NJ INVENTORS CONGRESS AND HALL OF FAME

"In the Spirit of Edison and Einstein..."

Hall of Fame
Induction Banquet
Thursday, February 16, 1995

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William Hazell Center
New Jersey Institute of Technology
Newark, New Jersey

Order of Ceremonies

Greetings
Candida Aversenti, Trustee

Grand Entrance
Special Awards
1995 Inventors of the Year
1995 Members of the New Jersey Inventors Hall of Fame

Welcome
James H. Blow, Jr., 1993-1995 Chairman

Dinner

Installation of Officers
Candida Aversenti

Chairman's Message
Saul K. Fenster, 1995-1997 Chairman

Keynote Speaker
James Carnes, 1995-1997 Vice Chairman

Presentation of Awards
James H. Blow, Jr.
Harry Roman, Selection Committee Chairman

1995 Special Citations

Small Business Inventor

Allan H. Willinger
Willinger Brothers Inc., Franklin Lakes

Allan Willinger is the best known inventor in the aquarium field, with his invention of the outside aquarium filter considered a breakthrough. He has more than 100 patents in aquarium pumps, heaters, valves and other equipment.

Before Willinger's invention of the outside filter, aquarium filtration had been a continuous challenge to manufacturers. His "Whisper Filter" provided a breakthrough by enabling a greater amount of filtering action using less energy consumption and improving the quality of the fish environment thereby preserving the life of the fish. The invention revolutionized the aquarium filter industry and generated a multitude of similar "copy-cat" filters by competitors.

Based upon his initial aquarium inventions, Willinger founded Metaframe Co., which became one of the world's best known aquarium companies producing pumps, filters, and other related products. The company was later sold to a subsidiary of Mattel Corp. After a number of years, Willinger started a new aquarium company called Willinger Brothers Inc. which sells various aquarium products under the Second Nature and Whisper brand names. Willinger Brothers was recently sold to Warner-Lambert which operates the firm as a subsidiary.

Independent Inventor

Michael D. Mintz
International Technidyne Corp., Edison

Michael D. Mintz developed the Hemochron anti-coagulant monitoring and dispensing device used in hospitals all over the world during heart surgery and other critical operative and special care procedures for International Technidyne Corp., which he co-founded with his brother Joel.

The Hemochron is outstanding as an enabling technology which provides an umbrella of safety under the which clinicians can aggressively anticoagulate blood to develop new procedures and devices.

The Hemochron automated the Activated Clotting Time (ACT) test which measures the functional hemostatic state of the patient. Small, inexpensive and easy to use, the Hemochron remains a standard part of every cardiovascular surgical suite throughout the world. Nearly 75 percent of the ACT tests done throughout the world are done on a Hemochron.

Independent Inventor

William J. von Liebig
Meadox Medicals Inc., Oakland

William von Liebig's inventions have made significant contributions to the field of vascular surgery, and particularly to the technological advancement of textile vascular grafts used in the reconstruction and replacement of human arteries.

His 1961 U.S. Patent No. 2,978,787 "Synthetic Vascular Implants," represented the first process and product formed for manufacturing seamless synthetic grafts used for vascular implants which could be seamlessly grafted onto human arteries and blood vessels. These grafts provided a unique structure which yielded increased strength, flexibility, elasticity, and resilience over handmade devices.

The implants, which can be stretched or compressed in length, allowed an enhanced hemodynamic flow over previous crimping patterns, thereby reducing the coagulation of blood components on the inside walls of the graft.

Liebig earned a bachelor's degree from Juniata College, a master's degree from the Philadelphia College of Textiles and Sciences, and an MBA from New York University.

1995 Inventors of the Year

Richard Frenkiel
AT&T Bell Laboratories, Murray Hill

Richard Frenkiel's patent, No. 4,144,411 for the "Cellular Radiotelephone System Structured for Flexible Use of Different Cell Sizes," greatly increased the capacity of cellular communications networks.

The invention covers the "underlaid cell" concept, which simplified the process of adding smaller cells to a system as more customers demand service. The pioneering work begun by Frenkiel and others at Bell Labs shaped the basic cellular system architecture and solved complex problems, such as how cellular systems locate vehicles and hand off calls from cell to cell as vehicles move. Frenkiel received the 1994 National Medal of Technology for this work.

Frenkiel's inventions are directly responsible for increasing mobile communications a thousandfold and making possible today's $13 billion cellular industry. Currently, there are 19 million cellular users with 17,000 new subscribers signing up each day.

