society; Member, Sigma Xi; Distinguished Faculty Research Award, Texas Tech University, 1978; Paul Witfield Horn Professorship, Texas Tech University, 1979.


Fellow Award "For contributions to the theory of multivariable control systems"; Distinguished Member, IEEE Control Systems Society, 1983; IEEE Centennial Medal, 1984. Other Awards: Bendix Energy Controls Division Recognition and Commendation Award; Fellow, National Science Foundation; Fellow, National Electronics Conference; Paul Galvin Fellow, Motorola Corporation; General Motors Scholar; Frank M. Freimann Chair in Electrical Engineering, University of Notre Dame, 1982.


Fellow Award "For contributions to microwave and laser technology." Other Awards: Awards for Distinguished Paper, Institute of Electronics and Communications Engineers of Japan, 1953, 1959, 1961, 1962; Award for Distinguished Achievement, Institute of Electronics and Communications Engineers of Japan, 1966; Award for Distinguished Paper, Institute of Electrical Engineers of Japan, 1969; Commendation Award, Minister of Post and Telecommunication of Japan, 1971; Imperial Award for Marked Inventions, Japan Institute of Invention and Innovation, 1975; Distinguished Service Award, Institute of Electronics and Communications Engineers of Japan, 1976; Prime Minister's Award of Commendation Year, 1983.


Fellow Award "For contributions to the understanding of electrical insulating materials."


Fellow Award "For contributions to research and development in the field of communication and biomedical engineering, and to engineering education"; IEEE Centennial Medal, 1984. Other Awards: Distinguished Service Award, Institute of Electronics and Communication Engineers of Japan, 1958; Distinguished Service Award, Institute of Electrical Engineers of Japan, 1964.


Fellow Award "For contributions to electromagnetic compatibility technology, and for leadership in engineering education"; Past Chairman Award, Phila-
delphia Section, 1972; Section Award, Philadelphia Section, 1972, "For leadership in the advancement of engineering education and professional contributions to electromagnetic compatibility technology." Other Awards: Listed in "Who's Who in the East"; Invited by Republic of China to lecture in Xian, Nanking and Shanghai from 1 Sept. thru 15 Dec., 1982.


Fellow Award "For contributions to the professional development of engineers and for leadership in national programs for the entrance of minorities into the engineering profession"; Prize Paper, AIEE, 1955; Achievement Award, IEEE Education Society, 1981. Other Awards: HKN Outstanding Electrical Engineer (Runner-up), 1955; Distinguished Service Citation, University of Wisconsin, 1973; Honorary Doctor of Science, Western N.E. College, 1973; Distinguished Service Award for CPDD, ASEE, 1980; Distinguished Engineering Alumnus Award, Marquette University, 1981.


Other Awards: Fellow, Illuminating Engineering Society, 1950; Tau Beta Pi; Omicron Delta Kappa; Scabbard and Blade.


Fellow Award "For contributions to data communication."


Fellow Award "For contributions to the design of large-scale computer operating systems."


Fellow Award "For his contributions in the fields of electron tube development, circuit design, and military electronic systems"; Harry Diamond Award, IRE, 1955, "For his contributions in the fields of electron tubes, circuits, and military electronics."


Fellow Award "For contributions to the technology of the electronic digital computers"; Distinguished Member, IEEE Control Systems Society, 1983; IEEE Centennial Medal, 1984. Other Awards: Tau Beta Pi, 1946; Eta Kappa Nu, 1946; Sigma Xi, 1947; Fellow, Institute for the Advancement of Engineering (IAE), 1980.


Fellow Award "For contributions to electric utility engineering, development and management."


Fellow Award "For technical leadership and direction in applying computer technology to pattern recognition."


Fellow Award "For excellent performance in directing engineering, construction, and operations in a large operating communications utility during a period of rapid expansion."


Fellow Award "For contributions to the development of electroacoustic and electro-optic gear for submarine defense systems." Other Awards: Tau Beta Pi; Sigma Xi.


IRE Fellow Award "For his fundamental work in the field of electronic research and for development of electronic devices of particular value at high frequencies"; AIEE Fellow Award "For contributions to the development of electron discharge devices for operation in the ultra-high frequency range"; Paper Prize, IRE, 1937. Other Awards: Fellow, American Physical Society; American Association for the Advancement of Science; Sigma Xi.

Fellow Award “For leadership in research and development in the field of radio communication.” Other Awards: Tau Beta Pi, 1931; Sigma Xi, 1949.


Fellow Award “For contributions to color television and electronic equipment for space vehicle guidance.”


Fellow Award “For contributions to circuit and system theory, including the functional analysis of nonlinear and time-varying circuits and systems.” Other Awards: Westinghouse Fellow, 1956; Bell Telephone Laboratories Fellow, 1957, 1958; Eta Kappa Nu; Tau Beta Pi; Sigma Xi; Best Paper Award, Asilomar Conference on Circuits, Systems and Computers, 1970; Distinguished Staff Award, Bell Laboratories, 1983; Member, National Academy of Engineering.


Fellow Award “For pioneering research and continuing technical leadership in the development and standardization of the Microwave Landing System for use by civil and military aircraft.” Other Awards: S.W. Gilfillan Professional Paper Award, 1971, 1973; Peter Reggia Omni Award, 1977; Engineer of the Year, San Fernando Valley, 1977.


Fellow Award “For contributions to the art of continuous-wave radar systems.” Other Awards: Public Service Award, U.S. Dept. of Navy, 1958.

SANDRETTO, PETER C., IRE Fellow 1954. Born: April 14, 1907, Pont Canverse, Italy. Degrees: B.S.E.E., 1930, E.E., 1939, Purdue University.


Fellow Award “For contributions to the advancement of nuclear instrumentation and particle acceleration techniques.” Other Awards: Medaille Blondel, 1966.


Fellow Award “For contributions to the field of low-noise microwave, millimeter wave and infrared receivers.”


Fellow Award “For contributions to the development of hybrid circuits used to provide highly reliable communication systems.” Other Awards: Technical Achievement Award, Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Japan.


Fellow Award “For research and development in the field of specialized antenna design.”


Fellow Award “For contributions to adjustable speed drive motor systems and static power converter technology”; Honorable Mention Award, IEEE Industry Applications Society, 1972. Other Awards: Authorship Prize, Teshima Industrial Education Society, Tokyo, 1981.

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Fellow Award “For contributions to the development of video tape recorders.” Other Awards: Prize Paper Award, Society of Motion Picture and Television Engineers, 1961; Prize Paper Award, Institute of Television Engineers of Japan, 1962; Commendation, Minister of Science and Technology Agency of Japan, 1963; Medal of Honor with Purple Ribbon, Japanese Government, 1968.


Fellow Award “For contributions to the arts of generation, transmission, and distribution in the expansion of a major power system.”


Fellow Award “For contributions to distributed circuit theory, and for leadership in engineering education.” Other Awards: J. J. Thompson Premium (with J. D. Rhodes), 1970, Institution of Electrical Engineers, U.K.


Fellow Award “For contributions to the design and overload protection of small motors.” Other Awards: Board of Trustees (Emeritus), The Johns Hopkins University.


Fellow Award “For the invention of the command-guidance principle for ground-to-air/space intercept of an intruding aircraft/missile.” Other Awards: U.S.
Army Commendation Medal; U.S. Army Outstanding Civilian Service Medal; Distinguished Alumnus Award from Ohio State University, 1966; The Centennial Award, The Bancroft School, 1983.


Fellow Award "For contributions to the development of simple and effective coding schemes for data communication systems"; IEEE Information Theory Group Paper Award (with T. Kailath), 1967.


Fellow Award "For theoretical and experimental contributions to microwave emission from the earth and atmosphere."


Fellow Award "For contributions to computer modeling of solid-state microwave power sources and other semiconductor devices."


Fellow Award "For contributions to the application of high-voltage circuit switching devices and their standardization."


Fellow Award "For contributions to the achievement of coherent light and the concept of the optical maser"; Morris N. Liebmann Award, 1964, "For his pioneering and continuing contributions in the field of optical masers." Other Awards: Stuart Ballantine Medal, Franklin Institute, 1962; Thomas Young Medal and Prize, Institute of Physics and the Physical Society, U.K., 1963; California Scientist of the Year, 1973; Frederick Ives Medal, Optical Society of America, 1976; Honorary Member, Optical Society of America, 1982; Marconi International Fellowship, 1977; Nobel Prize for Physics, 1981; Schawlow Medal, Laser Institute of America, 1982.


Fellow Award "For outstanding achievements, ingenuity, and broad engineering ability in designing power supply and electrical equipment layout for aluminum reduction plants and steel mills, including a number of electrical applications new to the industry."


IRE Fellow Award "In recognition of his mathematical contributions to electromagnetic theory"; Morris N. Liebmann Award, IRE, 1942. Other Awards: Stuart Ballantine Medal, Franklin Institute, 1949; Fellow, American Association for the Advancement of Science; John T. Bolljahn Memorial Award, 1969.


Other Awards: Fellow, Acoustical Society of America.


Fellow Award "For contributions to Touch-Tone telephone signaling systems." Other Awards: Duggan Medal, Canadian Institute of Steel Construction, 1951.


Fellow Award "For leadership in the design and operation of ultrahigh-voltage power transmission systems." Other Awards: Tau Beta Pi, 1950; Beta Gamma
Sigma, 1955.


Fellow Award “For innovation in the field of operating system software for large computer systems and networks.” Other Awards: Grace Murray Hopper Award, Association for Computer Machinery(ACM), 1975; Outstanding Contribution Award, IBM Corp., 1971.


Fellow Award “For contributions to the design of communication systems and to engineering education”; President, IEEE Communications Society, 1980-1981; Director, Division III, IEEE, 1982-1983. Other Awards: Meritorious Service Award, IEEE Communications Society, 1978; H.G. Kayser Distinguished Professor of Electrical Engineering, City College of New York, 1980-present; Coauthored five textbooks in telecommunications and in Electronics, 100 papers in telecommunications.


Fellow Award “For his developments in power operations and contributions to stabilizing interconnected power systems.” Other Awards: Award of Excellence, Dept. of the Interior, 1946; Special Act Award, Bureau of Reclamation, 1966; Engineering Achievement Award, Denver Federal Center Professional Engineers, 1968; Distinguished Service Award, Dept. of the Interior, 1970.


Fellow Award “For his contributions as an engineer and executive in the electron tube industry in Sweden under adverse war conditions.”


Fellow Award “For contributions to the study of electromagnetic wave-plasma interaction and relativistic beam high-power millimeter-waves sources.” Other Awards: Best Paper Award, Naval Research Laboratory, 1977, 1978.


Fellow Award “For his pioneering contributions to the understanding and applications of ferrites and high permittivity dielectrics”; Stoddard-Award, IEEE Electromagnetic Compatibility Society, 1982. Other Awards: Fellow, AAAS.


Fellow Award “For contributions to the theory and development of microwave ferrite materials and devices.”


Fellow Award “For engineering and administrative leadership in a large steel company.”


Fellow Award “For contributions to research and administration in ionospheric and radio physics.” Other Awards: NASA, Exceptional Service Medal, 1979.


Fellow Award “For contributions to integrated optics, acoustic surface waves, and fiber optics.”

Schmidt, W.C., AIEE Fellow 1962.

Fellow Award “For contributions to the development of wood pole high voltage transmission.”


Fellow Award “For contributions to the development of time-division multiple-access satellite communications.”


Fellow Award “For contributions in management of industrial research.” Other Awards: Honorary Prof. (physics), Univ. Hamburg, 1981; Mbr. of German Physical Soc.; European Physical Soc.; German Soc. of Electrical Engrs.

Schmitt, Hans J., Fellow 1979. Born: August 3, 1930, Dortmund, Germany. Degrees: Diplom-
Physiker, 1954, Dr. rer. nat., 1955, University of Göttingen.
Fellow Award “For contributions to the field of microwave physics and techniques.” Other Awards: Guggenheim Fellow, 1961-62.

Fellow Award “For his contributions to the application of electronics to the study of living organisms”; Morlock Award, IEEE, 1963; IEEE Centennial Medal, 1984. Other Awards: Award, Sigma Xi, 1935; Fellow, National Research Council, 1937; Sir Halley Stewart Fellow, 1938; Government Citation, 1950; Fellow, American Physical Society, 1953; Fellow, New York Academy of Sciences, 1959; Lovelace Award, 1960; Wetherill Medal, Franklin Institute, 1972; Minnesota Inventors Hall of Fame, 1978; National Academy of Engineering, 1979.


Fellow Award “For contributions and leadership in developing numerical control equipment for machine tools, and in establishing national and international standards.”

Fellow Award “For outstanding creative ability and technical leadership in high voltage power circuit breaker development, design, and testing.”


Fellow Award “For contributions to the development of apparatus insulation systems.” Other Awards: Member, American Society of Mechanical Engineers.

Fellow Award “For contributions to applied networks, control theory, and computer science, and for leadership in engineering education.” Other Awards: Teaching Fellowship, Case Institute of Technology, 1956-1957; General Electric Fellowship of MIT, 1957-1958; Member, Association for Computing Machines; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.

Fellow Award “For contributions to the development of instrumentation and techniques for automatic collection of real-time biological data.” Other Awards: Postdoctoral Fellow, Sloan Kettering Cancer Research Institute, 1957.


Fellow Award “For contributions to the theory and design of synchronizable codes for digital communications and radar systems”; Donald G. Fink Prize Award, IEEE, 1984. Other Awards: Distinguished Engineering Alumnus Award, University of Cincinnati, 1982; Leonard G. Abraham Prize Paper Award, 1983.


SCHOOLEY, ALLEN H., IRE Fellow 1954. Degrees: B.S., 1931, Iowa State University; M.S., 1932, D.Eng.(-Hon.), 1966, Purdue University.
Fellow Award “For his pioneering development of

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fire control radar, and his contributions to electronic measurements”; Harry Diamond Award, IRE, 1963, “For contributions in government service to radar and electronic research.” Other Awards: Distinguished Civilian Service Award, U.S. Dept. of Navy, 1946; Knight, Legion of Naval Merit, Brazil, 1963; Citation, Supreme Allied Commander, Atlantic Theater, 1965; Iowa Honor Award, Buena Vista College, 1966; Fellow, American Association for the Advancement of Science; Applied Science Trophy, Scientific Research Society of America; American Institute of Physics; American Geophysical Union; Phi Kappa Phi; Sigma Xi; Distinguished Alumnus Citation, Iowa State University, 1969; Marston Gold Medal Engineering Award, Iowa State University, 1974; International Union of Geodesy and Geophysics; International Association for the Physical Sciences of the Ocean.


Fellow Award “For contributions to ground, undersea, radio and satellite communication systems.” Other Awards: Engineering Achievement Award, University of Missouri, 1960.


Fellow Award “For contributions to the understanding of image enhancement, and for the design of image processing and transmission systems”; Leonard G. Abraham Prize Paper Award, 1971. Other Awards: Pulitzer Free Scholarship, New York State Scholarship, Columbia University; Gordon McKay Fellowship, 1949-1951, Charles Coffin Fellowship (General Electric Co.), 1951-1953, Harvard University; Journal Award, Society of Motion Picture and Television Engineers, 1960; Bernard Gordon Professorship, MIT, 1980-83; Honors Award, Technical Ass’n of the Graphic Arts, 1983.


Fellow Award “For contributions to speech communication, architectural acoustics, and electroacoustics”; W. R. G. Baker Prize Award, IEEE, 1977, for paper “Models of Hearing”; Senior Award (with B.S. Atal), IEEE Acoustics, Speech, and Signal Processing Society, 1979. Other Awards: Gold Medal, Audio Engineering Society, 1972; Foreign Scientific Member, Max Planck Society, 1975; Fellow, Acoustical Society of America; Fellow, Audio Engineering Society; Member, Academy of Sciences at Goettingen, 1973; Member, National Academy of Engineering, 1979; Member, New York Academy of Sciences, 1980; Companion of Western Europe Diploma, Who’s Who in Western Europe, 1981.

SCHROEDER, THEODORE W., AIEE Fellow 1958. Born: December 17, 1913, Omaha, Nebr. Degrees: B.Sc., 1936, University of Nebraska.

Fellow Award “For contributions to planning and design of power systems.” Other Awards: Eta Kappa Nu; Sigma Xi; Sigma Tau; Pi Mu Epsilon.


Other Awards: Milton H. McGuire Award, Northwest Public Power Association, 1950; Outstanding Achievement Citation, Drexel Institute, 1961.


IRE Fellow Award “For his contributions to electronic research.”

Fellow Award "For leadership in the field of electromagnetic compatibility, and for technical contributions to RF shielding"; Laurence G. Cumming Award, IEEE Electromagnetic Compatibility Society, 1980; IEEE Centennial Medal, 1984.


Fellow Award "For contributions to the performance improvement of military electronics and his contributions to the welfare of the engineering profession."


Fellow Award "For outstanding leadership in the medical electronic field"; Award, IRE, Philadelphia Section, 1963, "For his outstanding leadership in research and education in the electromedical field which has led to national recognition of Philadelphia as a center for such effort"; First Paper Prize, AIEE, Mideast District, 1952; W.J. Morlock Award, IRE, 1967, "For contributions in education and research and for inspiration of others by his personal example and scientific achievement, for pioneering a formal academic program in bio-engineering, and for research in the field of physical properties of biological materials, particularly with respect to the electrical properties of tissues and cells"; Edison Medal, IEEE, 1983. Other Awards: Fellow, American Association for the Advancement of Science, 1959; Foreign Scientific Member, Max Planck Society, 1961; Citation of Appreciation, U.S. Dept. of Health, Education and Welfare, 1966; Rajewsky Prize, 1974; Member, National Academy of Engineering, 1975; MacKay Visiting Professor, University of California, Berkeley, 1956; W.W. Clyde Visiting Professor, University of Utah, 1980; U.S. Senior Scientist Award, Alexander von Humboldt Foundation, West Germany, 1980-1981.


Fellow Award "For contributions to the theory and development of color television picture tubes and single-sideband aircraft radio equipment." Other Awards: Sigma Xi, 1951.


IRE Fellow Award "For applications of information and decision theory to communication systems"; AIEE Fellow Award "For contributions to the theory of communication systems." Other Awards: New York Academy of Sciences.


Fellow Award "For leadership and personal contributions to the practical realization of optical fiber technology"; Engineer of the Year Award, Region 3, IEEE, 1979.


Fellow Award "For contributions to the theory and design of phased array radar antennas." Other Awards: Sigma Xi.


Fellow Award "For contributions to electronic navigation systems"; Pioneer Award, IEEE Aerospace and Electronic Systems Group, 1969. Other Awards: Gold Medal, Institute of Navigation, 1956; First Pioneer Award, Airlines Avionics Institute, 1970; Honorary Commander of the Order of the British Empire, 1971; Founder, Member, Fellowship of Engineering; Past President, Fellow, Institute of Electronics and Radio Engineers, Great Britain.


Fellow Award “For contributions to the application of state estimation, load forecasting, and system dynamics to the control of electric power systems.” Other Awards: Tau Beta Pi; Sigma Xi; Sigma Pi Sigma; Pi Mu Epsilon.


Fellow Award “For contributions to infrared detector array technology.” Other Awards: Principal Scientist, Rockwell International Science Center, 1978; Certificate of Recognition, NASA Infrared Astronomical Satellite Program (IRAS), 1980; Fellow, American Physical Society, 1981; American Association for the Advancement of Science, 1982; Member, Smithsonian Institution, 1982.


Fellow Award “For contributions to engineering education and to analog and digital computer technology.”


Fellow Award “For contributions to engineering education and technical advances in the fields of computers and network theory.” Other Awards: Tau Beta Pi; Sigma Xi; Eta Kappa Nu; Phi Kappa Phi; American Society for Engineering Education; Armed Forces Communications and Electronics Association; Best Paper Prize, American Society for Engineering Education, 1955.


Fellow Award “For contributions to electrical distribution and protection systems”; Award, Philadelphia Section, 1967, “For creativity, leadership and inspiration which have enriched the economic, scientific and educational growth of the Delaware Valley.” Other Awards: Honorary Member, Eta Kappa Nu, 1958.


Fellow Award “For design, application, and development of power capacitors.” Other Awards: Charles A. Coffin Award, General Electric, 1946; Elfun Award, General Electric, 1965; Charter Day Award, Glens Falls Rotary Club, 1982.


Fellow Award “For innovative contributions to electrical engineering education.”


Fellow Award “For contributions to the design and manufacture of power circuit breakers.”


Fellow Award “For contributions in the field of coding and storage electron tubes”; The Haraden Pratt Award, IEEE, 1980.


Fellow Award “For contributions to the theory and design of active-RC and switched-capacitor filters, and to engineering education.”


Fellow Award “For contributions to the design and development of electronic receiving tubes and color kinescopes.” Other Awards: Award of Merit, RCA, 1955.


Fellow Award “For his contributions as an educator, author and as a director of research and development.” Other Awards: Army-Navy Certificate of Appreciation, 1946; Fellow, American Physical Society, 1948; Certificate of Distinction, Polytechnic Institute of Brooklyn,
1956; Silver Cross, Royal Order of Phoenix, Greece, 1967.


Fellow Award “For contributions to the field of active and passive microwave networks”; Microwave Prize, 1957, “For the most significant contribution to the field of endeavor of the professional group of microwave theory and techniques, for his paper ‘Synthesis of a Class of Microwave Filters.'”


Fellow Award “For contributions to the noise theory in telecommunication systems and to engineering education.” Other Awards: Purple Ribbon Medal, 1960; Third Order of Merit with the Order of the Sacred Treasure, 1975.


Fellow Award “For contributions and leadership in the field of communications.” Other Awards: Japanese Government Prize, 1976.


Fellow Award “For developments in d-c propulsion.”


Fellow Award “For contributions to the art of magnetic recording.” Other Awards; Fellow, Audio Engineering Society, 1961.


Fellow Award “For his contributions to the field of military electronics.”


Fellow Award “For contributions to the theory of switching circuits and techniques of computation.”


