



The IEEE

# Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

*Metro EMBS:*

## Cost Saving Power Cogeneration In Medical Facilities

On May 8, 1991, the IEEE Metropolitan Sections Engineering in Medicine and Biology Society and the NY/LI Joint Chapter of PES and IAS will present a lecture on "Power Cogeneration For Hospitals And Large Institutions—A Cost Saving Solution." The speaker will be Len Rubenstein, P.E.

### About The Talk

Squeezed by rising costs of equipment, shortages of trained professional staff, and more astute and financially pressed health care consumers, hospitals have been forced to seek alternative means of generating revenue or equivalent economies in their operating costs. Some, if not all, facilities may find possible technological savings within their existing confines. Resistance to cogeneration on the part of suppliers of electric power have been successfully overcome in many cases. Engineers in decision making positions or in situations where they may affect decisions may find this lecture topical and opportune.

### About The Speaker

Len Rubenstein has been involved in electrical power generation and distribution for his entire distinguished career. He is currently a Vice-President at the consulting firm of Laramore, Douglass & Popham in New York City; Chairman, Professional Activities Committee, IEEE New York Sections; and a member of the IEEE New York Section Executive Committee.

Informal pre-lecture get-together (optional) in the Tower Building, first floor cafeteria at 6:30 PM.

### June Meeting

The June 12th meeting will be a season review and discussion of plans for future topics. There is a tentative topic "Electronic Contributions To Desert Storm And Their Implications" with the speaker not as yet identified. Call one of the contact numbers closer to meeting date for more information on this.

Entrance at 66th St. and York Ave. Free Parking available.

**Further Information:** Robert Heyman, (516) 867-0620; Edna Feher (212) 757-0610; Joel Levitt (718) 891-6460; John Frederick (212) 595-2599.

## Symposium At Rutgers University

On May 17, 1991 the Joint Graduate Program in Biomedical Engineering: Rutgers, The State University of New Jersey University of Medicine and Dentistry of New Jersey, and Rutgers Biomedical Engineering Society: IEEE/EMBS, will hold their First Annual Research Symposium in Biomedical Engineering.

The faculty and students of the Graduate Program of Biomedical Engineering have organized this symposium in response to increased interest in their latest research activities. The Symposium will feature graduate student platform and poster presentations, informal discussions with the faculty, and tours of the laboratory facilities. All are welcome to attend. Invited guests include representatives from many local corporations and research agencies, as well as program alumni.

The topics to be presented are in the following areas of biomedical research: Cardiovascular Systems; Vision, Imaging, and Neurocomputing; Computers in Biomedical Engineering; and Biomechanics and Biomaterials.

Registration for the Symposium is \$25.00, Students \$10.00 (includes coffee, lunch, and reception). Preregistration required by May 5, 1991.

**Time:** 8:30 AM-5:00 PM, Friday, May 17, 1991.

**Place:** Rutgers Univ.-Busch Campus, Science and Engineering Resource Center, Piscataway, New Jersey.

**Information/Directions:** Ms. Marge Melton (908) 932-3155.

## North Jersey Joint Comp/Comm /LEO Society: Design Criteria For Efficient LANs

On May 15, 1991 the No. Jersey Joint Computers and Communications/LEO Society will meet to hear a talk on "Building Networks Today For Tomorrow's Application." The speakers will be Frank Henderson, Dave Koehler, and Steve Morganthal.

### About The Talk

Necessary design criteria for building efficient distributed Local Area Networks (LANs) will be discussed with a view towards managing distributed tasks over an integrated network.

Topics covered will include: Developing traffic designs for distributed LANs; Migrating applications to distributed platforms; Benefits of fast packet and frame relay for extended LANs; and integrated networks of distributed platforms.

### About The Speakers

Frank Henderson, Director of Network Technology, Dave Koehler, Senior Consultant, and Steve Morganthal, Senior Network Management Consultant, are with General Logistics International, Inc. Henderson and Koehler have been instrumental in the design and implementation of UNIX-based local and wide-area networks. Currently, Steve Morganthal is developing integrated network solutions for SNMP and OSI-based packages.

### All Welcome

Members and guests are welcome.

**Time:** 7:30 PM, Wednesday, May 15, 1991.

**Place:** Arnold Auditorium, AT&T Bell Labs, Murray Hill, N.J.

**Further Information:** Norman Hettinger (201) 835-6935.

**Time:** 7:30 PM, Wednesday, May 8, 1991.

**Place:** Rockefeller University, Tower Bldg., Rm. 305, 1200 York Ave., NYC.

**MAY, 1991**



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### NEWSLETTER STAFF

Editor..... M.M. Perugini  
Business Manager..... A.M. Beattie

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It is not necessary to inform the North Jersey Section when you change your mailing address. The NEWSLETTER and other section mailings use a list provided by IEEE's national headquarters in New York. This means the Section has no need to maintain a mailing list or addressing plates. Section membership records are changed when Headquarters notifies us.