During the past two decades, Frenkiel led a team of engineers at AT&T Bell Labs whose pioneering work in cellular technology increased capacity and made possible today's cellular services. He retired in 1993 and is now an industry consultant, teacher and writer.

Robert D. Howson
AT&T Bell Laboratories, Holmdel

Robert Howson's fifth U.S. patent was his invention of a more efficient error detection scheme for the digital carrier transmission systems which carry the bulk of all telephone traffic today. That patent, No. Re. 33,900 (1992), is titled "Error Monitoring on Digital Transmission Systems."

The invention allows the telephone company to perform real-time testing of its digital transmission lines without having to take them out of service and enables the telephone company to detect any degradation of the transmission path and take the faulty facilities out of service before the customer is impacted. Overall, the invention improves the reliability of the digital telecommunications network throughout North America, reduces costs associated with the maintenance of the network and improves customer satisfaction with the quality of telecommunications service provided.

Howson earned a bachelor's, master's, and doctoral degree in electrical engineering from Yale University.

Carl H. (C. Harry) Knowles
Metrologic Instruments Inc., Blackwood

C. Harry Knowles has played a leadership role in laser technology and developed the first laser bar code scanner, commonly found today in supermarkets and other stores.

Metrologic, the company Knowles founded in 1968, has been recognized as both a pioneer in laser technology and a leader in bar code scanning. Its early success came with the manufacture of low-power lasers, kits and accessories for the classroom.

Since then, developing and manufacturing laser bar code scanning equipment has become the primary business of the company. Traditionally, the company's bar code

scanners have been used in high volume retail stores. Today, the company is developing products for scanning applications in new markets such as banking, health services, transportation and manufacturing. Its European headquarters is located in Munich, Germany.

Knowles, who formerly worked for Westinghouse and Bell Telephone Labs, has over 20 patents ranging from semiconductors through lasers and bar code scanning.

John B. MacChesney
AT&T Bell Laboratories, Murray Hill

MacChesney, along with colleague Paul O'Connor, developed a simple vapor deposition process, known as Modified Chemical Vapor Deposition, to produce millions of kilometers of optical fibers, a process that is not only noteworthy but remains highly competitive.

This process was key in transforming optical fibers from scientific curiosities into the highly reliable, low loss medium necessary for high-speed, high-bandwidth fiber optic communications systems. MacChesney's further inventions have enhanced the functionality and reduced the cost of today's fiber optic cables, which are installed worldwide.

MacChesney, who has lived and worked in New Jersey the past 35 years, holds 65 patents in a diverse set of areas that impact all aspects of optical fibers. He has been a critical part of the optical-fiber based telecommunications revolution and has been remarkably successful at identifying interesting scientific areas and turning them into areas of tremendous commercial importance.

Liang Tai Wu
Bell Communications Research, Morristown

Liang Tai Wu invented a new asynchronous transfer mode (ATM) network which will form the basic building block for a wide variety of services soon to be offered on the information superhighway. The invention describes a data communications technique which can handle the transmission of both circuit and packet traffic. With ATM, circuits of any speed can be configured by varying the rate that fixed length packets (known as cells) are sent over a train of time frames generated at a basic backbone rate.

What is most important about the technique is that it has been accepted as a common technology endorsed by the previously somewhat disjointed computer, data network and telecommunications industries to support multimedia communications. There are widespread plans for ATM deployment worldwide, for both local and wide area networking. The U.S. government has awarded many contracts to construct agency networks using ATM technology. The Information Highway Initiative is expected to enrich people's economic, social and political lives.

Liang Tai Wu, who for the past decade has been a mentor for many young engineers and scientists in ATM technology development, has recently become a principal investigator contracted by the National Science Foundation to assist construction of its version of the National Information Highway.

James E. West
AT&T Bell Laboratories, Murray Hill

James West's inventions have brought together an unusually broad scope of areas that have enabled new technologies critical for the telecommunications industry.

He developed the foil-electret transducer for sound recording and voice communications, which is the heart of most new telephones manufactured today. These developments sprang from his U.S. Patent No. 3,118,022 (1964) entitled "Electroacoustic transducer."

West's pioneering research on charge storage and transport in polymers led to the development of the electret transducer. This transducer is simple yet rugged, which has made it ideal to serve as the heart of most new telephones.

In addition to applications of transducers in areas related to telecommunications equipment, West developed inventions for other applications, including use of electret transducers for blood pressure measurements. He also has significant inventions in the area of directional microphones among his 33 patents.