Fellow Award “For his contributions and leadership in studies of diffraction and propagation of electromagnetic waves.”


Fellow Award “For contributions in the fields of microwave instrumentation and radiation.” Other awards: Certificate of Commendation, U.S. Dept. of Navy, Bureau of Ships; Industrial Electronics Fellow, Massachusetts Institute of Technology, 1947-48; Fellow, American Association for the Advancement of Science, 1959.


SEQUIN, CARLO H., Fellow 1982. Born: October 30, 1941, Winterthur, Switzerland. Degrees:
Diploma (Exp. Physics), 1965, Ph.D. (Exp. Physics), 1969, University of Basel, Switzerland.

Fellow Award “For developments in charge-coupled image sensors and signal processing devices.”


Fellow Award “For contributions to the field of electroacoustic transducers, particularly the electret microphone”; Senior Award, IEEE Group on Audio and Electroacoustics, 1970, “For contributions to audio technology as documented in publications of The Institute of Electrical and Electronics Engineers.” Other Awards: T. D. Callinan Award, Electrochemical Society, 1970; 120 scientific articles; 20 U.S. patents; Fellow Acoustical Society of America; Member, American Physical Society; German Physical Society; Nachrichtentechnische Gesellschaft (Germany).


Fellow Award “For contributions to microwave theory and technology, and to engineering education.” Other Awards: Full Professor of Electrical Engineering, 1965, Universitaet Bochum, Germany; International Union of Radio Science, Commission B; Society of German Electrical Engineers; Society of Communication Techniques; German Physical Society; Rotary Club, Hattingen, President, 1983-84.


Fellow Award “For contributions to the development of EHV and UHV transmission.” Other Awards: Member, CIGRE.


Fellow Award “For contributions in reorganizing and planning an electric power district.”


Fellow Award “For contributions to computer systems architecture, logical design, and real-time data processing.”


Fellow Award “For his contributions to airborne military electronics.”


Fellow Award “For contributions to the more effective use of insulation and to the design of field-test facilities for extra high voltage.” Other Awards: Service Award, American National Standards Committee C63, Radio-Electrical Coordination, 1963-1973; Listed in “Who’s Who in the East,” 1968-69; Phi Eta Sigma, Sigma Tau, Eta Kappa Nu.


Fellow Award “For his contributions to the field of digital filter design and stability analysis.” Other Awards: Best Presentation Award, Society of Exploration Geophysicists, 1966.


Fellow Award “For his contributions to the philosophy of new pulse methods and to the basic theory of communication.” Other Awards: Member: National Academy of Sciences; American Academy of Arts and Sciences; American Philosophical Society; Leopoldina Academy, DDR; Royal Netherlands Academy of Arts and Sciences; Tau Beta Pi; Sigma Xi; Phi Kappa Phi; Eta Kappa Nu; Bolles Fellow, M.I.T. (1938-40); National Research Fellow, Institute for Advanced Study, Princeton 1940-41; Fellow of Center for Advanced Study in Behavioral Sciences (1957-58); Visiting Fellow at All Souls College, Oxford (1978); Honorary Fellow of Muir College of University of California; Alfred Nobel Prize (1949); Morris Liebnitz Memorial Award (1949); Stuart Ballantine Medal (1955); Research Corporation Award (1956); Rice University Medal of Honor (1962); Mervin J. Kelly Award (1962); IEEE Medal of Honor (1966); National Medal of Science (1967); Golden Plate Award (1967); Harvey Prize (1972); Jacquard Award (1978); Harold Pender Award


Fellow Award “For research and development in the microwave field”; Outstanding Paper Prize, IRE, 1962, for “An Effective Advance in the Field of Ultra-High Speed Pulse Generation.” Other Awards: Fellow, American Association for the Advancement of Science, 1967.


Fellow Award “For contributions to the field of microwave acoustics”; Morris N. Liebmann Memorial Award, IEEE, 1976; Achievement Award, IEEE Group on Sonics and Ultrasonics, 1981. Other Awards: Member, American Physical Society; Tau Beta Pi; Sigma Xi.


Fellow Award “For contributions to modeling, estimation, and control of stochastic systems.”


Fellow Award “For contributions to extra high voltage conductor technology.”


Fellow Award “For contribution to microwave, and leadership in military electronics.” Other Awards: Exceptional Civilian Service Award, U.S. Dept. of Air Force, 1962, 1968.


Fellow Award “For contributions to the theory and design of microwave antennas and feed networks.”


Fellow Award “For contributions to engineering education and the theory of adaptive control.” Other Awards: Fellow, American Association for the Advancement of Science, 1968; Fellow, Institution of Electrical Engineers, U.K., 1970.


Fellow Award “For contributions to the theory of active filters.”


Fellow Award “For contributions to guidance systems and associated computers.”


Fellow Award “For contributions in the field of high-speed printers and electronic instrumentation.” Other Awards: Armstrong Medal, The Radio Club of America; P.E., New Jersey; Past President, Radio Club of America; Present Secretary; Director, Armstrong Memorial Foundation.


Fellow Award “For his contributions to the development of airborne radar armament and for his active participation and leadership in the functions of the Institute.” Other Awards: Missouri Honor Award, Distinguished Service in Engineering, 1962; Fellow, American Association for the Advancement of Science, 1977.


Fellow Award “For contributions to the evolution of the semiconductor art and the growth of the semiconductor industry.”


Fellow Award “For his contributions to the development and design of electron tubes, particularly the reflex klystron.” Other Awards: Sigma Xi, 1937; Citation, U.S. Dept. of Navy, Bureau of Ships, 1947; Medal of Honor, National Electronics Conference, 1965; Minnesota Engineer of the Year Award, 1966; Member, National Academy of Engineering, 1969; Regents Award, University of Minnesota, 1974; Outstanding Achievement Award, University of Minnesota, 1979.


Fellow Award “For contributions to engineering education and man-machine systems.” Other Awards: Fellow, Human Factors Society; Paul M. Fitts Award (H.F.S.) “for contributions to education.”

Fellow Award “For contributions to satellite communications techniques and to medical electronics.”


Fellow Award “For contributions to radar systems engineering and signal processing.” Other Awards: Phi Beta Kappa; Sigma Xi; Pi Mu Epsilon.


Fellow Award “For contributions to the development of computer memories and magnetic material.” Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1961, 1964.


Fellow Award “For contribution to the development of oilless circuit breakers and for leadership in the standardization of metal-clad switchgear.”

SCHILDNECK, LLOYD P., AIEE Fellow 1960. Born: April 25, 1899, Edgemont, S.D. Degrees: B.S., 1924, University of Nebraska; M.S., 1929, Union College.

Fellow Award “For contributions to the development and design of steam turbine generators.”


Fellow Award “For contributions to acoustics, broadcasting and studio analysis.” Other Awards: Recognition Award, Association for Post and Telecommunications, 1942; Recognition Award, Association for Inventions Promotion, 1943; Recognition Award, Nippon Radio Wave Association, 1950; Recognition Award, Japan Broadcasting Corporation, 1956; Ranju Hosho, Medal of Honor with Blue Ribbon, H.M. Emperor of Japan, 1967; Niwa-Takayanagi Memorial Award, Institute of Television Engineers of Japan, 1972; Maejima Memorial Award, Society for Telecommunications, Japan, 1972; Recognition Award, Minister of Post and Telecommunications, Japan, 1974; Imperial Order of the Rising Sun, H.M. Emperor of Japan, 1975; Recognition Award, Institute of Acoustical Engineers of Japan, 1983.


Fellow Award “For contributions in the field of radio propagation and in the establishment of an earth station for satellite communications.” Other Awards: Blue Ribbon Award, 1970; Award, Institute of Electronics and Communication Engineers of Japan, 1971; ITE Award, 1974; Imperial Order of the Rising Sun, 1981.


Fellow Award “For contributions to the theory, design and development of control systems.” Other Awards: Eta Kappa Nu, 1952; Tau Beta Pi, 1952; Career Achievement Medal, Engineering and Architecture Alumni of the City College, 1980.


Fellow Award “For originality in the use of mathematical methods for the solution of complex electrical transmission system problems.”


Fellow Award “For contribution to the development of electrical contacts and to the theory of commutation”; Ragnar Holm Scientific Achievement Award, 1974. Other Awards: Fellow, American Association for Advancement of Science, 1953; Award of Merit, American Society for Testing Materials, 1953; Achievement Award, Susquehanna University, 1969; President, American Society for Testing & Materials, 1971-72; 3 books; 40 technical papers; 20 patents.


Fellow Award “For leadership in plasma science and


Fellow Award “For contributions to the design of high voltage oil and air-blast circuit breakers, and related electric utility applications.”


Fellow Award “For contributions to the design and installation of high-voltage power cables of large capacity”; Second Paper Prize, AIEE, Toronto Section, 1951; First Paper Prize, AIEE, Toronto Section, 1953; First Paper Prize, AIEE Canadian Section, 1953; First Paper Prize, AIEE, Vancouver Section, 1954; First Paper Prize, AIEE, Montreal Section, 1958. Other Awards: Order of “U.E.,” Royal Decree, 1972; Registered Professional Engineer; Certified Consulting Engineer.


SHOUPP, WILLIAM E., IRE Fellow 1951. Born: October 5, 1908, Troy, Ohio. Degrees: A.B., 1931, Miami University, Ohio; A.M., 1933, Ph.D., 1937, University of Illinois; D.Sc.(Hon.), 1956, Miami University; D.Sc.(Hon.), 1972, Indiana Institute of Technology.

Fellow Award “For his work in applying electronics to nuclear research”; Frederik Phillips Award, 1978. Other Awards: Man of the Year in Science Award, Pittsburgh Junior Chamber of Commerce, 1949; Order of Merit, Westinghouse Electric, 1953; National Academy of Engineering, 1967; Alumni Honor Award, University of Illinois, 1967; Fellow, American Nuclear Society; Fellow, American Physical Society; Fellow, American Society of Mechanical Engineers; Medal, Industrial Research Institute, 1973.


Fellow Award “For contributions to the theory of radar systems and moving-target indication techniques.”


Fellow Award “For contributions to basic and applied magnetism, in particular, the theory of new magnetization processes and its impact on the development of new permanent magnets.” Other Awards: Weizmann Prize for Science, Tel-Aviv Municipality, 1968; Michael Landau Prize, Mifal Hapayis Foundation, Israel, 1975; Fellow, American Physical Society, 1976.


Fellow Award “For contributions to the techniques of microwave transmission.”


Fellow Award “For contributions to the development of electrical apparatus through standardization.”


Fellow Award “For contributions to the theory and application of signal detection methods.”


Fellow Award “For contributions to direction of expansion of a state-wide communication system.” Other Awards: Citation, University of Wisconsin, 1954.

Los Angeles; Ph.D., 1957, Stanford University.

Fellow Award “For contributions to the theory and application of masers and lasers to communications”;
Guggenheim Fellow, 1969-70; Member, National Academy of Engineering, 1973; J.J.Ebers Award, 1977; R.W. Wood Prize, Optical Society of America, 1980; Fellow, American Physical Society, 1980; Fel-
low, American Association for the Advancement of Science, 1982.

SIEWIOREK, DANIEL P., Fellow 1981. Born: June 2,
1946, Cleveland, OH. Degrees: B.S.E.E., 1968, University
of Michigan; M.S.E.E., 1969, Ph.D., 1972, Stan-
ford University.

Fellow Award “For contributions to the design of
modular computer systems.” Other Awards: Recognition
of Outstanding Young Electrical Engineers (Hon.
Ment.), Eta Kappa Nu, 1977; Frederick Emmons Ter-
man Award, American Society for Engineering Educa-
tion, 1983.

SIFOROV, VLADIMIR IVANOVICH, Fellow 1967. Born:
May 31, 1904, Moscow, Russia. Degrees: B.E.E.,
1929, Institute of Electrical Engineering, Leningrad;
D.Sc., 1937, Supreme Sertificate Commission of
USSR.

Fellow Award “For his contributions and leadership
in research in the fields of radio reception and informa-
tion theory.” Other Awards: Corresponding Member,
USSR Academy of Sciences, 1953; Scroll of the Fifth
International Television Symposium, Montreaux, Swit-
zerland, 1967.

SILJAK, DRAGOSLAV D., Fellow 1981. Born: Septem-
ber 10, 1933, Beograd, Yugoslavia. Degrees: B.S.E.E.,
1958, M.S.E.E., 1961, Dr.Sc., 1963, University of
Beograd.

Fellow Award “For contributions to the theory of non-
linear control and large-scale systems.”

SILCOX, LEWIS K., AIEE Fellow 1931. Born: April 30,
1886, Germantown, Pa. Degrees: Dipl., 1903, Univer-
sity of Brussels, Belgium; D.Sc., 1932, Clarkson Colle-
ge of Technology; D.Eng., 1941, Cumberland Univer-
sity; L.L.D., 1948, Syracuse University; D.Eng., 1951,
Purdue University; L.L.D., 1955, Queen’s University
(Canada), L.L.D., 1963, Norwich College.

Other Awards: Gold Medal and Honorary Member,
Institute of Locomotive Engineers, London, 1932; Gold
Medal, American Society of Mechanical Engineers,
1943; Salzberg Medal, Syracuse University; Fellow,
American Association for the Advancement of Science;
Life Member, A.I.C.E.; Fellow, Institution of Electrical
Engineers, U.K.; Fellow, Institute of Mechanical En-
gineers; Honorary Member, American Railing Engineer-
ing Assn.; Phi Tau Sigma; Tau Beta Pi; Sigma Xi; Who’s
Who in America.

SILVERMAN, DANIEL, IRE Fellow 1953. Born: June
24, 1905, Montreal, Quebec, Canada. Degrees: B.S.,
1927, University of California at Berkeley; M.S., 1929,
Sc.D., 1930, Massachusetts Institute of Technology.

Fellow Award “In recognition of his application of el-
electronics to geophysical exploration.” Other Awards:
Medalist, University of California, 1927; Heller Travel-
ing Fellow, University of California, 1928-30.

SILVERMAN, LEONARD M., Fellow 1979. Born: Octo-
ber 21, 1939, England. Degrees: A.B., 1961, B.S.,

Fellow Award “For contributions to the theory of lin-
ear systems and its applications”; Prize Paper Award,

SILVESTER, PETER P., Fellow 1983. Degrees: B.S.,
1956, Carnegie Institute of Technology; M.A.Sc.,
1958, University of Toronto; Ph.D., 1964, McGill Uni-
versity (all in Elec. Eng.).

Fellow Award “For contributions to the development
of finite element methods and their application to elec-
magnetic field problems.”

SIMMONS, ALAN J., Fellow 1979. Born: October 14,
1924, New York, N.Y. Degrees: B.S., 1945, Harvard
University; M.S., 1948, Massachusetts Institute of
Technology; Ph.D. (Electrical Engineering), 1957, Uni-
versity of Maryland.

Fellow Award “For contributions to the development
of microwave and millimeter-wave components and an-
tennas.”

SIMON, MARVIN K., Fellow 1978. Born: September
City College of New York; M.S.E.E., 1961, Princeton
University; Ph.D., 1966, New York University.

Fellow Award “For analytical contributions to com-
unication system design”; IEEE Centennial Medal,
1984. Other Awards: NASA Paper Award, 1974;

SIMON, RALPH E., Fellow 1972. Born: October 20,
University; Ph.D., 1959, Cornell University.

Fellow Award “For his contributions in the concep-
tion and practical development of electron emitters us-
ing the principle of negative electron affinity and of low-
light level camera tubes”; Vladimir K. Zwoykin Award,
1975, “For the invention and leadership in the devel-
opment of the silicon target camera tube, and in the
extension of electronic television into new applica-
tions.” Other Awards: David Sarnoff Outstanding
Achievement Award, 1970; Two RCA Achievement
Awards.

SIMPSON, JOHN W., AIEE Fellow 1962. Born: Septem-
ber 25, 1914, Glenn Springs, S.C. Degrees: B.S.,
1937, United States Naval Academy; M.S.(in E.E.),
1941, University of Pittsburgh; D.Sc.(Hon.), 1968, Set-
ton Hill College; D.Sc.(Hon.), 1973, Wofford College.

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Fellow Award “For contributions to phased array radars and electronic countermeasures systems.”


Fellow Award “For contributions to engineering education.” Other Awards: Engineer of the Year Award, Mississippi Engineering Society, 1963; Alumnus of the Year Award, Mississippi State University, 1963; Mississippi Engineering Leadership Award, 1968; Distinguished Service Certificate, National Council of Engineering Examiners, 1971; Distinguished Alumnus Award, Electrical Engineering Alumni Association, University of Illinois, 1978.


IRE Fellow Award “For the development and application of various types of networks for high-frequency measurement of impedance.” Other Awards: Sigma Xi, 1935; Presidential Certificate of Merit, 1948; Member, National Academy of Engineering, 1965; Fellow, American Association for the Advancement of Science, 1969.


Fellow Award “For his contributions to the development of radiating systems and model techniques in antenna measurements”; General A.G.L. McNaughton Award, IEEE, Region 7, 1975. Other Awards: Army-Navy Certificate of Appreciation, 1948; Guggenheim Fellowship, 1958; Distinguished Alumnus Award, Ohio State University, 1966; Fellow, Royal Society of Canada, 1973; Fellow, Engineering Institute of Canada, 1974; Fellow, American Association for the Advancement of Science, 1978; Julian C. Smith Medal, Engineering Institute of Canada, 1980; Fellow Award, Ryerson Institute of Technology, Canada, 1980.


Fellow Award “For contributions to the knowledge of microwave plasmas and devices, and for research leadership.” Other Awards: S.K. Mitra Memorial Award, Institution of Telecommunication Engineers, India, 1969, 1976; Inventions Promotion Board Award, 1972; Distinguished Fellow, Institution of Electronics and Telecommunication Engineers, India, 1973; Fellow, Indian Academy of Sciences, 1974; Award, FICCI, 1979.


Fellow Award “For contributions to the development of pulse-code modulation systems.”


Fellow Award “For contributions to acoustic wave devices.”


Fellow Award “For contributions to the physics of the upper atmosphere and to radial beam switching tubes.”


Awards: Education Medal, IEEE, 1965, “For leadership in undergraduate education and, in particular, for innovation and lucid exposition of complex ideas in his textbooks.”

Fellow Award “For contributions to EHV power cable technology.”


Fellow Award “For contributions to electric system production and electrical design of power plants.”


Fellow Award “For contributions to the analysis of power systems stability and the development of generator excitation systems.”


Fellow Award “For contributions and administration in the radar and electronic counter-measure fields.” Other Awards: Legion of Honor, U.S. Dept. of Army, 1945; Registered Professional Engineer, Maryland, Arizona, and Hawaii.


Fellow Award “For contributions to the design of digital, sample-data control systems.”


Fellow Award “For contributions to the fields of acoustical and communication engineering.” Other Awards: Fellow, Acoustical Society of America; Member, Optical Society of America; Member, Sigma Xi; Sigma Tau.


Fellow Award “For contributions to the economic planning of domestic and foreign utility systems.”


Fellow Award “In recognition of his contributions to antenna design and to the field of radar object scatter and diffraction.” Other Awards: Research and Development Award, Air Research and Development Command, 1956; Fulbright Lecturer, College of Telecommunication, Madrid, Spain, 1963-1964; Decoration for Exceptional Civilian Service, Dept. of Air Force, 1970; Phi Beta Kappa, University of Wisconsin; United Nations Antenna Consultant, Catholic University, Bra-

Fellow Award “For contributions to microwave filters and equalizers and to the development of low-noise amplifiers for satellite communications.”

Fellow Award “For contributions to high power electron tubes.”

SLOAN, ROYAL D., AIEE Fellow 1956. Born: June 29, 1891, Mt. Vernon, Mo. Degrees: B.S., 1913, University of Montana; E.E., 1921, Montana State University; M.S., 1936, Massachusetts Institute of Technology.
Fellow Award “For his contributions as an educator and administrator”; Citation, Spokane Section, 1956.


Fellow Award “For contributions to the processing and fabrication techniques for large-scale manufacture of shadow-mask color television picture tubes.”

IRE Fellow Award “For his contributions to broadcast engineering and for his training activities”; AIEE Fellow Award “For his contributions to broadcasting antenna design, military electronics, and electrical engineering education.” Other Awards: Exceptional Civilian Service Award, War Dept., 1946; Distinguished Alumnus Award, Ohio State University, 1974; Distinguished Achievement Citation, Iowa State University, 1980; Honor Leadership Award, Cleveland Institute of Electronics, 1981.

IRE Fellow Award “For outstanding leadership in standardization activities, particularly in the field of television”; AIEE Fellow Award “For his work in establishing national color television standards and for his contributions to the radio and television arts.” Other Awards: Sigma Xi; Tau Beta Pi; Eta Kappa Nu; American Association for the Advancement of Science.

Fellow Award “For contributions to the development of large direct-current machinery for industrial, marine, and excitation applications”; Committees of IEEE, IEC, & NSPE.

Fellow Award “For research on sporadic-E radio propagation.” Other Awards: Member, Sigma Xi, 1956; Fellow, American Association for the Advancement of Science, 1966; CCIR 50th Anniversary Diplome d'Honneur, International Telecommunication Union, 1978; Member, Commissions C, E, F, G, International Scientific Radio Union (URSI), U.S. National Committee.


Fellow Award “For contributions to the development of charge-coupled devices”; Morris N. Liebmann Award, 1974, “For invention of the charge-coupled device (CCD) and leadership in the field of metal oxide semiconductor (MOS) device physics.” Other Awards: Fellow, American Physical Society, 1963; Stuart Ballantine Medal, 1973; Member, National Academy of Engineering, 1983.

Fellow Award “For contributions in the areas of electron emission, storage tubes and lasers.” Other Awards: Fellow, American Physical Society, 1963.

Other Awards: Engineer of the Year Award, National Society of Professional Engineers, 1957; Professor Emeritus, University of Washington, 1961.