### SECTION OFFICERS

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**The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings (held at ITT, 500 Washington Ave., Nutley, N.J.) are open to all members. Information on each meeting agenda is available from Thomas De Nigris, Section Secretary at (201) 575-1300.**

**Elected Section Officers are listed above.**

## North Jersey Section Activities MAY

**May 8, 1991--"High Voltage Optical Metering And Relay Systems"--No. Jersey Section Power Engineering Society, 7:00 PM, JCP&L, Punchbowl Rm., Punchbowl Rd. & Madison Ave., Morristown, N.J. Augi Franzoni (908) 964-2130.**

**May 8--"Power Cogeneration For Hospitals And Large Institutions--A Cost Saving Solution"--Metropolitan Sections EMBS and NY/LI Joint Chapter PES/IAS, 7:30 PM, Rockefeller University, Tower Bldg., Rm. 305, 1200 York Ave., NYC. Robert Heyman (516) 867-0620.**

**May 9--"Resource Recovery"--No. Jersey Section PACE, 7:30 PM, ITT Tower, 500 Washington Ave., Nutley, N.J. Robert Sinusas (201) 228-3941.**

**May 15--"Design Criteria For Efficient LANs"--No. Jersey Joint Computers & Communications/LEO Society, 7:30 PM, AT&T Bell Labs, Arnold Aud., Murray Hill, N.J. Norman Hettinger (201) 835-6935.**

**May 17--"Symposium On Biomedical Engineering"--Joint Graduate Program in Biomedical Engineering: Rutgers, State University of New Jersey University of Medicine and Dentistry of N.J. and Rutgers Biomedical Engineering Society: IEEE/EMBS, 8:30 AM-5:00 PM, Rutgers Univ.-Busch Campus, Piscataway, N.J. Ms. Marge Melton (908) 932-3155.**

**May 21--"Computer Program Validation"--NY/No. Jersey EMS jointly with the Project Management Institute, 7:00 PM, Snuffy's Pantagis Renaissance, Rte. 22, Scotch Plains, N.J. For details call Al Connolly (201) 616-0755.**

**May 22--"Protection Of Spacecraft Against Natural Radiation"--Princeton/ New Jersey Coast Section, Nuclear & Plasma Sciences Society, 8:00 PM, David Sarnoff Research Center Lounge, Princeton, N.J. Surinder Seehra (609) 490-2972.**

**May 30--"Low Frequency EMF--Are They Hazardous?"--IEEE No. Jersey Section IAS, 7:00 PM, ITT Auditorium, 500 Washington Ave., Nutley, N.J. Vittal Rebbapragada (201) 804-2011.**

**May 30--"Forgotten Aspects Of Computer Security"--NY Consultants' Network, 6:00 PM, Con Edison, 4 Irving Pl., NYC. For details call Jim Wetterau (212) 321-1999.**

### Upcoming Meetings

**June 12--"Review/Discuss Future Meetings"--Metropolitan Sections Engineering in Medicine and Biology Society, 7:30 PM, Rockefeller University, NYC. Robert Heyman (516) 867-0620.**

**June 13--"Young Mathematicians"--No. Jersey Section PACE, 7:30 PM, ITT Tower, 500 Washington Ave., Nutley, N.J. Robert Sinusas (201) 228-3941.**

**June 17--"Elections And Networking"--NY Consultants' Network, 6:00 PM, Con Edison, 4 Irving Place, NYC. For details call Jim Wetterau (212) 321-1999.**

**July 13--"Serving Members Worldwide With IEEE Technology"--No. Jersey Section PACE, 7:30 PM, ITT Tower, 500 Washington Ave., Nutley, N.J. Details next issue. Robert Sinusas (201) 228-3941.**

## Members and Non-Members Welcome PLEASE POST

### CHAIRMAN'S CORNER

Once again I have attended an awards dinner, honoring our brightest and (best?). I have been active for a number of years in many sections, chapters, region, & RAB and have attended numerous awards ceremonies. I imagine that I must have met over 1000 Fellows, medalists, and others. It is proper to honor the accomplishments of our peers, but does it accomplish anything for the IEEE? I have even been involved in sponsoring Fellows, and wonder if it is worth the effort.