1995 Hall of Fame Inductees

David Aronson
Worthington Corporation, Harrison

David Aronson is known for his work in the advancement of low temperature energy utilization equipment and various energy recovery systems while working as a manager in development engineering for the Worthington Air Conditioning Co., a division of Worthington Corp. He was recognized in 1964 with the company's Worldwide Engineering Award for his outstanding engineering achievement in the development of the Worthington Sentry absorption chiller.

He joined Worthington in 1951 and rose in the company ranks from staff engineer to chief engineer and beyond.

His inventions solved many difficult problems associated with absorption refrigeration. The patents were useful in the development of refrigeration for air conditioning, refrigeration and heat-pumping. They also permit the development of refrigeration systems that can utilize "waste heat," thereby conserving energy.

Among his 31 United States patents are an oil burner for gas turbine applications, large tonnage water chillers for air conditioning, a nuclear powered system using liquid metal coolant, and a heat pump using fuel-fired engine or turbine. He earned degrees in chemical engineering from both Cooper Union and the Polytechnic Institute in New York.

Alvin M. Cohan (1918-1992)
American Production Machine Co., Union City

Alvin Cohan is responsible for a body of work which started with the first machine in his basement and culminated in a $10 million company employing 50 people. His work encompasses the advancement of production printing equipment for the container industry.

A glance at the average American household shows at least 10 different containers in the refrigerator (soda and beer cans, yogurt, cottage cheese, ice cream, sour cream and salad dressing containers) and another 10 in the bathroom (toothpaste tubes and pumps, shampoo jars and bottles, moisturizers, creams, band aids, pharmaceutical products, etc.) that have been decorated by systems Cohan either directly manufactured or by systems using his inventions. He developed the ultraviolet (UV) curing system to the high standards the printing industry enjoys today.

Production speeds, print quality and material handling considerations were advanced by Alvin Cohan. His patents currently in use include oval cosmetic containers decorated by silk screen, the printing on Band-Aid and Curad bandage containers, and can lines in Canada, the United States, Germany and Venezuela. Cohan is a 1941 graduate of New Jersey Institute of Technology's Newark College of Engineering.

George deStevens
CIBA Pharmaceutical Company, Summit

In 1958, Dr. George deStevens discovered hydrochlorothiazide, a potent, non-mercurial, orally-active diuretic. In an extensive three-year program, he led a research group which synthesized over 400 derivatives. Used alone and in combination, hydrochlorothiazide became the most widely prescribed drug for the treatment of hypertension throughout the world. Because of its potency and built-in ceiling effect, it is highly effective in removing excess fluids from the body with minimum side effects. In addition, its fixed combination with other antihypertensive drugs has facilitated the treatment and control of high blood pressure for millions of patients. As a result, the incidence of stroke, renal damage and heart attacks has been markedly reduced for millions, thus leading to a significant reduction in mortality. In the U.S., more than 50 million people suffer from hypertension.

Dr. deStevens was executive vice president and director of research at CIBA and CIBA-Geigy from 1967 to 1979. In that capacity, he led research teams which developed Rimactane, a cure for tuberculosis; Celospor, a broad spectrum antibiotic; Slow-K, for potassium deficiencies in cardiovascular disorders; Apresazide, a new antihypertensive; Tegretol, for the treatment of epilepsy; Lioresal, an antispastic agent; Rengasil, for the treatment of arthritis; and Lopressor, a widely used antihypertensive agent. In addition, he pioneered the establishment of a new drug delivery system research group, which in collaboration with Alza, led to the development of Transderm-Nitro, for the treatment of angina.

Currently, Dr. deStevens is research professor of chemistry at Drew University and among the founders of Drew's Charles A. Dana Research Institute for Scientists Emeriti. He earned a doctorate in organic chemistry and enzymology from Fordham University. In 1991, the American Chemical Society named deStevens as the first recipient of the E.B. Hershberg Award for important discoveries in medicinally active substances.

Joseph J. Mascuch (1896-1986)
Breeze Corp., Union and Victory Engineering Corp., Springfield

Awarded 165 patents, Mascuch is best known for the development of the ignition shield which allows the clear reception and transmission of radio signals when the electrical system of an airplane or automobile engine is running.

He also developed a flexible metal hose that allowed the use of safe fuel lines in aircraft, a device first used in Wiley Post's airplane "The Winnie May" in 1934. Mascuch also developed the anti-jackknife hitch that prevents trailers from jackknifing when braking.