SMITH, HAROLD A., Fellow 1968. Born: March 17, 1919, Lucknow, Ontario, Canada. Degrees: B.Sc., 1940, D.Sc.(Hon.), 1977, Queen's University, Canada; D.Sc.(Hon.), 1978, McMaster University, Canada.


Fellow Award “For contributions to the field of geoscience electronics.” Other Awards: General Dynamics Award, 1960.


Fellow Award “For contributions to the development and application of pulse Doppler radar”; David Sarnoff Award, AIEE, 1962, “For achievements in pulse Doppler radar and other areas of applied electronics.” Other Awards: Citation, War Dept., 1945; Special Patent Award, Westinghouse Electric, 1960; Golden Plate Award, Academy of Achievement, 1962; Order of Merit, Westinghouse Electric, 1969; Meritorious Service Award, U.S. Air Force, 1974.


Fellow Award “For contributions to development of a large electric power system.”


Fellow Award “For contributions to electrical system design and project administration.” Other Awards: Engineering Institute of Canada; Association of Professional Engineers, Ontario; Canada Confederation Medal, 1967.


Fellow Award “For his contribution to system engineering and technical leadership of major defense systems.”


Fellow Award “For contributions to digital circuit design.”


Fellow Award “For contributions to the development and application of reliability engineering technology, and leadership of humanitarian organizations”; Florida West Coast Engineer of the Year Award, IEEE and Florida Engineering Society, 1970, “For outstanding service to society and to the engineering profession”; Annual Reliability Award, IEEE Reliability Society, 1978; IEEE Centennial Medal, 1984. Other Awards: Outstanding Service Award, ASQC, A&M Division, 1968-69.


Fellow Award “For contributions to the development of large-scale integration”; Distinguished Service Award, IEEE Computer Society, 1977-78; Richard E. Merwin Award for Distinguished Service, 1983.


Fellow Award “For his contributions to the theory and measurement of ionospheric radio-wave propagation and the development of methods of predicting ionospheric transmission on a world-wide scale”; Harry Diamond Award, IRE, 1952. Other Awards: Eta Kappa Nu; Sigma Xi; Tau Beta Pi, Sigma Tau; Fellow, American Association for the Advancement of Science, 1968; NORDIC Certificate; Special Achievement Award, U.S. Department of Commerce, 1974.


Fellow Award “For contributions in the fields of electrical measurement and feedback control systems”;


Fellow Award “For contributions to design and development of large motors and generators.”


Fellow Award “For contributions to tunable gas lasers”; Treasurer, QEA5, 1981, 1982; Vice President, QEA5, 1983; President, QEA5, 1984. Other Awards: Fellow, Optical Society of America; NATO Senior Scientist Award, 1979; Distinguished Technical Staff Award, Bell Laboratories, 1982; Bell System Technical Journal Prize Paper Award, 1983.


Fellow Award “For his contributions to the development of antennas and graphical analysis of transmission line characteristics”; Microwave Theory and Techniques Society, Special Recognition Award, “For the application of microwave theory and techniques to the practical realization of a circular transmission line chart for analyzing microwave circuits, the Smith Chart.” Other Awards: Tau Beta Pi.


Fellow Award “For eminent work in the advancement of engineering education, including excellent teaching, highly responsible administration, and effective writing that has guided, inspired, and aided scores of thousands of young men.”


Fellow Award “For contributions to the development of Nd:YAG solid-state lasers and nonlinear optical devices”; Outstanding Electrical Engineering Student, Stanford University, 1958; President, IEEE Quantum Electronics and Applications Society, 1981. Other Awards: Tau Beta Pi, 1957; Phi Beta Kappa, 1958; Chairman CLEOS, 1980; Chairman, Steering Committee, CLEO, 1981.


Fellow Award “For proficiency in development and design of electrical equipment.”


Fellow Award “For contributions to electron tube technology.”


Fellow Award “For contributions in many fields of radio engineering.” Other Awards: Honorary Member, Electronic Industries Association.


Fellow Award “For the application of quartz crystal devices to precision frequency generators of high special purity.” Other Awards: C.B. Sawyer Memorial Award, 1975; Technical Advisor to Technical Committee 49, International Electrotechnical Commission, 1973 to present.


Fellow Award “For contributions and leadership in semiconductor device development.”


Fellow Award “For achievements in research, development, and teaching of electronic engineering.” Other Awards: Golden Cross of Merit, 1956; Member, Polish Academy of Sciences, 1962; Officer’s Cross, 1964; Polish State Prize, 2nd Grade, 1964; Golden Honor Mark of Distinction, Association of Polish Electrical Engineers, 1969; Commander’s Cross of the Order of Polonia Restituta, 1973; Golden Honor Mark of Distinction, Polish Federation of Engineering Associations, 1977; Vice President, International Union of Radio Sciences, 1978; Order of the Banner of Labor (second class), 1980; Meritorious (Honorary) Teacher of the Polish People Republic, 1981.


Fellow Award “For his contributions to the design and development of ac and dc machinery.” Other Awards: Fellow, American Association for Advancement of Science; Distinguished Alumnus Award, University of Cincinnati, 1969; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Fellow, American Society of Mechanical Engineers.
Fellow Award “For contributions to biomedical and oceanographic instrumentation.” Other Awards: Admiral of the Fleet Award, Pacific Asiatic Area, 1945; Telemetering Man of the Year, NTC, 1966; Fellow, ISA, 1967; Compass Distinguished Achievement Award, MTS, 1968; Distinguished Public Service Award, U.S. Navy, 1968; Oceanographer of the U.S. Navy, 1974.

Fellow Award “For contributions to the theoretical understanding and analysis of MOS instabilities.” Other Awards: Certificate of Merit, Franklin Institute, 1975.

Fellow Award “For contributions to electronic circuitry, measurement techniques, and the development of the variable mu tube.”

Fellow Award “For contributions to and management of research in the fields of nuclear measurements and reactor safety.”

Fellow Award “For contributions to estimation theory and applications to communications and medicine.”


Fellow Award “For contributions to pioneering curricula in computer science and to computational physics”; IEEE Centennial Medal, 1984. Other Awards: Fellow, American Physical Society; Fellow, American Association for the Advancement of Science.

Fellow Award “For contributions to the development of electron tubes and of digital computers.”

Fellow Award “For contributions to the growth and effective operation of the Manila Utility System.”

Fellow Award “For contributions in the field of microwave techniques”; MTT National Lecturer, 1970; Dallas Section Outstanding Achievements Award, 1975; IEEE Centennial Medal, 1984. Other Awards: IR-100 Award, 1969.

Fellow Award “For contributions to the development of instrumentation and measurement methods, and for leadership in the establishment and acceptance of associated standards.” Other Awards: OSRD Certificate of Merit, 1945.

Fellow Award “For contributions to the technical planning and direction of national communications networks.” Other Awards: Distinguished Civilian Service Medal, Dept. of Defense, 1972.

Fellow Award “For contributions in research, design, and application of analog integrated circuits.”

Fellow Award “For contributions to phonographic recording and dictating machines”; Annual Science Achievement Award, IRE, Kansas City Section, 1961, “For outstanding service contributed toward the advancement of science and technology.” Other Awards: Audio Engineering Award, 1953; Tau Alpha Phi, 1961; Tau Beta Pi, 1962.

Fellow Award “For contributions in the use of sam-
plling theory in development of microwave communications systems.”


Fellow Award “For contributions in the field of photoemissive surfaces.” Other Awards: Gaede-Langmuir Award, American Vacuum Society, 1982.


Other Awards: Alfred Noble Prize, Founder Engineering Societies, 1938; Eta Kappa Nu.


Fellow Award “For contributions to operation and management of an electric utility.” Other Awards: Tau Beta Pi, 1929.


Fellow Award “For contributions to the field of high-power semiconductor devices.” Other Awards: Managerial Award, General Electric, 1963.


Fellow Award “For contributions to color television and digital techniques”; District Branch Competition Prize, AIEE. Other Awards: Tau Beta Pi; Omicron Delta Kappa; Award of Merit, RCA Victor; Council on Foreign Relations; Conference Board; American Management Association; National Association of Corporate Directors; Lecturer, Harvard Business School, M.I.T. Sloan School.


Fellow Award “For contributions in the fields of magnetics, ferrites, and thin films.” Other Awards: NATO Fellowship to CNRS, France, 1970; National Science Foundation Faculty Research Participation; IBM Fellow, 1974; NATO Fellowship, Centre National de la Recherche Scientifique, France, 1970; “Outstanding Educators of America,” 1972; “Who’s Who in America,” 1972; National Science Foundation Faculty Participation Fellow, IBM, 1974; Outstanding Teaching Award, Tau Beta Pi, 1976.


Fellow Award “For contributions to control, estimation, and optimization of stochastic dynamic systems.”


Fellow Award “For innovative contributions to the development of precision, electronic measuring instruments, and standards.”


Fellow Award “For his contributions to high frequency transmission and to engineering management.” Other Awards: Award of Merit, Chicago Technical Societies Council, 1969.


Fellow Award “For contributions and technical leadership in the field of computer technology.” Other Awards: Sigma Xi; Delta Epsilon Pi.


Fellow Award “For contributions to the development and application of digital control systems.”


Fellow Award “For contributions to semiconductor science and technology, and for leadership in development of solid-state electronics”; Jack A. Morton Award, IEEE, 1977. Other Awards: Fellow, American Physical Society; Fellow, American Institute of Chemists; Member, National Academy of Engineering.

Fellow Award “For innovation and leadership in the electrical design of industrial plants and commercial buildings”; Achievement Award, Industrial Power Systems Department, IEEE, 1979; Standards Medallion, Standards Department, IEEE, 1982. Other Awards: Engineer of the Year Awards, Seattle Section, Washington Society of Professional Engineers (NSPE), 1977; Consulting Engineers Council of Washington (ACEC), 1982.


Fellow Award “In recognition of his leadership in administration of electronic research and development”; Special Award; IEEE, 1958-59, “For his leadership and guidance as National Chairman of Professional Group on Military Electronics.” Other Awards: Associate Fellow, American Institute of Aeronautics and Astronautics; Meritorious Award, U.S. Navy; Special Commendation, U.S. Navy, 1948; Life Member, 1980, and National Secretary, 1976-81, Association of Old Crows; Science Advisor, 1968 to date, U.S. Army Intelligence & Security Command, Arlington, Va.


Fellow Award “For outstanding work in the design of digital computers and computer components.” Other Awards: Secretary-Treasurer, IFIP, 1960-1965; President, IFIP, 1965-1968; Honorary Member, Zurich Physical Society, 1968; Silver Core Award, IFIP, 1974; Prognos Prize (Basle, Switzerland) for innovation.


Fellow Award “For contributions to the theory of education in the algorithmic, linguistic, and perceptual aspects of computer-aided circuit design.”


Fellow Award “For outstanding technical and managerial leadership in the development of antennas for radar and communications.”


Fellow Award “For contributions to the theory and development of piezoelectric devices for communication systems”; C.B. Sawyer Award, 1972. Other Awards: Citation for Achievement, William Jewell College, 1969; Regents Meritorious Service Medal, University of New Mexico, 1981.


Fellow Award “For development of photoemission as a key technique for the investigation of the physical properties of solids and of surfaces.” Other Awards: Guggenheim Fellowship, 1978-79; Overseas Fellow, 1979, Churchill College, Cambridge (reappointed for 1984); American Physical Society Oliver E. Buckley Solid State Physics Prize, 1980; Research and Development Magazine (Dun & Bradstreet) Scientist of the Year, 1981; Visiting Scholar, Chinese University Development Project-World Bank-to Fudan University, Shanghai, 1983; Fellow, American Physical Society; Who’s Who (since 1966).


Fellow Award “For contributions and leadership in the design of power tubes.”

SPRAGUE, ROBERT C., AIEE Fellow 1949. Born: August 3, 1900, New York, N.Y. Degrees: B.S., 1922, United States Naval Post Graduate School; S.M., 1924, Massachusetts Institute of Technology; D.Eng.(Hon.), 1953, Northeastern University; D.Sc.(Hon.), 1954,

Fellow Award “For contributions to digital computer techniques for automated control of interconnected power distribution networks.”


Fellow Award “For contributions to application of the principles of power system protection and control.”


Fellow Award “For advances in radio astronomy and the development of microwave radiometric probes.”


Fellow Award “For contributions to space programs in the fields of telecommunication and system design”; Harry Diamond Memorial Prize Award, 1967, “For his outstanding technical contribution and his able direction of a highly complex engineering organization that has contributed to the exploration of space”; President, IEEE Aerospace and Electronic Systems Society, 1979-1980. Other Awards: U.S. Army Project Score, NASA Tiros, Nimbus, Orbiting Astronomical Observatory Group Awards; Civilian Executive Citation.


Fellow Award “For contributions to the planning and design of electric power systems.” Other Awards: Alfred Noble Prize, 1933, and Collingwood Prize, 1935, American Society of Civil Engineers; John Dunlap Prize, 1943, Anson Marston Award, 1947, Distinguished Service Award, 1962, and Hoover Humanitarian Award, 1979, Iowa Engineering Society; Engineer of the Year Award, 1965, and PEPP Award, 1975, National Society of Professional Engineers; Fellow, American Society of Civil Engineers; American Society of Mechanical Engineers; American Consulting Engineers Council; Distinguished Service Award, 1967, Hancher-Finkbine Medallion, 1971, and Iowa Business Leadership Award, 1980, University of Iowa; Past Presidents’s Award, 1983, American Consulting Engineer’s Council.

Fellow Award “For contributions to neurological control systems, to bioengineering education, and to the use of computers in medical instrumentation”; Morlock Award, IEEE Engineering in Medicine and Biology Society. Other Awards: Guggenheim Fellow, 1968-69; Sigma Xi;Eta Kappa Nu; Member, American Physiological Society; Member, Optical Society of America; Member, American Academy of Neurology; Member, Boston Society of Psychiatry and Neurology; Member, International Brain Research Organization; Member, Biophysical Society; Member, Instrument Society of America; Member, American Institute of Aeronautics and Astronautics; Member, Association for Computing Machinery; Member, American Society of Engineering Education; Member, American Society of University Professors.


Awards: First Paper Prize, AIEE, 1941, for “High-Voltage D-C Point Discharges” and “Air Electric Vehicle And Static Radio Interference”; First Paper Prize, AIEE, Northwest District, 1953, for “Shunt Capacitors in Large Transmission Networks”; William M. Habershaw Award, 1968, “For meritorious achievement in the field of electrical transmission and distribution”; Lamme Medal, IEEE, 1980; IEEE Centennial Medal, 1984. Other Awards: Distinguished Service Award, Gold Medal, U.S. Dept. of Interior, 1958; Engineer of the Year Award, Professional Engineers of Oregon, 1965; Distinguished Service Award, Oregon State University, 1976; Administrator’s Award for Distinguished Service, Bonneville Power Administration, 1982; National Academy of Engineering, 1977; National Society of Professional Engineers; Fellow, American Association for the Advancement of Science; American Nuclear Society; Eta Kappa Nu; Sigma Tau; Tau Beta Pi; Sigma Xi; Phi Kappa Phi.


Fellow Award “For contributions in the field of electronic and optical instrumentation related to chemical and clinical analyses.” Other Awards: Award of Merit, Chicago Technical Societies Council, 1970.


Fellow Award “For contributions in the development of aircraft navigation and landing systems.” Other Awards: Award for Outstanding Invention, New Jersey Research and Development Council, 1967; Tau Beta Pi; Eta Kappa Nu.


Fellow Award “For contributions to linear and nonlinear filter theory and their application to biological systems.” Other Awards: Distinguished Alumnus, Bradley University, 1980; Exceptional Civilian Service Award, U.S. Air Force, 1982.


Fellow Award “For contributions in the fields of microwave tubes and Doppler radar.” Other Awards: Certificate of Commendation, Secretary of Navy, 1946; Sigma Xi; Fellow, American Association for the Advancement of Science, 1960.


Fellow Award “For contributions to semiconductor devices.” Other Awards: Outstanding Teacher Award, Engineering College, University of Kentucky, 1971; University of Kentucky Alumni Great Teacher Award, 1975.


Fellow Award “For contributions to solid-state electronics, particularly plasma effects in solids.”

STEEN, JEROME R., IRE Fellow 1950. Born: June 29, 1901, West Bloomfield, N.Y. Degrees: B.S.E.E., 1923,
University of Wisconsin.

Fellow Award “For his work in the introduction and development of statistical quality control techniques in electron tube manufacturing.” Other Awards: Fellow, American Society for Quality Control, 1947; Fellow, Radio Club of America, 1959.


Fellow Award “For contributions to the design and operation of a major electric power system in Brazil.”


Fellow Award “For contributions in the fields of optical and microwave devices.”


Fellow Award “For contributions to the development of widely used MOS memory cells.” Other Awards: Award of the NTG, 1966.


Fellow Award “For technical leadership in the development of advanced communication and signal processing systems”; Paper Award, Information Theory Group, 1964.


Fellow Award “For contributions toward advancing the theory of radar, sonar, and communication systems, and for reducing advanced theories to practical forms for engineering applications.”


Fellow Award “For his contributions to the development and application of mercury vapor rectifier tubes.” Other Awards: Sigma Tau, 1924; Tau Beta Pi, 1925; “Who's Who in Engineering,” 1977; “Leaders in Electronics, 1979.”


Other Awards: Certificate of Achievement, Headquarters European Command, Paris, France.


Fellow Award “For contributions and leadership in the field of solid-state circuits.” Other Awards: Fellow
Award, American Association for the Advancement of Science, 1982.


Fellow Award “For leadership in the development of surface-acoustic-wave devices for signal processing in radar and communications systems.”


Fellow Award “For contributions to nonlinear network theory and engineering education”; Prize Paper Award, IEEE Communications Society, 1978. Other Awards: Fulbright Research Grant, 1965-66; IBM Post-Doctoral Fellowship, 1971-72; Member, American Association of University Professors; Sigma Xi; Eta Kappa Nu.


Fellow Award: “For contributions in the field of microwave solid-state energy sources and microwave modulation and demodulation of light.”


Fellow Award “For contributions to the inertial and astronautical guidance art.” Other Awards: Meritorious Civilian Award, U.S. Air Force, 1968.


Fellow Award “For contributions to the development of major high voltage power systems in the Pacific Northwest”; Distinguished Service Award, Substations Committee, 1978. Other Awards: Tau Beta Pi, 1924; Sigma Xi, 1953; Gold Medal for Distinguished Service, U.S. Dept. of Interior, 1964.


Fellow Award “For leadership in development and effective use of the Deep Space Tracking Network in lunar and planetary exploration missions, and the application of the stations for scientific investigations.” Other Awards: NASA Exceptional Service Medal.


Fellow Award “For contributions to electrical engineering education and literature.” Other Awards: Naval Ordnance Development Award, 1946; Phi Beta Kappa; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Special Citation, Edison Electric Institute, 1977.


Fellow Award “For contributions to the design, protection, and control of electric power generation, transmission, and distribution systems”; William M. Habershaw Award, 1974, “For meritorious achievements in the field of electrical transmission and distribution.” Other Awards: Tau Beta Pi, 1924; Distinguished New England Engineer Award, Engineering Societies of New England, Inc., 1975.

STIEBER, JOSEPH, AIEEE Fellow 1954. Born: August 13, 1903, Bochum-Linden, Germany.

Fellow Award “For his contributions to the knowledge of the behavior of dielectrics in high-voltage cables.” Other Awards: Attwood Associate Award in the U.S. National Committee Cigre “For having made notable contributions to the Conference Internationale des Grands Resea, Electriques a Haute Tension (CIGRE) over an extended period of time.”


Fellow Award “For contributions to the development of optically pumped solid-state lasers, and for initiation and management of research for laser fusion and solid-state electronics.” Other Awards: Outstanding Senior Engineer, University of Cincinnati, 1957; Marcus O’Day Award, ARCRL, 1966; Secretary of Defense Meritorious Civilian Service Medal, 1976.


Fellow Award “For contributions to the field of synchronous communications.”

versity of Nebraska; M.S., 1965, Ph.D., 1967 University of Illinois.

Fellow Award "For contributions to the characterization of ultra-pure gallium arsenide, to the extension of the long wavelength range of extrinsic photoconductors, and to the development of avalanche photodetectors."


Fellow Award "For contributions to laser technology and applications, particularly in the development of the laser range finder." Other Awards: Sigma Xi, 1951; Fellow, Institute for Advancement of Engineering (Southern California), 1971; Fellow, Society of Photo-Optical Instrumentation Engineers, 1981.


Fellow Award "For contributions to engineering education and to digital signal processing"; Senior Award (with A. V. Oppenheim and R.W. Schaefer), IEEE Group on Audio and Electroacoustics, 1969; Award for Outstanding Technical Achievement, IEEE, Utah Chapter, 1972; Engineering Excellence Award, Utah Chapter, IEEE, 1978. Other Awards: Goodwin Medal, Massachusetts Institute of Technology, 1957; T.V. Shares Management Award, Massachusetts Institute of Technology, 1957; Speech Winner, Science Symposium, Air Force Special Weapons Center, 1960; Member, Association for Computing Machinery; Member, Audio Engineering Society; Sigma Xi;Eta Kappa Nu; Tau Beta Pi; Fellow Award, Audio Engineering Society, 1978; President, Audio Engineering Society, 1982-1983.


Fellow Award "For contributions to the development of extended-range radar systems." Other Awards: 20 patents (radar and radio).


Fellow Award "For contributions to electrical engineering education." Other Awards: Engineer of the Year Award, Connecticut Society of Professional Engineers, 1958; Founders Award, Rensselaer Polytechnic Institute of Connecticut, 1971.


Other Awards: Distinguished Service Award, University of Missouri.


Fellow Award "For contributions to undergraduate and graduate electrical engineering education and to research in the area of high-voltage phenomena." Other Awards: Carter Teaching Award, 1955; Engineer of the Year Award, Professional Engineers of Oregon, 1968.


Fellow Award "For contributions to the field of precision frequency and time control." Other Awards: Commendation, U.S. Navy, 1966; Commendation, Commander Naval Electronic Systems Command, 1967; Commendation, Chief of Naval Research, 1967; Member, Sigma Xi, Naval Research Laboratory Chapter; Navy Distinguished Civilian Service Award.