The persons honored have made significant contributions to our body and should receive recognition for their work. We can (and sometimes do) elect one percent of our membership to Fellow. That can amount to almost 3,000 Fellows each year. This is a relatively large portion of our membership. What happens to them? I could probably arrive at the total number of Fellows by looking at the roster, but it is enough to know that they are relatively numerous. As I have stated, I am active and meet numerous other active members of the IEEE. I can only think of three Fellows that are active, other than staff. There are probably others. Is it proper to honor people who don't honor us? In most instances the only time I meet a Fellow again is when he is receiving another honor.

*George Graul, Chairman*

**1991  
NEW  
IEEE  
FELLOWS  
NORTH  
JERSEY  
SECTION**



John C. Bean



Charles A. Brackett



Stephen J. Brolin



Richard V. Cox



Stuart I. Feldman



Bhaskarpillai Gopinath



Renuka P. Jindal



Krishan K. Sabnani



David J. Thomson



James P. Van Etten

**1991  
David Sarnoff  
Award**



Federico Capasso

**1991 Morris N.  
Liebmann  
Award**



Morton B. Panish



## Fellow Citations

**John C. Bean, AT&T Bell Labs**

*"For contributions to silicon molecular-beam epitaxy"*

**Charles A. Brackett, Bellcore**

*"For leadership in and contributions to optical networking"*

**Stephen J. Brolin, AT&T Bell Labs**

*"For development of telephone subscriber line digital carrier systems"*

**Richard V. Cox, AT&T Bell Labs**

*"For contributions to real-time speech coding, and to the standardization of digital technology for secure voice, cellular radio, and telephony applications"*

**Stuart I. Feldman, Bellcore**

*"For contributions to software engineering and software configuration management"*

**Bhaskarpillai Gopinath, Rutgers**

*"For contributions to the modeling and analysis of communication systems"*

**Renuka P. Jindal, AT&T Bell Labs**

*"For contributions to the field of solid-state device noise theory and practice"*

**Krishan K. Sabnani, AT&T Bell**

*"For contributions to research and development in communication protocols"*

**David J. Thomson, AT&T Bell Labs**

*"For contributions to the theory of spectral estimation and its applications"*

**James P. Van Etten, Consultant**

*"For contributions to the development of the Ioran radio navigation system"*

## 1991 David Sarnoff Award

**Federico Capasso, Bell Labs**

*"For pioneering contributions to heterostructure devices through the use of bandgap engineering techniques"*

## 1991 Morris N. Liebmann Award

**Morton B. Panish, AT&T Bell Labs**

*"For outstanding contributions to the epitaxial growth of compound semiconductor materials and devices"*

## Fellow Awards

**John C. Bean**

John C. Bean is Head of the Materials Science Research Department at Bell Laboratories. He has conducted pioneering investigations of silicon based heterostructures including first synthesis of practical GeSi/Si multilayers, definition of their bandstructure, observations on atomic ordering, elucidation of strained layer growth and relaxation mechanisms, application of GeSi/Si to modulation doped structures, PIN, APD, and intrasub-band optical detectors, heterojunction bipolar transistors, and hot carrier devices.

He reported seminal results on molecular beam epitaxial growth of metal silicides on silicon, silicon on sapphire and spinel, and on incorporation of dopants by both co-evaporation and low energy ion implantation. He performed additional work on ion beam doping of GaAs MBE, solid phase epitaxy of Si and GeSi, including laser and ion beam effects, and SIMS. This work is represented by 190 publications and ten U.S. patents.

Dr. Bean received a BS degree from the California Institute of Technology in 1972, MS and PhD degrees from Stanford University in 1974 and 1976 respectively. All degrees were in Applied Physics. In February of 1976 he joined the Solid State Electronics Laboratory of the Physics Research Division of Bell Laboratories. In 1985 he was promoted to Distinguished Member of Technical Staff, and in 1986 to Head of the Materials Science Research Department.

**Charles A. Brackett**

Charles A. Brackett is District Manager, Optical Network Research at Bell Communications Research.

From 1968 to 1984, he was employed at AT&T Bell Laboratories, initially working on semiconductor microwave oscillators. In 1974 he became active in optical communications, including the development of optical receivers for transmission systems and optical data links. He supervised the development of all of AT&T's optical receivers for transmission systems, and their introduction to manufacture. In 1984, he joined Bell Communications Research as District Manager of Exploratory Optical Networks Research where he initiated work on multiwavelength optical networks and on optical code division multiple access systems. His interests include photonic device technology, optical networks, and optical switching.

Dr. Brackett received the PhD degree in Electrical Engineering from the University of Michigan in 1968. His professional affiliations include the IEEE, the Optical

Society of America, and he is a member of Tau Beta Pi, Eta Kappa Nu, Sigma Xi, and Phi Kappa Phi.