Rustproof standardized stainless steel automobile bumpers, a propeller blade, a marine bulkhead door, antenna structures, standardized helicopter hoists, the mechanism for carrying and releasing bombs and rockets, the instant reading thermocouple thermometer, and gear-driven clamps are also Mascuch devices.

Mascuch organized Breeze Corporation in 1926 by consolidating a number of manufacturing businesses and founded Victory Engineering Corp. in 1942. He graduated from Newark Technical School, a predecessor to New Jersey Institute of Technology.

Glenn Leslie Dimmick
RCA, Camden

Among his 94 patents, Dimmick's most significant inventions are in the areas of sound motion picture recording, sound-powered telephones, optical lens coating and dichroic reflectors for color television.

The first attempts at "talking movies" used a phonograph record for the sound. But the synchronization with the movie film was a problem. A system was needed that could effectively and practically put the sound track on the movie film at the same time the video image was captured on film. Dimmick's initial invention related to sound motion picture recording was a very robust galvanometer specifically adapted for recording sound on film. The galvanometer used electrical current from the studio microphones to "wiggle" a small mirror that produced a modulated light beam to the edge of the film.

Over the years, Dimmick invented numerous refinements, including noise reduction on the sound recording system that resulted in a robust, effective system. The RCA sound recording system with his galvanometer was still being used by the motion picture studios in 1963 when Dimmick retired, 32 years after his initial invention.

He invented the sound-powered telephone for U.S. Navy ships during World War II. The system, manufactured by RCA, uses the acoustic energy from the speaker's voice to generate enough electrical current to power the far end receiver without a battery.

Kenneth S. Johnson (1885-1956)
Bell Telephone Laboratories, New York City

Kenneth S. Johnson was considered the world's foremost authority on wire transmission. Johnson developed the basic engineering measure known as the "Q" factor, or selectivity of a circuit, which has become an indispensable design aid in a wide variety of electrical engineering system applications.

When he first used the symbol "Q" to represent the ratio of reactance to effective resistance in a coil or a condenser, Johnson could not have anticipated that within a span of 30 years this same symbol would be commonly used to describe an attribute of such dissimilar things as a resonant circuit, a spectral line, a mechanical vibrator, and a bouncing ball. For a time, Johnson designated the ratio of reactance to effective resistance of a coil by the symbol "K." It was in 1920, while working on the practical application of the wave filter which G.A. Campbell had invented some years before, that he first employed the symbol "Q" for his parameter. Initially, Johnson used a capital "Q" for coils and a small "q" for the corresponding ratio in capacitors. Before long, he was using it for both in his U.S. Patent No. 1,628,983 (1927) where it is applied to the coils in an electrical network.

Johnson also designed the 1937 telephone which was put in use throughout the country. The 1907 magna cum laude graduate of Harvard University held 53 U.S. patents.

1995 Corporate Hall of Fame Inductee

Exxon Research and Engineering Company
Florham Park

Exxon Research and Engineering Company is recognized for its 75 years of scientific and commercial innovation in the areas of petroleum products, synthetic fuels and refining processes, health and environmental issues, and refinery engineering technology. During its corporate history, ER&E engineers and scientists have been awarded more than 20,000 U.S. patents.

One of the nation's first industrial research laboratories, Exxon Research and Engineering Co. (ER&E) began in 1919 in New Jersey with 26 employees at Exxon's former Bayway Refinery in Linden. Today, ER&R stewards 3,000 scientists, engineers, technicians and support staff at four New Jersey sites and affiliated laboratories and engineering offices in North America, Europe and the Far East.

Most of the petroleum processing technology used today in Exxon refineries and plants originated in ER&E. The company's technological achievements have benefited the entire petroleum industry and have made a sizeable contribution to strengthening living standards throughout the world.

ER&E and its affiliates are responsible for fundamental research in science areas of importance to Exxon; applied research on petroleum products and synthetic fuels and manufacturing processes; engineering support for Exxon operations; and for research on health and environmental issues. ER&E's science and technology advances include the discovery of synthetic butyl rubber and the development of refining processes like fluid catalytic cracking and FLEXICOKING. The company's significant products include UNIFLO, the first fuel economy motor oil, and the XCL-12 fuel additive, a detergent that eliminates fuel injector fouling in late-model cars.

Current research activities focus on petroleum and synthetic fuels processes and products, engineering systems, environmental protection, biosciences, as well as basic research related to Exxon's exploration, production, and petrochemical businesses. Providing engineering support to Exxon affiliates worldwide, ER&E plays a key role in applying technology through capital project planning and management, technology applications, consulting and engineering research and development.

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