Fellow Award "For contributions in the application of mathematics to antennas, information processing, and computers." Other Awards: John Simon Guggenheim Fellow, 1951.


Fellow Award "For his contributions to the theory and application of magnetic amplifiers"; Magnetics Group Award, IEEE, "In recognition of outstanding contributions to the IEEE Magnetics Group", 1968; Honorary Chairman, IEEE-INTERMAG Conference, Stuttgart, 1966; Honorary Life Member, IEEE Magnetic Society, 1975; "Herbert F. Storm Best Paper Award" for Students was established by the Magnetics Society to honor Herbert F. Storm's contributions, 1968; IEEE Magnetics Society Achievement Award, "For founding the IEEE Magnetics Society and the IEEE INTERMAG Conference, and for outstanding contributions to Power Magnetics," 1982; IEEE Centennial Medal, 1984. Other Awards: Industrial Research 100 Award, 1973.


Fellow Award "For contributions to the advancement of computational methods for solutions to power system network problems."


Fellow Award "For contributions to telemetering, fire
control systems, servo systems and coordinated research programs.”


Other Awards: Fellow, Instrument Society of America, 1963; American Association for the Advancement of Science, 1981.


Fellow Award “For his many technical contributions in the field of radio propagation.” Other Awards: National Academy of Engineering, 1976.

STRANDBERG, MALCOM W. P., IRE Fellow 1959. Born: March 9, 1919, Box Elder, Mont. Degrees: B.S., 1941, Harvard University; Ph.D., 1948, Massachusetts Institute of Technology.

Fellow Award “For research in the field of microwave spectroscopy.” Other Awards: Fellow, American Physical Society, 1955; Fellow, American Academy of Arts and Sciences, 1957; Member, New York Academy of Sciences, 1957; Fellow, American Association for the Advancement of Science, 1959.


Fellow Award “For contributions to the understanding and control of nonsinusoidal currents in electric power systems”; Honorable Mention Paper Award, IEEE Industry Applications Society, 1980; Best Paper Award, IEEE Industry Applications Society, 1981. Other Awards: Registered Professional Engineer, New York, 1963; Chairman, Subcommittee on Reactive Compensation and Harmonic Control of Static Power Converters, Static Power Converter Committee, IEEE-IAS.

STRATTON, JULIUS A., IRE Fellow 1945. Born: May 18, 1901, Seattle, Wash. Degrees: S.B., 1923, S.M., 1926, Massachusetts Institute of Technology; Sc.D., 1928, Eid. Technische Hochschule, Zurich, Switzerland; D.Eng.(Hon.), 1955, New York University; LL.D.(Hon.), 1957, Northeastern University; D.Sc.(Hon.), 1957, St. Francis Xavier University, Canada; LL.D.(Hon.), 1958, Union College; LL.D.(Hon.), 1959, Brandeis University; LL.D.(Hon.), 1959, Harvard University; LL.D.(Hon.), 1960, Carleton College; LL.D.(Hon.), 1961, University of Notre Dame; L.H.D.(Hon.), 1962, Hebrew Union College, Jewish Institute of Religion; LL.D.(Hon.), 1962, The Johns Hopkins University; L.H.D.(Hon.), 1963, Oklahoma City University; D.Sc.(Hon.), 1964, College of William and Mary; D.Sc.(Hon.), 1965, Carnegie Institute of Technology; LL.D.(Hon.), 1965, Jewish Theological Seminary of America; D.Sc.(Hon.), 1967, University of Leeds, England; D.Sc.(Hon.), 1971, Heriot-Watt University (Edinburgh); D.Sc.(Hon.), 1972, Cambridge University.

Fellow Award “For his work as a teacher and author in the field of fundamental research and the application of his knowledge to improve radio communication.” Other Awards: Medal of Honor, IRE, 1957; “For his inspiring leadership and outstanding contributions to the development of radio engineering, as teacher, physicist, engineer, author and administrator.” Other Awards: Medal for Merit, 1946; Distinguished Public Service Award, U.S. Dept. of Navy, 1957; Member, Naval Research Advisory Committee, 1954-59 (Chairman, 1956-57); Member, National Science Board, 1956-62; 1964-67; Faraday Medal, Institution of Electrical Engineers, U.K., 1961; Officer, French Legion of Honor, 1961; Honorary Fellow, Manchester College of Science and Technology, England, 1963; Orden de Boyaca, Colombia, 1964; Member, Governing Board, National Research Council, 1961-65; Boston Medal for Distinguished Achievement, 1966; Honorary Member of Senate, Technical University of Berlin, 1966; Knight Commander, Order of Merit, Federal Republic of Germany, 1966; Fellow, American Academy of Arts and Sciences; Fellow, American Association for the Advancement of Science; Member, American Philosophical Society; Fellow, American Physical Society; Member, Bostonian Society; Member, Council on Foreign Relations; Eminent Member, Eta Kappa Nu; Member, National Academy of Sciences (Vice President, 1961-65); Founding Member, National Academy of Engineering; Sigma Xi; Tau Beta Pi; Zeta Psi; Silver Stein Award, M.I.T. Alumni Center of New York, 1967; Chairman, Commission on Marine Science, Engineering and Resources, 1967-69; Bronze Beaver, M.I.T. Alumni Association, 1968; Marine Technology Society Citation, 1969; Man of the Year, National Fisheries Institute, 1969; Individual Distinguished Achievement Award, Offshore Technology Conference, 1971; Member, National Advisory Committee on Oceans and Atmosphere, 1971-73; Neptune Award, American Oceanic Organization, 1979.


Fellow Award “For contributions to the theory of semiconductor devices and to technical management of semiconductor research and development.” Other Awards: Fellow, American Physical Society; Fellow, Institute of Physics (Great Britain).

Fellow Award “For contributions to the understanding of ion implantation and radiation damage of compound semiconductors.” Other Awards, Frederick Emmons Terman Award, American Society for Engineering Education, 1981; Janet S. Cockrell Centennial Chair in Engineering, University of Texas, 1983.


Fellow Award “For contributions to the development and application of solid-state power electronics systems.” Other Awards: Westinghouse Order of Merit, 1966.


Fellow Award “For contributions to holography, coherent optics, and application to optical computing.” Other Awards: Allan Gordon Memorial Award, Society of Photo-Optical Instrumentation Engineers, 1971. Fellow, American Physical Society; Fellow, Optical Society of America; Member, American Society of Physicists in Medicine; Member, Astronomical Society of America; Member, Biomedical Engineering Society; Member, European Physical Society; Member, Societe Francaise de Physique; Sigma Xi; “Blue-Ribbon” Task Force on Ultrasonic Diagnostics (reporting to Science Advisor to President), National Science Foundation, 1973; Member, U.S. Congress House “Select Committee” on President John F. Kennedy’s Assassination, 1977-1979; Humboldt Prize, Alexander von Humboldt Foundation, 1978; Visiting Professor, Harvard University (Medical School), 1970-1973; Visiting Professor, Technical University, Munich, 1978-1979.


Fellow Award “For contributions to military global communications systems and military electronic computers for command and control.”


Fellow Award “For his pioneering work in the radio equipment design and development field, particularly broadcasting transmitter, both medium and high frequency, and his many wartime contributions in England.” Other Awards: Officer of the Order of the British Empire, 1947.


Fellow Award “For contributions to cooperative engineering education and illuminating engineering.” Other Awards: Fellow, Illuminating Engineering Society, 1952; Gold Medal Award, Illuminating Engineering Society, 1966; Distinguished Service Award, Illuminating Engineering Society, 1967.


Fellow Award “For pioneering contributions to solid state and microsystems electronics.” Other Awards: Fellow, National Science Foundation, 1952-54.


Fellow Award “For contributions to the knowledge of electron tubes and associated circuits, particularly at high frequencies.” Other Awards: C. F. Gauss Medal, Society of Sciences, Brunswick, West Germany, 1954; Honorary Member, Society of Sciences, Brunswick, West Germany, 1955; Honorary Member, International Television Committee, 1956; Gordon McKay Professor of Electrical Engineering, University of California at Berkeley, 1961-1963; Honorary Member, Electronics Association of Japan, 1965; Senior Foreign Scientist Fellowship, National Science Foundation, 1966; Honorary Member, Institute of Electronics and Communication Engineers, Japan, 1967.


Fellow Award “For contributions to the theory and
application of time variable systems and to engineering education."


Fellow Award "For contributions to semiconductor and electrohydrodynamic devices, microwave systems, and management of applied science." Other Awards: Award, German Lilienthal Society, 1941.


Fellow Award "For outstanding direction and leadership in the training of engineers for broadcasting and television in both government and industry." Other Awards: Student Premium, Institution of Electrical Engineers, U.K., 1934; Fellow, Institution of Electrical Engineers, U.K., 1945; Ambrose Fleming Premiums, Institution of Electrical Engineers, U.K., 1941, 1945; Honorary Associate, University of Aston, 1956.


Fellow Award "For contributions to the theory of active and distributed-parameter networks and to engineering education." Other Awards: Faculty Research Award, Georgia Tech Chapter of Sigma Xi, 1957.


Fellow Award "For contributions to plasma theory and to graduate engineering education in plasma science." Other Awards: Best Paper Award, Naval Research Laboratory, 1974; Fellow, American Physical Society; IBM Professor of Engineering, and Director, Laboratory of Plasma Studies, Cornell University; Member, Editorial Boards of Nuclear Fusion, Physics of Fluids; 2 U.S. patents, 125 papers.


Fellow Award "For contributions to the theory and techniques of microwave absorbers and the introduction of educational technology." Other Awards: Paper Prize Award, IECEJ, 1960; Tokyo Metropolitan Technical Award, Tokyo Metropolitan Government, 1980.


Fellow Award "For contributions to semiconductor technology and devices and to engineering education." Other Awards: Research on MOS Devices, Inst. of Electronics & Comm. Engineers, Japan, 1974; Research on Surface Devices, Matsunaga Award, 1974; Academy of Science, DDR, 1983.


Fellow Award "For contribution in the field of power transmission and distribution."

Fellow Award "For developments in precision power measurement techniques and for leadership in electronic measurement and control industries." Other Awards: Prize of Japanese Minister, Japan Institute of Invention and Innovation, 1972; Invention Research Merit Award, Tokyo Governor, 1974; Purple Ribbon Medal, Japanese Government, 1975.

SUITS, C. G., AIEE Fellow 1947, IRE Fellow 1956. Born: March 12, 1905, Oshkosh, Wis. Degrees: B.A., University of Wisconsin; D.Sc., Eid. Technische Hochschule, Zurich, Switzerland; D.Sc.(Hon.), 1944, Union College; D.Sc.(Hon.), 1946, Hamilton College; D.Eng.(Hon.), 1950, Rensselaer Polytechnic Institute; D.Sc.(Hon.), 1955, Drexel Institute of Technology; D.Sc.(Hon.), 1959, Marquette University.


Fellow Award "For his contributions to the development and application of ionosphere measuring equipment."


Fellow Award "For contribution to the introduction, implementation and advancement of reliability technology in industrial and defense programs."


Other Awards: Distinguished Engineering Alumnus Award, University of Colorado, 1977.


Fellow Award "For contributions to pulse-code modulation and signal processing systems"; Alexander Graham Bell Medal, 1978.


Fellow Award "For advancement of stochastic and nonlinear control system theories and their engineering applications." Other Awards: Contributed Paper Award, Japan Society of Mechanical Engineers (JSME), 1963; Contributed Paper Award, Society of Instrument and Control Engineers (SICE), Japan, 1982.


Fellow Award "For contributions to knowledge of earth conduction effects."


Fellow Award "For contributions to power magnetics and computer magnetics, and for educational programs." Other Awards: Alumni Achievement Award, Catholic University, 1973.


Fellow Award "For contributions to the theory of electron beams and electrical engineering education."
Other Awards: Clerk-Maxwell Premium, Institution of Electronic and Radio Engineers; Senior Faculty Fellow, National Science Foundation.


Fellow Award “For development of high voltage underground cables and contribution to standardization of cable design and installation.” Other Awards: Sebastian de Ferranti Premium, Institution of Electrical Engineers, U.K., 1956; Fellow, Institute of Electrical Engineers, U.K.; Member, Institute of Civil Engineers, U.K.; Member, Institution of Mechanical Engineers, U.K.; Member, British Standards Institution; Member, British Electrical and Allied Industries Research Association.


Fellow Award “For contributions to microwave communications and relaying.” Other Awards: Joint Power Generation Sponsor’s Committee, 1971-1972.


Fellow Award “For contributions and leadership in the relaying of television signals via satellite”; Vladimir K. Zworykin Prize Award, IEEE, “For his outstanding technical contribution in the field of television and engineering leadership in the application of the relaying of television signals via satellite,” 1967. Other Awards: Awards, Institute of Electrical Communication Engineers of Japan, 1944, 1954, 1956; Scroll of Appreciation, Communications Satellite Corp., 1964; Purple Ribbon Award, Medal of Honor, Japanese Government, 1965; Maejima Award, 1961; Institute of Television Engineers Award, Japan, 1963, 1965; Award for Excellence, Japan Invention Association, 1969; Honorary Member, Institute of Television, Japan, 1977.


Fellow Award “For development of advanced mobile telephone systems and advancement of consumer communication service.” Other Awards: Maeshima Prize, Post and Telecommunications Association of Japan, 1982.


Fellow Award “For contributions to construction and operation of a large power system.”


Fellow Award “For contributions to radio astronomy, ionospheric physics, and engineering education.” Other Awards: Fellow, American Association for the Advancement of Science, 1966; National Academy of Engineering, 1978.


Fellow Award “For contributions to the development of the high-current isolated phase bus”; First Prize Paper, AIEE, Lehigh Valley Section Meeting, 1960, for “Practical Solutions of Inductive Heating Problems Resulting from High Current Busses.” Other Awards: Managerial Award, General Electric Co., 1950, 1959, 1968.


Fellow Award “For contributions to signal theory as applied to errors in tracking and trajectory prediction of missiles by radar.”


Fellow Award “For contribution to the application of ferrites to microwave devices, for the advancement of
microwave radiometry, and for exceptional staff work in planning complex research and development programs."


Fellow Award “For contributions to the area of microwave remote sensing of the oceans”; Distinguished Service Award, IEEE Council on Oceanic Engineering, 1977.


Fellow Award “In recognition of his work in promoting electronics and the affairs of the Institute, particularly in his district”; IEE Consumer Electronics Outstanding Contributions Award, 1973. Other Awards: Eta Kappa Nu, 1958.


Fellow Award “For contributions to the development of quartz crystal units for filter networks and frequency control”; Mervin J. Kelly Award, 1972. Other Awards: Distinguished Engineer Award, Pennsylvania Society of Professional Engineers, 1967; C.B. Sawyer Memorial Award, 1981.


Fellow Award “For creativity in the design, evaluation and application of the unijunction transistor, tunnel diode and other semiconductors.” Other Awards: Phi Beta Kappa, 1951; Swope Fellow, 1954; Semi Award, 1983.


Fellow Award “For development of super-power klystrons and hybrid amplifiers.”


Fellow Award “For contributions to the design and theory of electric machines and for leadership in engineering education.” Other Awards: Zipernowsky Medal, Institute of Hungarian Electrical Engineers, 1954.


Fellow Award “For contributions to semiconductor device research and to education.”


Fellow Award “In recognition of his contributions to the development of cathode-ray devices.” Other Awards: 70 patents, cathode ray device field.


Fellow Award “For contributions to filter design techniques.”


Fellow Award “For his contributions to television circuits and systems.” Other Awards: Radio Corporation of America, 1947, 1951, 1952.


Fellow Award “For developing standard field-strength measurement techniques.” Other Awards: Fellow, Radio Club of America, 1980.


Fellow Award “For contributions to electromagnetic and antenna theory”; IEEE Centennial Medal, 1984. Other Awards: Walker-Ames Professor, University of Washington, 1973; Distinguished Faculty Achievement Award, University of Michigan, 1975; Honorary Professor, Shanghai Normal University, 1979.


Fellow Award “For leadership in space technology and related advances in reliability engineering.” Other Awards: Paper Award, Institution of Electrical Engineers, Japan, 1959; Awards for Distinguished Services, Institute of Electronics and Communication Engineers, Japan, 1965; Institution of Electrical Engineers, Japan, 1968; Japan Broadcasting Corporation, 1970; Purple Ribbon Medal (Emperor), 1972; Second Order of Merit with the Rising Sun (Emperor), 1978.

Fellow Award "For his inventive and educational contributions in manufacture, research, and development in the electronics industry." Other Awards: The Fourth Order of the Sacred Treasure, Emperor of Japan, 1981.


Fellow Award "For contributions to the development of antenna systems and overseas telecommunication facilities." Other Awards: Distinguished Services Award, Science and Technology Agency of Japan, 1962; Distinguished Services Award, The Institute of Electronics and Communication Engineers of Japan, 1968; Honorary Member, The Institute of Electronics and Communication Engineers of Japan, 1970.


Fellow Award "For contributions in the field of Communication, and to engineering education." Other Awards: Paper Awards, Institute of Electronics and Communication Engineers of Japan, 1951, 1970, 1981; Award for Publication, Institute of Electronics and Communication Engineers of Japan, 1961, 1972; Paper Award, Institute of Television Engineers of Japan, 1962; Distinguished Services Award, Institute of Television Engineers of Japan, 1975; Distinguished Services Award, Institute of Electronics and Communication Engineers of Japan, 1980; Minister's Prize, Ministry of Post and Telecommunications, Japan, 1980; Broadcasting Cultural Award, Japan Broadcasting Corporation (NHK), 1981.


Fellow Award "For contributions to guided wave propagation, with application to electromagnetics, optics and acoustics"; Special Recognition, IEEE Antennas and Propagation Society, 1968, for the paper "On Radio Wave Propagation in Forest Environments"; Other Awards: Institution Premium, IEE (London), 1964; Electronics Section Premium, IEE (London), 1967; Citation, Distinguished Research, Polytechnic Chapter, Sigma Xi, 1978.


Fellow Award "For contributions to the control, operation, and planning of power systems and for leadership in power system engineering education." Other Awards: KURATA Memorial Prize, Hitachi Works, Japan, 1971; ISHIKAWA Memorial Industrial Prize, Japan, 1978.


Fellow Award "For contributions to computer-aided analysis of electric field effects and the development of low skin-effect stranded conductors." Other Awards: President Award, Sumitomo Mining and Sumitomo Kyodo Electric Power Co., 1951; President Award, Sumitomo Electric Industries Ltd., 1953; I.C.C. Award, 1979.


Fellow Award "For contribution to the technology and applications of computers and leadership in the computer profession." Other Awards: Honorary Member, Information Processing Society of Japan, 1970; Honorary Member, International Federation for Information Processing, 1979; Distinguished Service Award, American Federation of Information Processing Societies, 1983.


Fellow Award "For contributions to solid-state junction devices, and for leadership in the development of advanced manufacturing technology." Other Awards: A.M. Campbell Lecture, 1975; Fellow, American Physical Society; National Academy of Engineering.


Fellow Award "For contributions to the development of lasers and nonlinear optical devices and processes." Other Awards: Fellow, American Physical Society, 1974

TANG, DONALD T., Fellow 1981. Born: May 9, 1932, China. Degrees: B.S. (E.E.), 1953, Taiwan University; Ph.D (E.E.), 1960, University of Illinois at Urbana.


PRESENT FELLOWS
TANK, FRANZ, IRE Fellow 1949. Born: March 6, 1890, Zurich, Switzerland. Degrees: Dr.Phil., 1916, Zurich University; Dr.Tech.Sc.(Hon.), 1954, Ecole Polytechnique, Lausanne, Switzerland; Laurea, 1960, Politecnico, Turin, Italy.
Fellow Award “For his contributions to the field of radio education in Switzerland, and his accomplishments in ultra short-wave communications.”

Fellow Award “For contributions leading to the elimination of precipitation static on aircraft.” Other Awards: Phi Beta Kappa; Tau Beta Pi; Sigma Xi; Scientific Research Society of America.

Fellow Award “For his contributions to the design and application of audio equipment in the broadcast field”; McNaughton Gold Medal, IEE, Canadian Region, 1972, “For outstanding and sustained contributions to the professional, technical and industrial aspects of electrical and electronics engineering both nationally and transnationally”; Haraden Pratt Award, IEE, 1981; "For contributions towards professionalism and dedicated services to the Canadian Region, to the IEEE, and to the profession over many years;” President, IEEE, 1972.

Fellow Award “For pioneering work in broadcasting and for the development of electronic components and equipment”; Consumer Electronics Award, IEE, 1979. Other Awards: Eta Kappa Nu; Sigma Delta Chi; Tau Beta Pi; Charter Member, Society of Television Pioneers; Member, Armenian Students Association, 1961; Indiana Penn Man of the Year Award, University of Pennsylvania, 1962; Member, Friars Senior Society, 1966; Certificate of Appreciation, Radio Free Europe, 1969; D. Robert Yarnall Award, Engineering Alumni Society, University of Pennsylvania, 1969; Sagamore of the Wabash, State of Indiana, 1969; Man of the Year Award, Ararat Square Club of Delaware Valley, 1973; Distinguished American Award, Eisenhower Memorial Scholarship, 1975; National Horatio Alger Award, 1977.

Fellow Award “For the advancement of high-density MOS dynamic memory technology.”

Fellow Award “For contributions to microwave networks and millimeter quasi-optic techniques”; IEEE Centennial Medal, 1984.

Fellow Award “For contributions to communication theory and development of deep space communication and tracking systems.” Other Awards: Exceptional Service Medal, NASA, 1977; Exceptional Engineering Achievement Medal, NASA, 1983.

Fellow Award “For leadership in the development of professional engineering procedures and standards for the cable television industry.”