**Stephen J. Brolin**

Stephen J. Brolin is Supervisor, System Architecture, Integration & Adaptations Group at AT&T Bell Laboratories. He is responsible for architecture, integration, and specific development activities applied to digital subscriber carrier, including Fiber-To-The-Home features. Previously, he has had the above responsibilities for four generations of subscriber digital carrier, which included a system developed for international applications. In 1984 he received the AT&T Bell Laboratories Fellow Award for advancing the state-of-the-art of digital loop carrier systems.

Earlier in his career at Bell Laboratories, he developed power supplies for: defense contracts, the Telstar Space Craft, Channel Banks, and Electronic Central Offices. He then developed line repeaters for PICTUREPHONE service. Dr. Brolin has been awarded a total of 28 patents. He chaired a session and organized a session at the International Conference on Communications, June 1975. He has reviewed papers for various IEEE publications. Dr. Brolin has a BEE, MEE, and PhD EE, all from New York University. He is a member of Eta Kappa Nu and Tau Beta Pi.

**Richard V. Cox**

Richard V. Cox is Supervisor, Digital Principles Research Group in the Signal Processing Research Department at AT&T Bell Laboratories.

From 1973 through 1977 he was a member of technical staff with the Aerospace Corporation in El Segundo, California, working in the areas of image processing and queuing theory for operations research.

In 1977 he joined the faculty of the Department of Electrical Engineering of Rutgers University, teaching courses and conducting research in the field of digital signal processing.

He joined Bell Laboratories in 1979 and has worked in various aspects of speech and audio coding, speech privacy, digital signal processing, and real-time signal processing implementations. Most recently he has been working on robust coding strategies for noisy channels. He is also currently involved with CCITT standardization of speech coding at 16 kb/s.

Dr. Cox received the BS degree in 1970 from Rutgers University, Piscataway, N.J. and the MA and PhD in 1972 and 1974 respectively, from Princeton University, all in electrical engineering. Dr. Cox is chairman of the Speech Technical Committee and a member of the AdCom for the IEEE Signal Processing Society.



## Stuart I. Feldman

Stuart Feldman is Division Manager of Computer Systems Research at Bellcore. This division does research in areas of software engineering, distributed systems, and artificial intelligence.

He received an AB from Princeton in Astrophysical Sciences in 1968 and a PhD from MIT in Applied Mathematics in 1973. He joined Bell Labs that year in the Computing Science Research Center. At divestiture he joined Bellcore in Morristown, New Jersey as district manager of the Software Engineering Research Group.

Feldman is a Vice Chair of ACM SIGPLAN, and a member of the Technical Policy Board of the Numerical Algorithms Group. He is best known for having written several important UNIX utilities, including the MAKE program for maintaining computer programs and the first portable Fortran 77 compiler (F77). His main technical interests are programming languages and compilers, software configuration management, software development environments, and program debugging.

## Bhaskarpillai Gopinath

Bhaskarpillai Gopinath, a recognized authority in high-speed computer technology, is State of New Jersey Professor of Electrical and Computer Engineering at Rutgers University. He was formerly a manager of the Systems Principles Research Division at Bellcore.

Gopinath was a member for 15 years of the technical staff of Bell Telephone Laboratories in Murray Hill, until the breakup of AT&T in 1983. He then moved to Bellcore where as division manager he supervised theoretical work on fundamental problems in communication and computation, and experimental work on new architecture and applications of computer hardware and software.

Dr. Gopinath received his Master's and Doctorate degrees in EE from Stanford University. He is co-author of 70 technical reports, has five patents and four that are pending.

Winner of the Guillemin-Cauer Prize of the Institute of Electrical and Electronic Engineers in 1979, he also served as the Alexander von Humboldt Fellow at the University of Goettingen in West Germany in 1972-73, and was the Gordon McKay Professor at the University of California at Berkeley in 1980-81.

## Renuka P. Jindal

Renuka P. Jindal is a Distinguished Member of Technical Staff in the VLSI Research Department at AT&T Bell Laboratories at Murray Hill, New Jersey.

Dr. Jindal received his Bachelor degree in Physics (Honors) in 1973 from the University of Delhi, the BE degree with Distinction in Electronics and Communication Engineering in 1976 from the

Indian Institute of Science, Bangalore, and the MSEE and PhD degrees in Electrical Engineering from the University of Minnesota, in 1978 and 1981 respectively.

At Bell Labs he has been involved in fundamental studies of noise behavior of scaled submicron MOS devices and the design of high performance GigaHertz Band analog MOS integrated circuits. He has also been involved in the study of the Physics of multiplication phenomena and low noise signal detection in terms of novel device structures and concepts. His interests include solid-state device physics and lightwave communication systems. He has published close to 50 technical papers in the above areas.