Fellow Award “For contributions to the understanding of electron tunneling in superconductors and for leadership in the development of Josephson junction voltage standards.” Other Awards: Outstanding Achievement Award in Science, RCA, 1969; Fellow, American Physical Society, 1972; Fellow, Washington Academy of Sciences, 1974; John Price Wetherill Medal, Franklin Institute, 1975; Silver Medal Award for Meritorious Federal Service, U.S. Dept. of Commerce, 1975.

Other Awards: Professional Engineer, New Jersey; former Chairman, New York Section, AIEE; former Secretary of District 1, AIEE; Chairman, AIEE Automatic Stations Committee; Chairman, Electrical Equipment Committee, Edison Electric Institute.

Fellow Award “For contributions in the field of extra-high-voltage transmission as pertains to radio and audible noise, and to the study of transients and surges on EHV systems”; District Prize Award, 1962; Working Group Prize Paper Award, 1972; P.E.S. Prize Paper Award, 1981. Other Awards: Tau Beta Pi, 1952; Eta
Kappa Nu, 1952.


Fellow Award "For pioneering and invention in the fields of radio transmission and telephone switching and signaling."


Fellow Award "For contributions to the application of electrical lighting to industry." Other Awards: Fellow, Illuminating Engineering Society, 1953; Gold Medal, Illuminating Engineering Society, 1971.


Fellow Award "For contributions to the theory and application of electromagnetic scattering by turbulent media." Other Awards: Distinguished Alumnus Award, New Mexico State University, 1971.


TAYLOR, THOMAS T., Fellow 1972. Born: April 18, 1921, Montpelier, Ind. Degrees: B.S., 1942, Purdue University; M.S., 1953, Ph.D., 1958, California Institute of Technology.


Fellow Award "For advances in electronics, particularly in the field of semiconductors"; Medal of Honor, 1968, IEEE, "For his contributions to single crystal germanium and silicon technology and the single crystal grown junction transistor"; IEEE Centennial Medal, 1984. Other Awards: Fellow, American Association for the Advancement of Science, 1959; Honorary Member, Sigma Pi Sigma Physics Honor Society, 1959, "In Recognition of Achievement in Physics"; Honorary Life Fellow, Texas Academy of Science, 1960; Distinguished Alumnus Award, Baylor University, 1964; Chartered Electrical Engineer, Institution of Electrical Engineers, U.K., 1965; Inventor of the Year Award, The Patent, Trademark and Copyright Research Institute, George Washington University, 1966; Fellow, Institution of Electrical Engineers, U.K., 1966; Golden Plate Award, American Academy of Achievement, 1967; Certificate of Appreciation and Honor Scroll, National Bureau of Standards, 1967; Fellow, American Institute of Chemists; Member, National Academy of Engineering, 1969, "For essential contributions to the development of the semiconductor and electronic industries"; Medal for Creative Invention, American Chemical Society, 1970, "For essential contributions to the achievement of the junction transistor and for his germanium and silicon single crystal developments vital to semi-conductor science and technology"; Honor Scroll Recipient and 34th Fellows Lecturer, 50th Annual Meeting, American Institute of Chemists, 1973; The Wilfred T. Doherty Award, Dallas-Fort Worth Chapter, American Chemical Society, 1974; Omicron Delta Kappa Outstanding Baylor University Alumnus, 1978; Brown University Graduate School 50th Anniversary Commemoration Citation, 1978; Citation, Texas Instruments, 1980; Sigma Xi.


Other Awards: Sigma Xi, 1928; Fellow, New York

Fellow Award “For contributions to television, acoustics, and electronic systems, and for leadership in research.” Other Awards: “Yeder” Award, 1955; Member, Royal Dutch Academy of Sciences, 1977.


Fellow Award “For contributions to electric machine design and in the investigation of eddy currents in conducting media.”


Fellow Award “For contributions to the understanding and application of electroacoustic devices.”


Fellow Award “For contributions to receiver design and transistorization.”


Fellow Award “For his outstanding contributions to the development of underground and submarine power transmission”; Paper Prize, AIEE, 1960, for “Two Examples of Industrial Research in France Relating to the Transmission of Electrical Energy.” Other Awards: Laureate Member, Societe Francaise des Electriciens, 1952; Fellow, Institution of Electrical Engineers, U.K., 1965.


Fellow Award “For contributions to filter theory and computer-aided circuit design”; Best Paper Award (Darlington Award) with co-recipient, IEEE Circuits and Systems Society, 1968; IEEE Centennial Medal, 1984. Other Awards: Outstanding Engineer Merit Award, Institute for the Advancement of Engineering, 1981; Best Paper (Darlington Prize) Award (co-recipient), 1982; Western Electric Fund Award, 1982.


Fellow Award “For contributions to the continuing development and application of excitation systems for large alternating current generators.” Other Awards: Member, C.I.G.R.E.; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For important contributions to the advancement of engineering knowledge.”


Fellow Award “For contributions to nonlinear optics and quantum electronics.” Other Awards: Science and Engineering Award, Drexel Institute of Technology, 1964; Sesquicentennial Award, University of Michigan, 1967.


Fellow Award “For contributions to the design and development of semiconductor computer memory and logic circuitry.” Other Awards: IBM Outstanding Contribution Award, 1968; IBM Outstanding Invention Awards, 1971, 1974, 1977; Fellow, American Association for the Advancement of Science, 1981.


Fellow Award “For leadership in the field of automatic control and contributions to engineering education”; Harry Diamond Award, IEEE, 1965. Other Awards: Sigma Xi; American Society for Engineering Education.


Fellow Award “For contributions to space exploration through his efforts in establishment and operation of the Deep Space Network.” Other Awards: Tau Beta Pi, 1928; Sigma Xi, 1929; Achievement Award, NASA Lunar Orbiter Team, 1967; Scroll of Appreciation, U.S. Department of State, 1969; Fellow, Institute for Advancement of Engineering, 1971.


Awards: Tau Beta Pi, 1934; Phi Kappa Phi, 1956; Registered Professional Electrical Engineer, Missouri.

Fellow Award “For his leadership in the engineering of long distance microwave links for network television and multiplex telephony.”


Fellow Award “For contributions to computational methods in electromagnetic theory”; Best Paper Award, IEEE Antennas and Propagation Society, 1976.


Fellow Award “For contributions to the understanding of luminescence in semiconductors and to the development of light-emitting diodes.” Other Awards: Oliver E. Buckley Solid State Physics Prize (recipient J. J. Hopfield), American Physical Society, 1969.


Fellow Award “For contributions to the understanding of luminescence in semiconductors and to the development of light-emitting diodes.” Other Awards: Oliver E. Buckley Solid State Physics Prize (recipient J. J. Hopfield), American Physical Society, 1969.


Other Awards: National Electrical Manufacturers Association; American Standards Association.


Fellow Award “For contributions to the field of semiconductor devices.” Other Awards: Phi Beta Kappa, 1939; Sigma Xi, 1942; Award, U.S. Dept. of Navy, Bureau of Ordnance, 1944; Award for Effective Service, Office of Scientific Research and Development, 1946; Honorary Member, Tau Beta Pi, 1959; Fellow, American Physical Society, 1959.


Fellow Award “For contributions to communication theory and engineering education.” Other Awards: Senior Postdoctoral National Science Foundation Fellow, 1967-1968.


Other Awards: Fellow, American Society of Mechanical Engineers, 1958; Distinguished Alumnus Award, Texas A&M University, 1974; 50-Year Pin Award, American Society of Mechanical Engineers, 1977.


Fellow Award “For leadership in electromagnetic compatibility and development of interference measurement instrumentation and standards”; Debt of Gratitude, IEEE, 1968; Certificate of Appreciation, IEEE Electromagnetic Compatibility Society, 1965; Laurence G. Cumming Award, IEEE Electromagnetic Compatibility Society, 1979. Other Awards: Certificate, American Standards Association, 1946; Certificate of Appreciation, Society of Automotive Engineers, 1970; Chartered Electrical Engineer, Institution of Electrical Engineers (UK); Corporate Member, Institution of Electrical Engineers (UK), 1956; Member Washington Society of Engineers; National Society of Professional Engineers; District of Columbia Society of Professional Engineers; American Society of Naval Engineers; Society of Automotive Engineers; Registered Professional Engineer, District of Columbia, 1952; Listed in “Who’s Who in the South and Southwest”; “Who’s Who in Technology Today”; and “Who’s Who in Engineering.”

THOMAS, MELVIN A., AIEE Fellow 1948. Born: January 5, 1903, New Castle, Neb. Degrees: B.S., 1925, University of Wisconsin; M.S., 1931, University of Texas.


Fellow Award “For developing techniques for thin-film magnetic recording heads.” Other Awards: IBM Fellow, 1980; IBM Awards: Outstanding Contribution, Outstanding Invention, and Outstanding Innovation awards.


Fellow Award “For leadership in the application of solid-state electronics.” Other Awards: B.G. Lamme Scholarship Award, Westinghouse Electric, 1961; Order of Merit Award, Westinghouse Electric, 1976. Eta Kappa Nu; Sigma Xi; Tau Beta Pi; Instrument Society of America.

THOMPSON, LELAND E., IRE Fellow 1957. Born: September 18, 1905, Creighton, Nebr. Degrees: B.S.,
1929, University of South Dakota.

Fellow Award “For contributions to microwave communication systems and development of special purpose radio receivers.”


Fellow Award “For advancing the understanding of the design and operation of equipment for ultrahigh-voltage power transmission systems.”


Fellow Award “For contributions in research and development in the field of semiconductor devices”; IEE Centennial Medal, 1984. Other Awards: Science Conference Award, Dept. of the Army, 1976; Research and Development Achievement Award, Dept. of the Army, 1976; Honors Award, University of Michigan; Sigma Xi; Phi Kappa Phi; Phi Lambda Upsilon; Senior Executive Service Awards, Department of Army, 1980, 1982, 1983; AFCEA Gold Medal, 1983.


Fellow Award “For contributions to planned expansion of a utility power system.”


Fellow Award “For contributions to the science and technology of thin films, and solid-state structures.” Other Awards: Award for Technological Achievement, U.S. Army Corps of Engineers, 1953; Fellow, American Physical Society, 1972.


Fellow Award “For contributions to electron devices, and for ability as both a teacher and as an administrator.” Other Awards: Robert M. Crichtfield Professor, Emeritus, Ohio State University, Columbus, Ohio.


Fellow Award “For clarifying the understanding of interband tunneling and surface charge transport, and for applying these phenomena to new devices.” Other Awards: Miniaturization Award, Miniature Precision Bearings, Inc., 1959; I-R 100 Award, Industrial Research Magazine, 1971, 1974. Coolidge Fellow, Research and Development Center, General Electric.


Fellow Award “For creativity and leadership in advanced electronics”; Morris N. Liebmann Award, 1979. Other Awards: Sigma Xi; Achievement Award, Chinese Institute of Engineers, 1966; National Academy of Engineers, 1975; Fellow, Optical Society of America, 1976; National Academy of Sciences, 1978; Bell Laboratories Fellow, 1983.


Awards: Alfred Noble Prize, 1936. Other Awards: Honorary Member, Eta Kappa Nu, 1931; Full Member, Sigma Xi, 1935. Life Member, American Society for Engineering Education; Founder and Editor, San Francisco Engineer, 1948; Chairman San Francisco Bay Area Engineering Council, 1952.


Fellow Award “For notable contributions to the design of electrical apparatus and transmission systems,” Other Awards: Ross Medal, Engineering Institute of Canada, 1963; Fellow, Engineering Institute of Canada, 1970; Honorary Director, Research Institute of Hydro-Que (IREQ), 1979.

Timoshenko, Gregory S., AIEE Fellow 1954. Born: November 1, 1904, St. Petersburg, Russia. Degrees: Dipl.Ing.(Applied Physics), 1929, Technical University, Berlin, Germany; Ph.D.(Electrical Engineering), 1932, University of Michigan.

Fellow Award “For his contributions to the advancement of engineering education.” Other Awards: Fellow, American Physical Society, 1941.


Fellow Award “For contributions to the application of digital computers to solve large power network problems”; Prize Paper Award, IEEE Power Engineering So-


Fellow Award “For his many contributions to the fundamental knowledge and the development of transformer design.”


Fellow Award “For technical contributions in the field of microwaves”; Distinguished Service Awards, MTT/AP PGT, and Huntsville, Alabama Section, 1964 and 1965. Other Awards: Distinguished Service Award, NASA, 1963; Tau Beta Pi; Sigma Xi; Distinguished Professor, NPS, 1978-1979.


Fellow Award “For contributions to design and development of industrial and high voltage circuit interrupting devices.”


Fellow Award “For leadership in power system operations and engineering.” Other Awards: Distinguished Engineering Alumnus, Purdue University, 1976.


Fellow Award “For contributions to the theory and design of fault-tolerant digital systems, and to engineering education.” Other Awards: Okabe Memorial Award, Institute of Electronics and Communication Engineers of Japan, 1965; Excellent Book Award, Institute of Electronics and Communication Engineers of Japan, 1976.


Fellow Award “For the application of electronics to the field of medicine.” Other Awards: Fellow, Association for the Advancement of Science, 1943; Fellow, New York Academy of Sciences, 1957.


Fellow Award “For contributions to the development of transmission conductor and hydroelectric power plant design.”


Fellow Award “For contributions to discrete systems theory, computer control theory, and engineering education.” Other Awards: Distinguished Alumni Award, Yale University, 1970; Fellow, Academia Sinica, 1971.

Fellow Award "For leadership in the introduction of high power levels in short-wave radio and in TV broadcasting, and in setting of standards for TV broadcast equipment."


Fellow Award "For contributions to the conception, design, and development of fault-tolerant computers for electronic telephone switching systems and telecommunication systems."


Fellow Award "For contributions to the development of unique long-life spacecraft scientific instruments." Other Awards: NASA Medal for Exceptional Scientific Achievement, 1974; NASA Medal for Exceptional Service, 1977; Phi Kappa Phi; NASA Research and Study Fellowship and Visiting Associate, Caltech, 1979.


Fellow Award "For his contributions and leadership in engineering education," Other Awards: Engineer of the Year, Toledo Technical Society (Ohio), 1978.

Fellow Award "For his contributions to the fields of computing devices and of gun-fire control equipment, and to engineering education." Other Awards: Alumni Citation, Drexel Institute of Technology; Citation, U.S. Dept. of Navy, 1946; Eta Kappa Nu; Tau Beta Pi; Sigma Xi; 50th Anniversary Gold Medal, Moore School of Electrical Engineering, University of Pennsylvania, 1974.

TREITEL, SVEN, Fellow 1983. Born: March 5, 1929, Freiburg i/Breisgau, Germany. Degrees: B.S.(Geophysics), 1953; M.S.(Geophysics), 1955; Ph.D.(Geophysics), 1958, MIT.

Fellow Award "For contributions to the development of digital signal processing techniques and their application to geophysical data." Other Awards: SEG Fessenden Medal, 1969; EAGE Conrad Schlumberger Award, 1969; SEG Honorary Member, 1983.


Fellow Award "For contributions to magneto optic memories, and for leadership in the field of applied physics."


Fellow Award "For contributions to the analysis of communication circuits and to engineering education"; Guillemin-Cauer Award, IEEE, 1976, for the paper "Computation of Capacitor Voltage and Inductor Currents with Respect to Initial Conditions for the Steady State Analysis of Nonlinear Periodic Circuits." Other Awards: ASEE-NASA Summer Faculty Fellowship, 1970, 1971; Best Paper Award, Asilomar Conference on Circuits and Systems, 1972, Member: Sigma Xi, Eta Kappa Nu, Tau Beta Pi, Pi Mu Epsilon.


Awards: Nikola Tesla Award, IEEE, 1980.


Fellow Award "For leadership in the research and development of large-scale integration for computer circuits."


Fellow Award "For contributions to the understanding of wave-plasma interactions and to plasma education." Other Awards: Fulbright Scholar, The Netherlands, 1958; Guggenheim Fellowship, 1966; Distinguished Alumnus Award, California State Polytechnic College, 1978; Fellow, American Association for the Advancement of Science; Fellow, American Physical Society.

TROXEL, FRANKLIN D., AIEE Fellow 1950. Born: September 15, 1900, Arcanum, Ohio.

Other Awards: Life Member, Western Society of Engineers; Fellow, A.A.A.S.; Eta Kappa Nu.


Fellow Award "For contributions in the field of high voltage engineering, particularly super voltage X rays"; Lamme Medal, AIEE, 1960; Power Life Award, 1973. Other Awards: The King’s Medal for Freedom, 1946; Presidential Citation, 1946; Holmes Lecturer, New England Roentgen Ray Society, 1963; Public Service Award, Polytechnic Institute of Brooklyn Alumni Association, 1963; New England Award, Engineering Societies of New England, 1967; Honorary Member, Alumni Association, Lahey Clinic Foundation, 1970; Honorary Fellow, American College of Radiology, 1974; Member, National Academy of Engineering, 1977; Gold Medal of American College of Radiology, 1982.


Fellow Award "For fundamental contributions to the theory of feedback control systems"; Education Medal, IEEE, 1974. Other Awards: Phi Beta Kappa; Sigma Xi; Tau Beta Pi; Eta Kappa Nu; American Association for the Advancement of Science; American Society for Engineering Education; National Academy of Engineering; Education Award, ISA, 1963; Westinghouse Award, American Society for Engineering Education, 1965.


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Fellow Award “For rehabilitation of electrical utilities in Greater Shanghai after WW II, and contributions to electrical communications.” Other Awards: First Class Ching Sing Meritorious Medal, Republic of China, 1945; Professional Achievement Award, Chinese Institute of Engineers, 1964; Distinguished Service Award, Phi Tau Phi, 1973; Award of Honor, Chinese Culture Society, 1974; Fellow, Institute of Electrical Engineers (U.K.); Fellow, AAAS; Fellow, Radio Club of America; Who’s Who, Marquis 1979-1980; Director, Chinese Institute of Engineers-U.S.A., 1980-1983; Chairman of Technical Seminar Committee, CIE-USA, 1981-present.

Fellow Award “For contributions to the theory and industrial application of induction heating”; Past Chairman, Electric Process Heating Committee, Induction and Dielectric Heating Subcommittee, IEEE Industry Applications Society.

Fellow Award “For contributions to digital communications and signal processing.”


Fellow Award “For contributions to pattern recognition and read-only memories;” Treasurer, IEEE, 1983-84. Other Awards: Charles Babbage Award, Institution of Electronics and Radio Engineers, Great Britain, 1964; IBM Outstanding Contribution Award, 1965; IBM First Level Invention Achievement Award, 1966; IBM Second Level Invention Achievement Award, 1968; IBM Division Award, 1980.

Fellow Award “For contributions to the development of telephone electronic switching systems.”

Fellow Award “For contributions to statistical communication theory and its applications.” Other Awards: Guggenheim Fellowship, 1966-67; British Science and Engineering Council Senior Fellowship, 1983.

Fellow Award “For achievements in telecommunications and in their international regulation.”

Fellow Award “In recognition of his contributions to the engineering development and management of a large electric utility.”

Fellow Award “For pioneering services to radio communications.” Other Awards: Hall of Fame, American Radio Relay League; Honorary Member, Antique Wireless Association, 1981.

Fellow Award “For contributions to the design, construction, and operation of large electrical power systems, including computer applications to such systems.”

AIEE Fellow Award “For contributions to the theory and solution of electrical networks”; IRE Fellow Award “For contributions to network theory education.” Other Awards: Western Electric Fund Award, 1977.

Fellow Award “For his application of sound theoretical principles to the design of commercial measuring equipment.” Other Awards: Medal of Freedom, 1946; Fellow, American Association for the Advancement of Science, 1971.


Fellow Award “For contributions to electromagnetic scattering theory.” Other Awards: Fellow, American Physical Society; Fellow, Optical Society of America; Fellow, Acoustical Society of America; Fellow, American Association for the Advancement of Science; John Simon Guggenheim Fellow, 1972-73, 1979-80.


Fellow Award “For his contributions to radar and color television systems.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1947.


Fellow Award “For contributions to the theory and design of antennas, for pioneering work in the field of microwaves.” Other Awards: The Imperial Academy Prize of Japan, 1932.


Fellow Award “For contributions to the methodology of computer control of power systems.” Other Awards: Progress Award, IEE of Japan, 1972; Prize, Remarkable Invention, Ministry of Science & Technology of Japan, 1975.


Fellow Award “For contributions to the technology of insulation and electrical breakdown in high-voltage power systems.” Other Awards: Prize for Technical Progress, 1954, 1962; Prize for Technical Thesis, 1964; and Prize for Electric Power Engineering, 1969; all from the Institute of Electrical Engineers, Japan; Prize for Contribution to Research from the Minister of Science and Technology, Japan, 1982.


Fellow Award “For technical contributions in the field of parametric devices, and for leadership in electron devices research and development.” Other Awards: INADA Award, Institute of Electronic and Communication Engineers of Japan, 1956; Distinguished Paper Award, National Electronic Convention, 1967.


Fellow Award “For original contributions to the theory, development, and application of varactor diodes in parametric amplifiers.”


Fellow Award “For contributions to the development of telephone electronic switching systems.”


Fellow Award “For contributions to the development of analytical methods and their application to electric power systems.”


Fellow Award “For development of interactive simulation methods and analysis techniques for electric power systems.”

Fellow Award “For contributions to the theory of multimode millimeter waveguides.”


Fellow Award “For contributions to switching circuit theory and computer science education.” Other Awards: Guggenheim Fellow, 1967.


Fellow Award “For leadership in avionics research and development and contributions to guidance and control for missiles and aircraft”; Service Award, Life Member, IEEE Aerospace and Electronic Systems Society, 1977; IEEE Centennial Medal, 1984. Other Awards: Sigma Xi; Tau Beta Phi; Meritorious Civilian Service Medal 1970; NATO Advisory Group for Aerospace Research and Development Guidance and Control Panel; U.S. Air Force Representative/Consultant to NASA, Aerospace Safety Advisory Council; Distinguished Alumnus Award, University of Cincinnati, 1982.


Fellow Award “For contributions to radar signal processing and to graduate education.”


Fellow Award “For leadership in radiowave propagation research.” Other Awards: Department of Commerce Gold Medal, 1972; Letter of Commendation from the President, 1972; Distinguished Engineering Alumnus Award, University of Colorado, 1973.


Fellow Award “For leadership in the field of biomedical engineering and education.” Other Awards: Tokyo Metropolitan Governor’s Award, 1980; Niwa-Takayanagi Prize, Institute of Television Engineers of Japan, 1982.


Fellow Award “For leadership in the development of semiconductor memories and microcomputer components.”


Fellow Award “For contributions to the techniques of acoustic-emission measurements in industrial process monitoring”; 2nd Prize Student Paper Award, IEEE, 1970; Meritorious Award, IE Society, 1979; Editor IEEE Trans on IE. Other Awards: Sigma Xi.


Fellow Award “For contributions to electrical engineering teaching and to synthetic insulations.” Other Awards: Member: Phi Eta Sigma, Omicron Delta Kappa, Phi Beta Kappa, Sigma Xi; Sigma Tau; Tau Beta Pi; Eta Kappa Nu; Pi Mu Epsilon; Distinguished Alumnus Award, Duke University School of Engineering, 1967; Engineer of the Year in Education Atlanta Chapter, Georgia Society of Professional Engineers, 1975; Engineer of the Year in Education Award, State, Georgia Society of Professional Engineers, 1976; Engineer of the Year in Georgia Award, State, Georgia Society of Professional Engineers, 1979. Life Member, Georgia Engineering Foundation Board of Directors, 1978; ASEE 1979 College Industry Education Conference Best Paper Award; Listed in: “Who’s Who in Engineering, 1964”, “Who’s Who in the South and Southwest, 1965-66”, “American Men and Women of Science, 1973”, “Who’s Who in America, 1980-81”, “Who’s Who in the World, 1980-81.”


Fellow Award “For contributions to the theory and applications of solid-state electronic devices.”


Fellow Award “For contributions to military systems engineering.” Other Awards: Letter of Appreciation, U.S. Dept. of Army, 1945; Presidential Certificate of Merit, 1948; Distinguished Service Award, Air Force Association, 1951; Exceptional Civilian Service Medals, 1956, 1958, 1964; Fellow, American Physical Society.

1939, University of Iowa; D.Sc.(Hon.), 1951, Iowa Wesleyan College; D.Sc.(Hon.), 1957, Grinnell College; D.Sc.(Hon.), 1958, Coe College; D.Sc.(Hon.), 1959, Cornell College; D.Sc.(Hon.), 1960, University of Dubuque; D.Sc.(Hon.), 1961, University of Michigan; D.Sc.(Hon.), 1961, Northwestern University; D.Sc.(Hon.), 1963, Illinois College; D.Sc.(Hon.), 1966, Butler University; D.Sc.(Hon.), 1966, Boston College; D.Sc.(Hon.), 1967, Southampton College; D.Sc.(Hon.), 1969, Augustana College; D.Sc.(Hon.), 1982, St. Ambrose College.

Fellow Award “For the experimental discovery and exploration of radiation belts around the earth.” Other Awards: C. N. Hickman Medal, American Rocket Society, 1949; Physics Award, Washington Academy of Science, 1949; Research Fellow, Guggenheim Memorial Foundation, 1951; Space Flight Award, American Astronautical Society, 1958; Distinguished Civilian Service Medal, U.S. Dept. of Army, 1959; Louis W. Hill Space Transportation Award, 1960; First Iowa Award in Science, 1961; First Annual Research Award, American Rocket Society, 1961; Elliott Cresson Medal, Franklin Institute, 1961; Space Flight Award, International Academy of Astronautics, 1961; David and Florence Guggenheim International Astronautics Award, 1962; John A. Fleming Award, American Geophysical Union, 1963; Golden Omega Award, Electrical Insulation Conference, 1963; Commander, Ordre du Merite pour la Recherche et l'Invention, 1964; Award, Iowa Broadcasters Association, 1964; Carver Distinguished Professor, University of Iowa; Medal for Exceptional Scientific Achievement, NASA, 1974; Distinguished Fellow, Iowa Academy of Science, 1975; Distinguished Civilian Service Award, U.S. Navy, 1976; William Bowie Medal, American Geophysical Union, 1977; Fellow, American Physical Society; Fellow, American Geophysical Union; National Academy of Sciences; American Astronomical Society; Fellow, American Astronautical Society; Sigma Xi; Gold Medal, Royal Astronomical Society, 1978; Award of Merit, American Consulting Engineers Council, 1978; Fellow, American Rocket Society; Fellow, American Academy of Arts and Sciences; Regents Fellow, Smithsonian Institution, 1980; Space Science Award, American Institute of Aeronautics and Astronautics, 1982; Governor's Science Medal, 1982.


Fellow Award “In recognition of his contributions in the field of microwave antenna theory and design”; IEEE Centennial Medal, 1984. Other Awards: NDRC Citation, Office of Scientific Research and Development, 1945; Presidential Certificate of Merit, 1948; Sigma Xi Citation, 1957; Certificate of Appreciation, Los Angeles City Schools, 1959; S.C.I.E.C. Award, 1960; Fellow, American Physical Society; Associate Fellow, American Institute of Aeronautics and Astronautics.


Fellow Award “For contributions to electromagnetic theory.” Other Awards: International Montefiore Prize, 1965; Fellow, IEE.


Fellow Award “For contributions to the design and application of saturable reactors, nonlinear magnetic devices, and transformers.”


Fellow Award “For contributions to superconducting devices and to engineering education.” Other Awards: Outstanding Engineering Alumnus, Rutgers University, 1975.


Fellow Award “For contributions to the theory and development of atomic-resonance frequency standards.”


Fellow Award “For contributions to the understanding of radiation effects and to the applications of this knowledge to improve the survivability of military and space systems.”

VAN NESS, JAMES E., Fellow 1982. Born: June 24, 1926, Omaha, NB. Degrees: B.S., 1949, Iowa State University; M.S., 1951, Ph.D., 1954, Northwestern
University.
Fellow Award “For contributions to research and education in computer analysis of power systems.”

VAN NORDEN, R.W., AIEE Fellow 1913.

Fellow Award “For contributions to semiconductor device theory and solar-cell development and for leadership in academic research.” Other Awards: Project Leader, Research Program on Photovoltaics, European Economic Community; C.R.B. Fellowship, 1960, Advanced C.R.B. Fellowship, 1972, Belgian-American Educational Foundation; Member, American Physical Society; European Physical Society; Koninklyke Vlaamske Ingenieurs Vereniging (K.V.I.V.).


Fellow Award “For contributions to telephone transmission, radar circuitry, and applications of digital techniques to data processing.”

Fellow Award “For contributions to teaching and research in the detection, estimation and modulation theory area, and the design of military communications systems.”


Fellow Award “For technical contributions and leadership in the semiconductor industry.”

Fellow Award “For his contributions as an educator and an administrator in close contact with industrial research.”

VANZETTI, RICCARDO, Fellow 1982. Born: May 1, 1910, Milano, Italy. Degrees: D.Eng., 1932, University of Rome, Italy.

Fellow Award “For fundamental contributions to the theory and control of large-scale stochastic systems.”

Fellow Award “For contributions to electronic and magnetic devices and materials.”

Fellow Award “For contributions to the planning of reliable and economic electric power systems.” Other Awards: National Academy of Engineering, 1980.

Fellow Award “For his contributions in the field of turbine generator design and in the development of transmission systems”; National Award, Best Paper on Application, AIEE, 1946. Other Awards: American Society of Mechanical Engineers; National Society of Professional Engineers; International Executive Service Corps.

Fellow Award “For pioneering work and subsequent leadership in data communications engineering including systems planning, project management, and standards activities.” Other Awards: Tau Beta Pi, 1936; “Who’s Who in Engineering,” 1977.


Fellow Award “For contributions to the development of interest and education in the field of instrumentation and control.”


Fellow Award “For contributions to software engineering theory and applications”; Member, Governing Board, IEEE Computer Society; Chairman, Technical Committee on Distributed Data Processing, IEEE Computer Society. Other Awards: Dept. of Army Research and Development Achievement Award, 1972; Senior Executive Honorable Mention, 1979.


Fellow Award “For contributions to the design of radio systems for space communications and tracking.” Other Awards: Tau Beta Pi, 1942; Sigma Xi, 1962; Space Act Award, NASA, 1963.

VIDYASAGAR, MATHUKUMALLI, Fellow 1983.

Fellow Award “For contributions in the stability analysis of linear and nonlinear distributed systems.”


Fellow Award “For contributions and leadership in the development and deployment of electronic switching systems.” Other Awards: Outstanding Young American Engineer,Eta Kappa Nu, 1964.


Fellow Award “For contributions to the theory of electrochemical reactions involved in electrical and electronic products.” Other Awards: Fellow, Chemical Institute of Canada, 1973; Fellow, Royal Society of Chemistry, London, 1973; Lash Miller Award, Electrochemical Society, Quebec, 1973; NORANDA Lecture Award, Chemical Institute of Canada, 1979; Maître de recherche, Institut de recherche d'Hydro-Quebec, 1973; Member, Editorial Board, several international research journals; Invited Professor, Institut National de la Recherche Scientifique-Energie, 1970.


Fellow Award “For contributions to knowledge of the ionosphere and its role in the propagation of radio waves”; Morris N. Liebmann Award, IRE, 1957, “For his contributions in the fields of meteor astronomy and ionospheric physics which led to the solution of outstanding problems in radio propagation.” Other Awards: Outstanding Young Bay Area Engineer Award, 1955; Member, National Academy of Science, 1961; Member, National Academy of Engineering, 1966; Meritorious Civilian Service Award, Dept. of the Air Force, 1975; Medal for Outstanding Public Service, Dept. of Defense, 1981; Fellow, American Academy of Arts and Sciences, 1982.


Fellow Award “For leadership in engineering education and contributions to the theory of metal-oxide-semiconductor devices.”


Fellow Award “For contributions to the analysis and design of high-voltage dc power systems.”


Fellow Award “For contributions to computer-aided analysis and design of electrical networks.”


Fellow Award “For outstanding work and teaching on UHF tubes, wave propagation, and space communication”; Chairman, France Section, IEEE, 1972-1981. Other Awards: Chairman, Institut pour le Developpement et l'Amenagement des Telecommunications et de l'Economie (IDATE); Deputy Director and Special Advisor, Direction des Affaires Industrielles et Internationales, Ministry of Post and Telecommunications, Paris; President, International Union of Radio Science (URSI), 1975-1978.


Awards: William Martin Habershaw Medal and Award, 1970, “For meritorious achievement in the field of electrical transmission and distribution.” Other Awards: Certificate of Commendation, U.S. Dept. of Navy, 1946; awarded several patents; Honorary Sigma Xi; Tau Beta Pi; Eta Kappa Nu; Chairman, Sharon Section, Transformer Committee and Dielectric Tests Subcommittee; Coordinating Committee #4 on Insulation Life; ANSI Transformer Standards.


Fellow Award “For contributions to military electronics.” Other Awards: Outstanding Performance Award, U.S. Air Force, 1957; Fellow, American Association for the Advancement of Science, 1959.


Fellow Award “For contributions to radiation, physics, and quantum electronics, for applied research, and for leadership in engineering education”; IEEE Centennial Medal, 1984. Other Awards: Fellow, AAAS, 1967.


Fellow Award “For his contributions to the development and manufacture of electronic laboratory instruments.” Other Awards: Legion of Merit, 1945; Oak Leaf Cluster, 1946; Medal of Achievement, Western Electrical Manufacturers Association, 1964.


Fellow Award “For leadership in the codification of the theory and application of microwave ferrites, and for contributions to the theory of phased array antennas.”

VON BAEYER, HANS J., IRE Fellow 1959.

Fellow Award “For contributions to development of radio communication techniques and systems.”


Fellow Award “For contributions to FM multiplex broadcasting and reception in the field of high fidelity music reproduction”; Achievement Award, Group on Audio and Electroacoustics, 1967. Other Awards: Eta Kappa Nu, 1950; Tau Beta Pi, 1951; Sigma Xi, 1951; Fellow, Audio Engineering Society, 1962; Gold Medal, Audio Engineering Society, 1978.


Fellow Award “For contributions to the development of international standards for power system protection and control”; Distinguished Service Award, Power System Relaying Committee, IEEE, 1979.
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Fellow Award “For leadership in the development and application of silicon power conversion equipment”; Outstanding Achievement Award, IEEE Industry Applications Society, 1973.


Fellow Award “For development of magnetic materials for electric power apparatus and for research and development leadership in advanced energy conversion.” Other Awards: Prize for the Promotion of Science, IEE Japan, 1949.


Fellow Award “For contributions to parametric amplification”; IEEE Centennial Medal, 1984. Other Awards: Outstanding Young Electrical Engineer, Eta Kappa Nu, 1955; Annual Award, National Electronics Conference, 1959; Visiting Professorship at Tokyo University, Japan Society for the Advancement of Science, 1971; Fulbright-Hays Lectureship in Spain, 1972; Distinguished Teaching Award, UCSB Academic Senate, 1977; “Special Chair” Visiting Professorship at National Taiwan University, National Science Council, Republic of China, 1980.


Fellow Award “For leadership in the management of utility research programs.”


Fellow Award “For contributions to the development, AIEE design and installation of aluminum reduction plants and their associated power conversion equipment.” Other Awards: Silver Beaver Award, 1961; St. George Award, 1964; Distinguished Service Award, Clarkson College of Technology, 1971; Silver Antelope Award, 1983.


IRE Fellow Award “For his distinguished teaching in the engineering field and for furtherance of international understanding through technical services in the Middle East.” Other Awards: Fulbright Award, Egypt, 1951-52; Fulbright Award, Australia, 1961-62; Research Award, Sigma Xi, 1977, Teaching Award, Haliburton, 1983, University of Missouri.


Fellow Award “For contributions to the development of pulse code modulation systems and of design techniques for feedback amplifiers.”


Fellow Award “For contributions to international standards in the utilization of the radio spectrum.”
er Awards: Alumni Citation, Denison University; Diplome d'Honneur, International Telecommunications Union; Licensed Radio Amateur, Licensee of Experimental-Research Station KM2XK0 for investigation of ionospheric effects.


Fellow Award “For contributions to concepts of integrated electronic devices and field-effect transistors.” Other Awards: L. J. Wallmark Award, Royal Academy of Science, Sweden, 1954; David Sarnoff Outstanding Team Award, 1964; Fellow, American Association for the Advancement of Science; Member, Royal Academy of Engineering Sciences, Sweden; Polhem Award, Swedish Engineer Association, 1982.


Fellow Award “For leadership in the engineering and protection of industrial power systems, and for contributions to the education of power systems engineers”; IEEE Centennial Medal, 1984. Other Awards: Sigma Xi; Sigma Tau.


Fellow Award “For contributions to radar theory, missile guidance, and electronics research.” Other Awards: Exceptional Civilian Service Award, U.S. Air Force, 1969; Meritorious Civilian Service Award, Dept. of Defense, 1971; Citation of Honor as Outstanding Air Force Civilian Employee of the Year, Air Force Association, 1971; Distinguished Civilian Service Award, Dept.


Fellow Award “For contributions to traveling-wave and Luneberg lens antennas, and to graduate education.” Other Awards: Robert M. Critchfield Award, Ohio State University; Ronald W. Thompson Award, Ohio State University.


Fellow Award “For contributions and leadership in the development and application of semiconductor radiation spectrometers.”


Fellow Award “For outstanding contributions in the development of measuring instruments, improved methods of measuring dielectric phenomena, and for inventions in the field of insulation, particularly for high-temperature applications.” Other Awards: Charles A. Coffin Award, General Electric, 1950; Life Member, NSPE and MSPE, 1972; Senior Member, FSPE, 1977.


Fellow Award “For contributions to aircraft flight control and missile guidance technology.” Other Awards: Member, Tau Beta Pi, associate of Sigma Xi, Registered Professional Engineer in N.Y. State; Yale Engr. Assoc., Mass; National Soc. of Professional Engrs.

WANG, AN, Fellow 1971. Born: February 7, 1920, Shanghai, China. Degrees: B.S.E.E., 1940, Chiao Tung University; M.S., 1946, Ph.D., 1948, Harvard University; Honorary Doctoral Degrees: Lowell Technological Institute, Suffolk University, Southeastern Massachusetts University, Syracuse University, Emmanuel College, Bryant College, Fairleigh Dickinson University, Tufts University, Polytechnic Institute of New York, University of Hartford, Boston College.

Fellow Award “For leadership and contributions in developing electronic desktop calculators and magnetic-core memories.” Other Awards: Achievement Award, Chinese Institute of Engineers (in America), 1969; Fellow, American Academy of Arts & Sciences, 1981; Newcomen Society in America, 1981; Member, Babson College’s Academy of Distinguished Entrepreneurs, 1981; Member, National Academy of Engineering, 1982; The Golden Door Award (The International Institute of Boston), 1982; New England Inven-
tors Award, 1983.


Fellow Award “For basic contributions in the field of microwave tubes.” Other Awards: Victor Emmanuel Distinguished Professor, Cornell University, 1960; Achievement Award, Seven Long Island Colleges, Special Convocation, 1960; Achievement Award, Chinese Institute of Engineers, 1961; Fellow, Academia Sinica, 1968.


Fellow Award “For contributions to the theory and technique of integrated optics devices.”


Fellow Award “For contributions to the design, analysis, and evaluation of radar systems.”


Fellow Award “For contributions to electrical engineering through teaching and research.”


Fellow Award “For his outstanding contributions to computer controlled systems”; Distinguished Member, IEEE Control Systems Society, 1983; IEEE Centennial Medal, 1984.


Fellow Award “For contributions to electrical engineering education.”


Fellow Award “For contributions in the early development of digital computers”; Achievement Award, Los Angeles Section, IRE, 1957; IEEE Centennial Medal, 1984. Other Awards: Atwater Kent Prize, Moore School of Electrical Engineering, University of Pennsylvania, 1941; Tau Beta Pi National Fellowship, 1941-42; Award, American Federation of Information Processing Societies, 1963; Computer Sciences Man of the Year, Data Processing Management Association,


Fellow Award “For contributions to the development and application of nationwide switching.”


Fellow Award “For continued contributions to the field of semiconductor devices.”


Fellow Award “For outstanding leadership in the application of electrical engineering principles in the medical field, and for leadership in the promotion of appreciation of such work among both electrical engineers and physicians.” Other Awards: Fellow, American Association for the Advancement of Science; Associate Fellow, American College of Radiology; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For contributions to the understanding of wave propagation in multimode media and to the development of millimeter waveguide transmission systems.”


Fellow Award “For contributions to filter design, computer-aided circuit theory, and application.” Other Awards: Inata Memorial Award, 1960; Best Paper Awards, Institute of Electronics and Communications Engineers, Japan, 1961, 1968, 1969; Best Book Award, Institute of Electronics and Communications Engineers, Japan, 1969.


Fellow Award “For contributions to economic solutions of planning and operating problems in the electric utility industry.” Other Awards: Tau Beta Pi, 1921; Sigma Xi, 1923.


Fellow Award “For contributions to the science and practice of transhorizon radio propagation.”


Fellow Award “For his contributions to the development of microwave tubes”; Achievement Award, IRE, Region 7, 1957; Frederik Philips Award, IEEE, 1981. Other Awards: Member, National Academy of Engineering, 1968; Fellow, American Association for the Advancement of Science, 1981.


Fellow Award “For his accomplishments in the application of electricity to ship propulsion and in the formulation of the regulations governing electric installations on shipboard.” Other Awards: Fellow, Institute of Marine Engineers, 1934; Fellow, Institution of Electrical Engineers, U.K., 1940.


Fellow Award “For contributions to the electrical industry in the administrative and technical development of utility engineering and operating practices and inter-system collaboration.”

Other Awards: Tau Beta Pi; Member, Texas Society of Professional Engineers.


Fellow Award “For leadership in engineering education and for contributions to the theory and application of control systems.” Other Awards: Engineer of the Year, East Tennessee Chapter, Tennessee Society of Professional Engineers, 1969; Outstanding Service Award, Air Force ROTC, 1969; Tasker H. Bliss Medal, Society of American Military Engineers, 1970; Nathan W. Dougherty Engineering Award, 1976; First Recipient, “University Professor” Chair, University of Tennessee, 1982.


Fellow Award “For his contributions to the development of color television.” Other Awards: Outstanding Work in Research Award, RCA Laboratories, 1947-1949; Distinguished Engineering Alumnus Award, Purdue University, 1970; “Outstanding Professional Achievement Award,” University of Denver Alumni Association, 1983.


Awards: Chairman, Committee on Membership, AIEE, 1938-1940; Chairman, Committee on Switchgear, AIEE, 1948-1952. Other Awards: Life Member, National Society of Professional Engineers, 1934-1982; Life Member, NSPE, 1983; Chairman, AEIC Committee on Electric Switching and Switchgear, 1962-1964; Chairman EEI-AEIC-NEMA Joint Committee on Power Circuit Breakers, 1966-1968.


Fellow Award “For contributions to high power klystron amplifiers.” Other Awards: Sigma Xi.

WEBER, ERNST, AIEE Fellow 1934, IRE Fellow 1951. Born: September 6, 1901, Vienna, Austria. Degrees: Dipl.Ing., 1924, Technische Hochschule Vienna; Ph.D., 1926, University of Vienna; D.Sc., 1927, Technische Hochschule Vienna.

Awards: Education Medal, 1960, “For excellence as a teacher in science and electrical engineering, for creative contributions in research and development, for broad professional and administrative leadership, and in all, for a considerate approach to human relations”; Founders Award, IEEE, 1971, “For leadership of great value to the profession”; Microwave Career Award, IEEE Microwave Theory and Techniques Society, 1977. Other Awards: Fellow, American Physical Society, 1946; Presidential Certificate of Merit, 1948; Honorary Member, Institute of Electrical Engineers of Japan and Institute of Radio Engineers of Japan, 1963; Member, National Academy of Engineering, 1964; Member, National Academy of Sciences, 1965; Howard Cooley Medal, ASA, 1966; Honorary Member, American Society for Engineering Education, 1972; Distinguished Service Award, Transportation Research Board, National Research Council, 1976; Eminent Member, Eta Kappa Nu, 1962.


Fellow Award “For contributions to theory and practice in electroacoustical transducers and engineering education.” Other Awards: Honorary Member, Swiss Association for Electrical Engineers, 1969; Naturforschende Gesellschaft Zurich, 1964, 1977.


Other Awards: Life Member, International Association of Electrical Inspectors, 1961; Life Member, International Municipal Signal Association, 1961.

WEBER, JOSEPH, IRE Fellow 1958. Born: May 17, 1919, Paterson, N.J. Degrees: B.S., 1940, United States Naval Academy; Ph.D., 1951, Catholic University of America.

Fellow Award “For his early recognition of concepts leading to the development of the maser.” Other Awards: Guggenheim Fellow, 1955, 1962; Scientific Achievement Award, Washington Academy of Sciences, 1958; First Prize, Gravity Research Foundation, 1959; Fellow, American Physical Society; Babson Award, Gravity Research Foundation, 1970; Award, Sigma Xi, 1970; Boris Pregel Award, 1973.

Fellow Award “For his contributions to the development of the maritime mobile services and his leadership in promoting measures for enhancing the safety of life and property at sea.” Other Awards: Marconi Medal, 1950.


Fellow Award “For outstanding personal contributions and leadership in microwave device and integrated circuit technology development”; Best Paper Award, IRE, 1961. Other Awards: Citation, AVIATION WEEK AND SPACE TECHNOLOGY, 1967.


Fellow Award “For contributions to gaseous electronic and solid-state devices”; Editor’s Award, IRE, 1952; Frederik Philips Award, IEEE, 1980.


Fellow Award “For contributions to electron tube research, engineering, and manufacture.” Other Awards: Fellow, American Association for the Advancement of Science, 1925.


Fellow Award “For contributions to radar and weapons systems.” Other Awards: Award of Merit, RCA Victor, 1954; Achievement Award, Kansas State University, 1964.


Fellow Award “For contributions to the understanding of the sputtering process.” Other Awards: 2nd Welch Award, American Vacuum Society, 1971; Honorary Member, American Vacuum Society, 1981.


Fellow Award “For contributions to the development of computer tape drives.”


Fellow Award “For contributions to systems planning in air navigation and traffic control.” Other Awards: Collier Award, 1948; Superior Achievement Award, Institute of Navigation, 1967; Honorary Life Member, Institute of Navigation, 1981.


Fellow Award “For contributions to radar transmitter and system technology.” Other Awards: Eta Kappa Nu, 1950; Tau Beta Pi, 1951; Sigma Xi, 1951.


Fellow Award “For contributions as a research manager and leader in the field of electronic control and protection systems for nuclear reactors.” Other Awards: Chairman, Technical Committee 45 Nuclear Instrumentation International Electrotechnical Commission; Chevalier de la Legion d’Honneur, Medaille de la Reconnaissance Francaise; Officier de l’Ordre National du Merite, 1982.


Fellow Award “For contributions to the field of network theory.” Other Awards: Dean Bidersee Award, Brooklyn College, 1941; Alumnus of the Year Award, Brooklyn College, 1964; Fellow, A.A.A.S., 1960; Alumnus of the Year, Thomas Jefferson High School, 1971; Research Fellowship, Japan Society for Promotion of Science.

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Fellow Award “For contributions to the theory of computer arithmetic logic, and to the layout of large-scale integrated circuits.” Other Awards: IBM Corporate Invention Award, 1981.

WEINBERGER, JULIUS. IRE Fellow 1925. Born: July 22, 1893, New York, N.Y. Degrees: B.S., 1913, City College of the City University of New York.
Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1940.

Fellow Award “For contributions to instrumentation in radio astronomy”; IRE Award, Boston Section, IEEE, 1958.

Fellow Award “For contributions in the field of precision microwave measurements and advancement of attenuation measurements.” Other Awards: Fellow, Institution of Electrical Engineers, 1977.

Fellow Award “For contributions to the theory and practice of voiceband data communications, and to IEEE publications activities”; Donald W. McLellan Meritorious Service Award, IEEE Communications Society, 1983.

Fellow Award “For contributions to radar systems and for leadership in development of modern air defense systems.” Other Awards: David Sarnoff Outstanding Achievement Award and Medal in Engineering, 1972.

Fellow Award “For contributions in semiconductor compound device research.” Other Awards: Outstanding Achievement Award, RCA, 1959; Secretary of Defense Meritorious Civilian Service Medal, 1979.

Fellow Award “For contributions to microwave ferrites and in the management of research.” Other Awards: Fellow, American Physical Society, 1964; Fellow, American Institute of Engineering.

Fellow Award “For contributions in the field of effective radio spectrum utilization by the Land Mobile Radio Services.” Other Awards: Award of Merit, National Electronics Conference, 1970; Corporate Leadership Award, Massachusetts Institute of Technology; 1976, Freedom Foundation of Valley Forge Award, 1974, Electronic Industries Association Medal of Honor, 1981.

Fellow Award “For contributions and leadership in the development of communications by submarine cable and satellites.” Other Awards: Honorary RPI, New York, 1950; Sigma Xi.

Fellow Award “For contributions to the development of reactors, transformers and arc welding apparatus.” Other Awards: Charles A. Coffin Award, General Electric.

Fellow Award “For his contributions to research on microwave tubes and solid state devices”; Paper Prize, IRE, 1952, for “Effects of Space Charge on Frequency Characteristics of Magnetrons.” Other Awards: Phi Beta Kappa, 1942; Sigma Pi Sigma, 1946; Sigma Xi, 1950; Eta Kappa Nu, 1956; Tau Beta Pi, 1957; Fellow, American Association for the Advancement of Science, 1978.

Fellow Award “For contributions to the development of error-correcting codes.”

WELDON, JAMES O. IRE Fellow 1954. Born: March 15, 1905, Canton, Mo.
Fellow Award “For his contributions to the design of high power transmitters and their use in international broadcasting.”

Fellow Award "For contributions to the analysis of cardiovascular systems and to the development of heart-assist devices." Other Awards: Rutgers Research Council Fellow, 1974-1975.

Fellow Award "For leadership in automotive electronics and instrumentation and for electronic control of automotive emissions." Other Awards: Distinguished Alumnus, University of Cincinnati, 1973.

Fellow Award "For technical and educational contributions in the field of communication transmission engineering." Other Awards: Phi Beta Kappa, 1917; Eta Kappa Nu, 1955.

Fellow Award "For his contributions to pulse techniques."

WELSH, J. W., AIEE Fellow 1914. Born: October 20, 1880, Springfield, Ohio. Degrees: A.B., 1900, Wittenberg University; A.B., 1901, Harvard University; B.S., 1903, Massachusetts Institute of Technology.

Fellow Award "For his contributions to thermal measurement and cooling of electronic equipment." Other Awards: Buffalo's Man of the Week, 1969.

Fellow Award "For his contributions to the development of television equipment and circuits." Other Awards: Award, RCA, 1947.

Fellow Award "For contributions to reliability and performance of military components"; Commendation, IRE; Award, IRE, Professional Group on Reliability; Contribution Award, IEEE, 1967. Other Awards: Certificate of Merit, Certificate of Service, Air Force System Command; Commendation for Meritorious Civilian Service, Superior Performance Rating, Department of Air Force; Certificate of Merit, National Security Industrial Association; Certificate of Appreciation, Dept. of Defense; Ohio Senior Citizens Hall of Fame, 1979.

Fellow Award "For his design advances on high-capacity current transformers."

Fellow Award "For contributions to the theory and synthesis of microwave filter and multiplexer networks"; G-AMTT Microwave Prize, 1967.

Fellow Award "For his contributions to radio communications and communication satellite systems."

Fellow Award "For leadership in the design and development of digital satellite communications systems."

Fellow Award "For contributions in the planning and developing of large-scale electric power systems."

Other Awards: American Society for Testing and Materials; CIGRE.

Fellow Award "For research, development and design of one and two million volt resonant transformer X-ray machines and the 100 MeV Betatron and the 70 MeV Synchrotron electron accelerators." Other Awards: John Price Wetherill Medal, Franklin Institute, 1944.

Fellow Award "For contributions to the design and economic operations of large power systems."


Fellow Award "For contributions to differential
alyzer solutions of rotating machinery and power system problems.”


Fellow Award “For contributions to the understanding of plasmas and to the development of plasma diagnostic techniques.” Other Awards: Humboldt-Preis, Alexander von Humboldt Foundation, Germany, 1973; Fellow, American Physical Society, 1973; ORC Visiting Professor, Occidental Research Corp., 1979-1981.


Fellow Award “For contributions to electromagnetic propagation in turbulent media, and for basic exploration in missile guidance.” Other Awards: Member, National Academy of Engineering.


Fellow Award “For contributions to the development of microwave and millimeter-wave nonreciprocal components.”


Fellow Award “For his contributions to the knowledge of electromagnetic theory and the application of that theory to microwave problems”; IEEE Education Medal, 1967; Microwave Career Award, IEEE Microwave Theory and Techniques Society, 1976, “For a career of meritorious achievement and outstanding technical contributions in the field of microwave theory and techniques”; IEEE Centennial Medal, 1984. Other Awards: Guggenheim Fellow, 1959; Member, National Academy of Engineering, 1965; Member, National Academy of Sciences, 1972; Lamme Award, American Society for Engineering Education, 1975; Fellow, Optical Society of America, 1977; Distinguished Alumnus Award, University of California at Berkeley, 1980; Appointed University Professor, University of California, 1980; American Academy of Arts and Sciences, 1980.


Fellow Award “For development and subsequent improvements of the visible light helium-neon laser”; David Sarnoff Award, IEEE, 1984.


Fellow Award “For contributions to the organization and development of standardization activities in support of the national measurement system.” Other Awards: Letter of Commendation for Outstanding Services as a Civilian Engineer, U.S. Navy, 1946; Contributions to the Literature of Standards, American Society for Testing and Materials, 1963; Outstanding Achievement in Metrology and Calibration, U.S. Air Force Systems Command, 1964; Outstanding Services Award, National Conference of Standards Laboratories, 1970; Life Member, National Society of Professional Engineers, 1975.


Fellow Award “For contributions to engineering education.” Other Awards: George Westinghouse Award, American Society for Engineering Education, 1961; Fellow, American Academy of Arts and Sciences, 1963; Member, National Academy of Engineering, 1975; Chairman, Electric Power Research Institute Ad-
visory Council, 1984-1986; Ford Professor of Engineering and Director of the Energy Laboratory at M.I.T.


IRE Fellow Award “For his leadership in advancing the use of radio in the interest of safety and efficiency in industry”; IEEE Centennial Medal, 1984. Other Awards: Bronze Star, 1943; Presidential Unit Citation, 1944; China-Burma-India Theater Citation, 1944; Alumni Service Award, George Washington University, 1973.

**WHITE, EUGENE L.** Fellow 1966. Born: January 7, 1900, Harford, N.Y. Degrees: B.S., 1924, University of Nebraska.

Fellow Award “For achievement as an engineering executive in the field of high-voltage transmission of electric energy.” Other Awards: Distinguished Service Award, U.S. Dept. of Interior, 1962.


Fellow Award “For contributions to radar systems and physical instrumentation.”

**WHITE, H. BRIAN.** Fellow 1978. Born: September 18, 1922, Toronto, Canada. Degrees: Bachelor of Applied Science (Structural, Honours), 1944, University of Toronto.

Fellow Award “For contributions to the development of extra-high-voltage transmission line structures.”


Fellow Award “For contributions to the theory and practice of electrostatic precipitation.” Other Awards: Sigma Xi, 1933; Fellow, American Physical Society, 1937; Fellow, American Association for the Advancement of Science, 1946; Frank A. Chambers Award, Air Pollution Control Association, 1971; Fellow, Institute of Electrostatics, Japan, 1977; Harry Faith Technical Achievement Award, Air Pollution Control Association, 1979; Award of Merit, Institute of Electrostatics, Japan, 1982.


Fellow Award “For contributions to the development and digital computer analysis of large ac and dc rotating machines.”


Fellow Award “For contributions to wind-tunnel electrical instrumentation.”


Fellow Award “For contributions to the development of diode phase shifters for microwave array antennas”; Application Award, IEEE Microwave Theory and Techniques Society, 1975. Other Awards: Member, Eta Kappa Nu; Sigma Xi.


Fellow Award “For contributions to the discovery and applications of surface elastic waves.” Other Awards: Guggenheim Fellowship, 1968-69.


Fellow Award “For achievements in the fields of air traffic control, information theory, countermeasures, and radar.”


Fellow Award “For contributions in the fields of power transmission and high voltage testing.”


Other Awards: Distinguished Service Award, National Council of Engineering Examiners, 1968; Western Electric Fund Award, American Society for Engineering Education, 1970; Distinguished Engineering Alumnus Award, University of Colorado, 1972.


Fellow Award “For contributions to communications and computer systems, and to methodology of systems effectiveness.” Other Awards: Meritorious Civilian Service Award, U.S. Navy, 1946.


Fellow Award “For his contributions to the improved design of dry-type insulating structures and to a better knowledge of their thermal aging”; Second Paper Prize, AIEE, 1954, for “Calculation of Life Characteristics of Insulation.” Other Awards: Phi Beta Kappa, 1927; Managerial Award, General Electric, 1948; Sigma Tau, 1965; Eta Kappa Nu, 1966; 8 Patents; Full Professor, South Dakota State University; Listed in Who’s Who in Engineering; American Men of Science.


Fellow Award “For contributions to the design of generation, transmission, substation, and distribution facilities of electric power systems.”


Fellow Award “For contributions to the theory and design of large rotating electrical machines.” Other Awards: Silver W Award, Westinghouse Electric, 1965.


Awards: Vice President, IRE, 1928. Other Awards: Sigma Xi, 1915.


Fellow Award “For leadership in electrical standards formulation and implementation”; Achievement Award, Industrial and Commercial Power Systems Department, IEEE Industry Applications Society, 1978.


Fellow Award “For contributions to experimental wave propagation research.” Other Awards: Award, RCA, 1954.


Fellow Award “For contributions to adaptive antenna systems and to the theory of quantization error”; First Prize Paper, AIEE, Eighth District, 1960-1961, for “Statistical Analysis of Amplitude-Quantized Sampled-Data Systems”; IEEE Centennial Medal, 1984. Other Awards: Francqui Chair, University of Louvain, Belgium, 1967; Tau Beta Pi; Fellow, American Association for the Advancement of Science, 1980.

WIESNER, JEROME B., IRE Fellow 1952. Born: May 30, 1915, Detroit, Mich. Degrees: B.S.E.E., 1937, M.S., 1938, Ph.D., 1950, University of Michigan; D.Eng.(Hon.), 1961, Polytechnic Institute of Brooklyn; D.Sc.(Hon.), 1962, Lowell Technological Institute; D.Sc.(Hon.), 1962, University of Michigan; D.Eng.(Hon.), 1962, Rensselaer Polytechnic Institute; D.Sc.(Hon.), 1965, Lehigh University; D.Sc.(Hon.), 1965, Brandeis University; D.Sc.(Hon.), 1965, University of Massachusetts; D.Sc.(Hon.), 1966, Northwestern University; Ph.D.(Hon.), 1968, Williams College; D.Sc.(Hon.), 1969, Oklahoma City University; D.Sc.(Hon.), 1970, Yeshiva University; Dr. of Law, 1974, Harvard University; Hon. Doctorate, University of Notre Dame.

Fellow Award “For his contributions in the field of information theory and administration of research on advanced techniques and concepts”; Founders Medal, IEEE, 1977. Other Awards: Eta Kappa Nu, 1937; Phi Kappa Phi, 1937; Sigma Xi, 1937; Fellow, American Academy of Arts and Sciences, 1950; Outstanding Engineering Graduate, University of Michigan, 1954; Al-


Fellow Award “For significant contributions to the art of submarine cable telegraphy.” Other Awards: F.E. d’Humy Award, Western Union, 1959.


Fellow Award “For contributions to the development of high-resolution synthetic aperture radar.”


WILHELM, GEORGE RAYMOND, AIEE Fellow 1948. Born: August 7, 1896, Monkton, Md.


Fellow Award “For his contributions to research, to short wave direction finding, and to the early development of radar.” Other Awards: Radio Section Premium, Institution of Electrical Engineers, U. K., 1932; Officer of the Order of the British Empire, 1942; Leslie McMichael Premium, British Institution of Radio Engineers, 1957; Fellow, Institution of Electrical Engineers.


Fellow Award “For contributions to the application of probability and statistics in the engineering of communication systems.” Other Awards: Medal for Merit, 1946;Eta Kappa Nu, honored as founder of the Award for the Recognition of Outstanding Young Electrical Engineers, 1962; Iowa State Alumni Distinguished Service Award, 1973; Honorary Member, International Advisory Committee, International Teletraffic Congress.


Fellow Award “For contributions to the theory of dynamical systems”; Associate Editor, IEEE Transactions on Automatic Control, 1971-1973. Other Awards: Fulbright Fellow, 1963-1965; Member, Society for Industrial and Applied Mathematics; Member Dutch General Systems Society; Member, Dutch Wiskundig Genootschap; Associate Editor, SIAM T. on Control and Optimization, RAIRO Automatique; Managing Editor, Systems and Control Letters.


Fellow Award “For contributions to electrical engineering education”; IEEE Centennial Medal, 1984. Other Awards: Distinguished Engineering Service Award, Brown University, 1962; Member, National Academy of Engineering, 1975; Gold Medal, Dept. of Commerce, 1975; Fellow, American Association for the Advancement of Science, 1978; Cecil H. Green Professor of Engineering, Southern Methodist University.


Fellow Award “For extensive contributions, major achievements, and leadership in all areas of high-capacity and high-voltage power engineering.”


Fellow Award “For technical contributions and in-
novative leadership in research and development of electron devices." Other Awards: RCA Laboratories Outstanding Achievement Award, 1967; RCA Laboratories David Sarnoff Award for Outstanding Technical Achievement, 1970.


Fellow Award "For the development of low-cost power distribution systems." Other Awards: Engineer of the Year, Hawaii Society of Professional Engineers (NSPE), 1972.

WILLIAMS, CHARLES E., IRE Fellow 1952. Born: March 15, 1896; Seattle, WA.

Fellow Award "For his contributions to electronic and radio engineering, and for planning and development of Naval radio installations." Other Awards: Meritorious Civilian Service Award, U.S. Navy, 1947.


Fellow Award "For contributions to the development and application of nuclear instrumentation"; Administrative Committee, IEEE Nuclear Plasma Science Society, 1976-1979; Secretary, Ad Com, 1977; Vice President, IEEE Nuclear Plasma Science Society, 1978. Other Awards: Registered Professional Engineer; National Society of Professional Engineers; Tau Beta Pi;Eta Kappa Nu.


Fellow Award "For contributions to the development and application of pulse Doppler and imaging radars." Other Awards: L.A. Hyland Award; Associate Fellow, American Institute of Aeronautics and Astronautics.


Fellow Award "For contributions to the design and development of oil field electric supply systems."


Fellow Award "For his accomplishments in the design of very high power radio transmitters and for his contributions to transmitter industrial standards." Other Awards: Southwestern Regional Community Service Award, Elfun Society, General Electric, 1965; U.S. Assay Commission, 1968.


Fellow Award "For contributing reflective grating devices to the field of surface-acoustic-wave filters."


Fellow Award "For contributions to circuit and systems theory in the area of nonlinear circuits"; Guillemin-Cauer Best Paper Award, IEEE Circuits and Systems Society, 1978. Other Awards: Distinguished Faculty Member Award, UCLA Engineering Alumni Association, 1982; George Westinghouse Award, American Society for Engineering Education, 1982.


Fellow Award "For contributions to the design of large steam turbine-driven generators." Other Awards: Fellow, American Society of Mechanical Engineers, 1978; Power Systems Sector Engineering Award, General Electric Company, 1981.


Awards: Antenna Research Award, 1929; Premium, Institution of Electrical Engineers, U. K., 1930; Bureau of Ordnance Development Award, 1945.


Fellow Award "For contributions to the development of compact transmission-line technology in the United States."


Fellow Award "For contributions to electric power engineering education and to the understanding of arc and noise phenomena in power systems"; Hickernell

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Award, 1971, "For inspiring Roger Chang to present the 1970 Hickernell Prize Winning Paper in Electrical Power Engineering."


Fellow Award "For contributions to the design of electrical measuring instruments especially by the improvement in accuracy of current transformers."


Fellow Award "For leadership in the development of high-powered dielectric heating equipment"; Outstanding Engineer Region III, IEEE, 1977; Achievement Award, IEEE Industrial Electronics and Control Instrumentation Society, 1979; IEEE Centennial Medal, 1984. Other Awards: Eminent Engineer, Tau Beta Pi, 1977; U.S. Delegate to CISPR and IWP 1/4 of CCIR.


Fellow Award "For contributions to development of high voltage switchgear"; Alfred Noble Paper Prize, AIEEE, 1944, for "Corona in Aircraft Electric Systems at High Altitude"; IEEE Standards Medallion, 1977. Other Awards: Cordiner Award, General Electric, 1961; Sesquicentennial Award, University of Michigan, 1967.


Fellow Award "For contributions to the design and performance analysis of large steam-turbine generators and to the advancement of their excitation systems." Other Awards: Tau Beta Pi, 1946.


Fellow Award "For contributions in switching theory, computer structure, and microprocessor design and applications." Other Awards: Fellowship, National Science Foundation, 1956-1957; David Sarnoff Award for Outstanding Technical Achievement, RCA, 1976.

WING, ARTHUR K., JR., IRE Fellow 1957. Born: July 1, 1908, New York, N.Y. Degrees: B.S., 1930, Yale University; M.S., 1931, Massachusetts Institute of Technology.

Fellow Award "For contribution to the advance of vacuum tube techniques."


Fellow Award "For contributions to circuit theory and engineering education." Other Awards: Great Teacher Award, Society of Older Graduates of Columbia; Fulbright Lecturer, Taiwan, 1961; Ford Foundation Engineering Resident(IBM), 1966; Fulbright-Hays Senior Lecturer, The Netherlands, 1979.


Fellow Award "For assistance in development and application of AC network systems of underground electric power distribution"; Past Section Chairman of I.E.E.E., Fort Wayne, Ind. Section. Other Awards: Past President of Fort Wayne Engineers Club.


Fellow Award "For contributions and leadership in the development of radar and high-power capacitors."


Fellow Award "For analysis of computational complexity which established bounds on the time required to compute certain mathematical functions"; W. Wallace McDowell Award, IEEE Computer Society, 1974. Other Awards: IBM Fellow, 1972.


Fellow Award "For his electronic research at ultra-high-frequencies." Other Awards: Tau Beta Pi, 1942;
Sigma Xi, 1948; Eta Kappa Nu, 1958.


IRE Fellow Award “For contributions to engineering education and instrumentation”; Paper Prize, AIEE, Houston Section, 1959. Other Awards: Special Science Education Grant, National Science Foundation, Technische Hogeschool te Eindhoven, Netherlands; Honor Alumnus, Rose-Hulman Institute of Technology.


Fellow Award “For scientific leadership and research and development in devices for image detection in darkness.” Other Awards: Fellow, Illuminating Engineering Society; Honors Bronze Tablet, University of Illinois, 1948; Outstanding and Sustained Performance Awards, Dept. of Army, 1959 through 1981; Meritorious Civilian Award, Dept. of Army, 1965; Research and Development Achievement Award, Dept. of Army, 1965; Exceptional Civilian Service Award, 1968; Dept. of Defense Distinguished Civilian Service Award, 1969; Presidential Senior Executive Service Distinguished Executive Award, 1980; Distinguished E.E. Alumni Award, University of Illinois, 1980.


Fellow Award “For technical leadership in the development of gallium arsenide power field-effect transistors and integrated circuits.” Other Awards: Phi Eta Sigma, Tau Beta Pi, Phi Kappa Phi, Sigma Xi, Phi Beta Kappa.


Fellow Award “For contributions to magnetic recording on tapes and disks and to secondary storage devices for computers.” Other Awards: IBM Invention Achievement Award, 1961; IBM Outstanding Invention Award, 1962; Master Design Award, Product Engineering, 1963, 1965; IBM Fellow, 1970.


Fellow Award “For contributions to the theories of fine-particle ferromagnetism and the properties of electrons in metals”; Distinguished Lecturer Award, IEEE Magnetics Society, 1979; IEEE Centennial Medal, 1984.


**WOLF, HERMAN B., AIEE Fellow 1945.** Born: September 10, 1896, Dallas, N.C.

Other Awards: Tau Beta Pi; Robinson Award and Citation, Duke Power Co.; Distinguished Service Citation, Charlotte Engineers Club.


Fellow Award “For contributions to coding theory”; Prize Paper Award (co-recipient), IEEE Information Theory Group, 1975. Other Awards: Senior Postdoctoral Fellowship, National Science Foundation, 1971-1972; Guggenheim Fellow, 1979-80.


Fellow Award “For contributions to the development of silicon solar cells and their applications in spacecraft power systems and for terrestrial energy supply; Marconi Award, IRE, 1958.


Fellow Award “For contributions to fundamental understanding of magnetic materials and leadership in engineering education.” Other Awards: Scholar, New College, Oxford University, 1948; Fulbright Fellowship, 1956; Fellow, American Physical Society, 1963; Senior Visiting Fellow, Oxford University, 1980, 1984; Member, Connecticut Academy of Science and Engi-
neering, 1982; Humboldt Senior U.S. Scientist Award, 1983.


Fellow Award “For contributions to the development of high-purity gallium-arsenide for microwave and optical device applications.” Other Awards: Electronic Division Award, Electrochemical Society, 1978; Samuel C. Sachs Professor, Washington University, 1982.


Fellow Award “For contributions to antennas, geoscience instrumentation, and management of scientific projects.” Other Awards: Fellow, Washington Academy of Sciences; Phi Eta Sigma; Sigma Tau; Eta Kappa Nu.


Fellow Award “For contributions and leadership in the field of simulation systems for training.” Other Awards: Radio Amateur; Adjunct Professor, Polytechnic Institute of Brooklyn.


Fellow Award “For contributions to the design and understanding of ac machines.” Other Awards: Sigma Tau, 1937.


Fellow Award “For contributions to design of transmission at extra high voltages; overhead, underground and underwater”; AIEE National Prize (with K.W. Miller), 1932, for “Best Paper in Engineering Practice.”


Fellow Award “For contributions to the algebraic theory for multivariable control systems.”


Fellow Award “For contributions to the theory of random processes and its engineering applications, and to engineering education.” Other Awards: John Simon Guggenheim Fellow, 1968.


Fellow Award “For contributions to multivariable control system theory and design.” Other Awards: National Academy of Sciences Senior Postdoctoral Resident Research Associateship, held at NASA, 1967-1969.


Fellow Award “For leadership in the design of high-voltage transmission lines.” Other Awards: Past Chairman, CIGRE Study Committee 22; Fellow, Institution of Electrical Engineers.


Fellow Award “For contributions to engineering and economic analyses of large scale electric power systems”; First Prize Paper, AIEE, District 1, 1960; Vice Chairman, Power Eng. Education Committee, IEEE PES, 1982-1983.


Fellow Award “For leadership in the standardization of all channel television receivers by industry and government and in the development of commercial television receivers.” Other Awards: Engineering Department Outstanding Accomplishment Award, Electronic Industries Association, 1971; Consumer Electronics Engineering Panel, Electronic Industries Association, 1967; Consumer Electronics Group, Electronic Industries Association, 1971.


Fellow Award “For contributions to simulated Raman Scattering and laser engineering.”


Fellow Award “For contributions in the electrical
utility fields of transmission, power system analysis, and standardization of ratings of large power circuit breakers.”


Fellow Award “For contributions to teaching and research in the areas of energy conversion, electric machinery, and power-systems technology”; Nikola Tesla Award, IEEE, 1984. Other Awards: Member: American Society for Engineering Education; American Association for the Advancement of Science; National Academy of Engineering; Eta Kappa Nu; Tau Beta Pi; Sigma Xi; Phi Kappa Phi; Edison Electric Institute Power Engineering Educator Award, 1978; Fellow, American Association for the Advancement of Science.


Fellow Award “For his contributions to physics and electronics research, and his leadership in development efforts for national defense.” Other Awards: Citation of Honor, Air Force Association, 1955; Distinguished Service Citation, University of Oklahoma, 1960; Westinghouse A.A.A.S. Award for Science Writing, 1963; Fellow, American Physical Society; Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Academy of Arts and Sciences; Member, National Academy of Sciences, National Academy of Engineering.


Fellow Award “For contributions to the design of integrated circuits for communication systems”; IEEE Fortescue Fellow, 1966. Other Awards: University Medalist, University of California, Berkeley, 1966.


Fellow Award “For contributions to coding theory and practice.”


Fellow Award “For contributions to the design of economical electric power generating plants.”


Other Awards: National Society of Professional Engineers; Member, American Society of Mechanical Engineers, 1958; Institute of Engineers, Australia, 1958.


Fellow Award “For contributions to the design of economical power generation and to formulation of nuclear standards for the electric power industry”; Nominee, Outstanding Engineer Award, IEEE, Region III, 1971; Recognition Award, Charlotte Section, IEEE, 1971; Outstanding Service Award, Power Generation Committee, IEEE Power Engineering Society, 1978. Other Awards: Outstanding Service Award, Charlotte Engineers Club, 1978; Tau Beta Pi.


Fellow Award “For leadership in the development of land transportation including higher powered diesel-electric locomotives, commercial frequency electrification, and high speed rapid transit.”


Fellow Award “For contributions to hybrid integrated circuit development and application”; Best Paper Award, Eascon, 1962, 1963; Best Paper Award, ECC, 1968; Chairman, Globecom/ICC Conference Board; Secretary, IEEE Communications Society Board of Governors. Other Awards: Outstanding Young Electrical Engineer Award, Honorable Mention, Eta Kappa Nu, 1968.


Fellow Award “For basic contributions to information theory”; Prize Paper Award, IEEE Information Theory Group, 1977. Other Awards: Guggenheim Fellowship,
Other Awards: Distribution Achievement Award, American Gas Association, 1960.

Fellow Award “For contributions to advanced electrical devices for energy generation and transmission.”

YAMAMURA, SAKAE, Fellow 1974. Born: February 26, 1918, Tokyo, Japan. Degrees: B.E., 1941, University of Tokyo; M.S., 1951, Michigan State University; Ph.D., 1953, Ohio State University; Dr.E., 1955, University of Tokyo.
Fellow Award “For contributions to the theory of high-speed linear induction motors and development of the numerical control technique”; Nikola Tesla Award, IEEE, 1982. Other Awards: Technical Paper Award, Institute of Electrical Engineers of Japan, 1958; Technology Advancement Award, Institute of Electrical Engineers of Japan, 1968; Electric Power Technology Award, Institute of Electrical Engineers of Japan, 1970; Technical Book Award, Institute of Electrical Engineers of Japan, 1974; Award of Honor, Institute of Electrical Engineers of Japan, 1975; Blue Ribbon Award, Government of Japan, 1978; Japan Academy Award, 1983; Professor Emeritus, Faculty of Engr., Bunkyo-ku, Tokyo, Japan.

Fellow Award “For contributions to high power laser systems for material processing and nuclear fusion and for leadership in education.” Other Awards: Award, Toray Science Foundation, 1968; Award, IEE of Japan, 1972.

Fellow Award “For contributions to the analysis and design of microstrip networks.”

Fellow Award “For contributions to research and development in the fields of semiconductor devices and microwave technology, and to engineering education.”

Other Awards: Excellent Paper Awards, 1957, 1971, Distinguished Services Award, 1970, Excellent Book Award, 1982, Institute of Electronics and Communication Engineers of Japan; Minister’s Award for Standardization, MITI, Japan, 1973; Award for Research and Invention, Governor of Tokyo Metropolis, 1974; International GaAs Symposium Award (Heinrich Welker Medal), 1980.

Fellow Award “For his contributions to antenna design, industry-government frequency utilization, and engineering education”; Annual Paper Award, IRE, Professional Group on Vehicular Communications, 1960.

Fellow Award “For basic contributions to research and education in quantum electronics and solid-state devices”; Quantum Electronics Award, IEEE, 1980. Other Awards: Fellow, Optical Society of America; Member, National Academy of Engineering; American Academy of Arts and Sciences.

Fellow Award “For contributions to switching theory, the reliability of computing systems, and engineering education”; First Richard E. Merwin Award, IEEE Computer Society, 1981. Other Awards: Louis E. Levy Medal, Franklin Institute, 1963; Golden Plate Award, American Academy of Achievement, 1964; Life Fellow, Franklin Institute, 1971; Fellow, American Association for the Advancement of Science, 1983; Eta Kappa Nu; Sigma Xi; Tau Beta Pi; Pi Mu Epsilon.

Fellow Award “For contributions to the development and application of biontransducers using hybrid technology.” Other Awards: Special Fellow, National Institutes of Health, 1972-1974; Listed in “Who’s Who in America.”

Fellow Award “For contributions to theory and observation in ionospheric research and to engineering education”; Certificate of Achievement Award for the paper, “Displacement of Rays in a Turbulent Medium,” IEEE TRANSACTIONS on Antenna and Propagation,
1968.


Fellow Award "For research and leadership in software engineering"; IEEE Centennial Medal, 1984. Other Awards: Special Award, IEEE Computer Society, Founding Editor of IEEE Transactions on Software Engineering.


Fellow Award "For his contributions to the principles, design, and economic application of electrical equipment to power systems and for investigations and technological studies leading to the use of EHV transmission."


Fellow Award "For contributions to the development of telephone electronic switching systems and operator service systems."


Fellow Award "For outstanding contribution to the development of very-high-frequency microwave multichannel radio relay systems and leadership to the rapid growth of the telecommunication industry in Japan"; IEEE Founders Medal Award, 1982. Other Awards: 13th Mainichi Industrial Engineering Prize, Mainichi, 1961; Merit Prize, Institute of Electrical Communication Engineers of Japan, 1962; Merit Prize, Ministry of Post and Telecommunications, 1977; Testimonial, Nippon Telegraph and Telephone Public Corporation, 1978; The Special Maejima Prize, Association of Communications, 1979; First order of merit decorated in recognition of Communications from the Emperor, 1982.


Fellow Award "For contributions to power semiconductor device development and standardization."


Fellow Award "For contributions in the field of surge arrester design and standardization in the electric power industry." Other Awards: Eta Kappa Nu, 1947; Tau Beta Pi, 1948.


Fellow Award "For contributions to network synthesis techniques"; W.R.G. Baker Prize Award, 1965; Guillemin-Cauer Circuit Award, 1973. Other Awards: Air Force Systems Command Award, 1965; Special Award, School of Engineering, City College of the City University of New York, 1969.


Fellow Award "In recognition of his many contributions in the fields of facsimile and electronic timing equipment." Other Awards: Modern Pioneer Award, National Association of Manufacturers, 1946; Sigma Xi.


Fellow Award "For the development and application of digital computer techniques for the dynamic analysis of power systems."


Fellow Award "For contributions to the engineering and management of laboratory facilities for underground transmission technology"; First Prize Paper Award, IEEE Power Group, 1963, for "Shielding of
Transmission Lines.” Other Awards: Tau Beta Pi.


Fellow Award “For contributions to industrial power conversion systems.” Other Awards: Engineering Medal, Association of Professional Engineers of Ontario, 1980; General Electric Steinmetz Award, 1981.


Fellow Award “For contributions to biomedical instrumentation and biomedical engineering education”; Franklin Taylor Award, IEEE, 1965. Other Awards: Member, National Academy of Engineering, 1980; Fellow, Explorers Club, 1980; Dryden Lecturer, American Institute of Aeronautics and Astronautics, 1982; Member, U.S. Air Force Scientific Advisory Board, 1979; NASA Life Sciences Advisory Board, 1980; National Research Council-Aerospace Engineering Board, Exec. Council of Committee on Hearing, Audition and Biomechanics, Air Force Study Board; Principal Investigator, Spacelabs 1, 4&D-1.


Fellow Award “For his contributions in the field of microwaves”; Microwave Prize, IEEE, 1963; National Lecturer, IEEE, 1968; Citation of Honor, United States Activities Board, 1978; Distinguished Service Award, IEEE Microwave Theory and Techniques Society, 1979; Certificate of Recognition, IEEE Electromagnetic Compatibility Society, 1980; President, IEEE, 1980; IEEE Centennial Medal, 1984. Other Awards: Major Open Scholarship, Cambridge University, 1943; Sigma Xi, 1956; Benjamin Garver Lamme Graduate Scholarship, Westinghouse Electric Corp., 1958; Fellow, American Association for the Advancement of Science, 1981; Life Member, IEEE Microwave Theory and Techniques Society, 1982.


Fellow Award “For contributions to mobile radio and data communication systems”; Technical Program Chairman, VTS/79. Other Awards: Professional Engineer, State of New Jersey.


Fellow Award “For leadership in the field of computer science and education.” Other Awards: AEC Predoctoral Fellowship, 1950; Navy Outstanding Performance Award, 1961; Navy Superior Civilian Service Award, 1964; Fellow, American Association for the Advancement of Science, 1982.


Fellow Award “For contribution to the development of analysis and testing techniques applied to stability in large electric power systems.”

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Fellow Award “For teaching and research in the field of automatic control.”

ZACHARIAS, JERROLD R., Fellow 1964. Born: January 23, 1905. Degrees: A.B., 1926, M.A., 1927, Ph.D., 1932, Columbia University; D.(Hum.) (Hon.), 1964, Tufts University; D.Sc.(Hon.), 1964, Oklahoma City University; D.Sc.(Hon.), 1965, St. Lawrence University; D.Sc.(Hon.), 1967, Western Reserve University; L.L.D.(Hon.), 1968, Jacksonville University.

Fellow Award “For contributions to defense systems, atomic frequency standards, and education.” Other Awards: President’s Certificate of Merit, 1948; Certificate of Appreciation, Dept. of Defense, 1955; Oersted Medal, American Association of Physics Teachers, 1961; National Science Teachers Citation, 1969; Fellow, American Association for the Advancement of Science; National Academy of Sciences; American Academy of Arts and Sciences; American Physical Society; American Association of Physics Teachers.


Fellow Award "For contributions to high-voltage transmission research and development."

Fellow Award "For contributions to metal-oxide-semiconductor interface and radiation damage theory and technology." Other Awards: David Sarnoff Fellow; two RCA Laboratories Achievement Awards; Eta Kappa Nu; Tau Beta Pi; Department of the Army commendation for contributions to "... the development of the DoD and Army Very High Speed Integrated Circuit (VHSIC) Program", 1980; IEEE 'Outstanding Contributions to the ICCD, 1983.'

Fellow Award "For contributions in the field of statistical communication theory."


IRE Fellow Award "For contributions in the application of millimicrosecond electronic instrumentation techniques." Other Awards: Eta Kappa Nu, 1937; Outstanding Young Electrical Engineer Award, Eta Kappa Nu, 1948; America's Ten Outstanding Young Men Award, Junior Chamber of Commerce, 1950; Fellow, American Institute of Aeronautics and Astronautics, 1968; Albert F. Sperry Medal Award, Instrument Society of America, 1969; Illinois Institute of Technology Hall of Fame, 1982.

Fellow Award "For contributions to the introduction of microwave systems in developing nations."

Fellow Award "For contributions to error correction, jitter reduction, and synchronization in data transmission."

Fellow Award "For contributions to the theory of programming languages, particularly the formal descriptions of syntax and semantics, and for work in computer language design." Other Awards: Prize of the Nachrichtentechnische Gesellschaft im VDE, 1960; Goldene Stefan Ehrenmedaille of Oesterreichischer Verband fuer Elektrotechnik, 1969; Fellow, British Computer Society; Wilhelm Exner-Medaille, 1972; Honorary Member, Computer Society of South Africa, 1972; Grosses Ehrenzeichen fuer Verdienste um die Republik Oesterreich, 1974; Honorary Member, Information Processing Society of Japan, 1975; IBM Fellow, 1976; Silver-Core and Honorary Member, International Federation for Information Processing, 1977; Prechtl-Medaille, University of Technology, Vienna, 1978; Corresponding Member, Austrian Academy of Sciences, Vienna, 1979; Merit Medal, Bulgarian Academy of Sciences, 1980.

Fellow Award "For the application of generalized functions and integral transforms to network theory." Other Awards: National Science Foundation Faculty Fellow in Science, 1975-1976; Science Award, Armenian Students Association of America, 1982; Leading Professor of Electrical Engineering, State University of New York at Stony Brook.

Fellow Award "For contributions to solid-state electronics and the development of IV-VI compound semiconductors for infrared photoconductive applications."

Fellow Award “For contributions to magnetic recording and printing telegraphy.”


Fellow Award “For outstanding contributions to the development of printing telegraph and data communication apparatus and systems.” Other Awards: Certificate of Commendation (Civilian), U.S. Navy, 1947; Life Member, Western Society of Engineers; Inventor, Communication Products, 100 U.S. patents.


Fellow Award “For contributions to communication theory and medical signal processing and to engineering education.” Other Awards: Member, Swedish Academy of Engineering Sciences, 1976.


Fellow Award “For guidance and leadership in military electronics.” Other Awards: Siemens Ring Stiftung, 1934; Fellow, American Astronautical Society, 1960; Meritorious Civil Service Award, 1963, 1970; Meritorious Service Award, Armed Forces Communications and Electronics Association, 64; Anarctica Service Medal, 1964; Gold Medal for Meritorious Service, Armed Forces Communications and Electronics Association, 1974; Secretary of the Army’s Exceptional Civil Service Award, 1976.


Fellow Award “For contributions to digital communications systems and to engineering education”; Education Award, St. Louis Section, IEEE, 1980. Other Awards: Halliburton Award of Excellence, Halliburton Education Foundation, 1983.


Fellow Award “For contributions to the reliability and standardization of semiconductor devices.” Other Awards: Engineering Award of Excellence, Electronic Industries Association, 1976.


Fellow Award “For the application of finite mathematics to the design and analysis of communication systems, including error-correcting codes and cryptology.”


Fellow Award “For contributions in the field of high voltage engineering.” Other Awards: Professor Emeritus, Cornell University, 1973.


Fellow Award “For contributions as an educator and director of research and graduate training in the broad field of electronics.” Other Awards: Alumni Achievement Award, Washington University Engineering School, 1975.


Fellow Award “For outstanding work in the development of electric plants and electric propulsion on large seagoing vessels.”


Fellow Award “For contributions to space communications and space radar by leadership in the design and fabrication of high-power microwave tubes.”


Fellow Award “For contributions in the fields of information theory and engineering education, and for leadership in establishing engineering research and development in Israel.”


Fellow Award “For contributions to the research and development of transmission-line engineering”; Outstanding Engineer Award, North Carolina Council, IEEE, 1980; Outstanding Engineer Award, Charlotte Section, IEEE, 1980.

ZRAKET, CHARLES A., Fellow 1978. Born: January 9, 1924, Lawrence, Mass. Degrees: B.S.(Electrical Engi-
neering, magna cum laude), 1951, Northeastern University; M.S.(Electrical Engineering, cum laude), 1953, Massachusetts Institute of Technology.

Fellow Award “For technical management and contributions in the application of systems engineering to large military and civilian problems.” Other Awards: Associate Fellow and Corporate Representative, American Institute of Aeronautics and Astronautics; The New York Academy of Sciences; Fellow, The American Association for the Advancement of Science; Tau Beta Pi; Eta Kappa Nu; Sigma Xi.


Fellow Award “For inspiring leadership in network synthesis theory in communications, radar, weapon control, and navigation systems.”