Dr. Jindal has held the National Science Talent and other Merit Scholarships and Fellowships. He was awarded the Alumni Award Gold Medal by the Indian Institute of Science in 1977. Since joining Bell Labs, he has received several AT&T awards for his work in the device area. He became a Senior member of the IEEE in 1985 and took over as the Associate Editor for the solid state section of *IEEE Transactions on Electron Devices* in 1987. Dr. Jindal received the Distinguished Technical Staff Award from AT&T Bell Labs in 1989 for his fundamental work on noise in solid state devices and circuits. He was also a member of the organizing committee of the 1989 Device Research Conference. Currently Dr. Jindal is the Editor of *IEEE Transactions on Electron Devices*.

## Krishan Sabnani

Krishan Sabnani is a researcher in the Distributed Systems Research Department of AT&T Bell Laboratories, Murray Hill, New Jersey. He has made significant contributions to verification, conformance testing, and automated implementation of communication protocols. They are among the most referenced contributions in the field and have been used extensively within AT&T. He has also designed a lightweight transport protocol based on the idea of periodic state exchange. This protocol has been proposed as a B-ISDN standard.

Krishan Sabnani received a BSEE degree from Indian Institute of Technology, New Delhi, India, and a PhD degree from Columbia University, New York, N.Y. In 1981, he joined AT&T Bell Laboratories after graduating from Columbia University. Krishan was a co-chairman of the Eighth International Symposium on Protocol Specification, Testing, and Verification held in Atlantic City, N.J. held in June 1988. He is currently an editor of the *IEEE Transactions on Communications* and of the *IEEE Transactions on Computers*. He has served on the program committees of several conferences. He has served as a guest editor for the *IEEE Journal on*

*Selected Areas in Communications* (JSAC) and the *Computer Networks Journal*. He was awarded the Bell Laboratories Distinguished Technical Staff Award in 1990.

## David J. Thomson

David J. Thomson is a Distinguished Member of Technical Staff in the Communications Analysis Research Department at Bell Laboratories.

Since 1965 he has been a Member of the Technical Staff at Bell Laboratories and has worked on multipair and coaxial cable development and the WT4 Millimeter Waveguide System. In the Advanced Mobile Phone Service project he was responsible for the circuit design of and software for a microprocessor-controlled modem for Rayleigh fading channels. He has been a Green Scholar at Scripps Institution of Oceanography and a Steinbeck visiting Scholar at Woods Hole Oceanographic Institution. In addition to spectrum estimation and communications theory, his present research interests include digital signal processing, robust statistics, phase tracking problems, modulation theory, circuit design, seismology, and paleoclimatology. He is the author of several papers on spectrum estimation and communications problems and holds patents on fluid logic devices and circuit designs.

Dr. Thomson received the BSc (Honours Math.) from Acadia University, Wolfville, N.S. in 1965 and his MS (EE) and PhD (EE) from the Polytechnic Institute of Brooklyn in 1967 and 1971, respectively.

Dr. Thomson is a member of the American Geophysical Union, The American Statistical Association, the Institute of Mathematical Statistics, and a Fellow of the Royal Statistical Society. He was an associate editor of the *IEEE Transactions on Information Theory* and is an adjunct professor in the Graduate Department of Scripps Institution of Oceanography and at the Neurological Institute of Columbia University.

## James P. Van Etten

James P. Van Etten is a consultant in engineering, marketing and navigation. He retired from ITT in 1984.

Mr. Van Etten received his BS degree from the USCG Academy in New London in 1943 and was commissioned in the U.S. Coast Guard. He received the professional degree of EE from MIT in 1950.

From 1943-1958 he served on various assignments in the USCG, then joined ITT Laboratories in Nutley, N.J. in 1958. Between 1963 and 1969 he served as Director of Engineering for Navigation Systems. In 1966 he received a joint First Award in the ITT Awards Program for work on the development of Loran-C air navigation equipment (AN/APN-157), and in 1967 a commendation for work on the



development of Loran-C Ground Transmitting Equipment, the AN/FPN-44, FPN-45, and FPN-46. He had technical management responsibility for the early development of the USAF AN/ARN-101 Tactical Weapons Delivery System for application in F4 aircraft and earlier, the AN/ARN-92 Loran-D Navigation Set used extensively in SEA.

Subsequent to 1970, he served as Chief Scientist, Navigation Product Line; Director-Engineering, CNI Systems; Technical Advisor to the Vice President and Director of Engineering; and Director, JTIDS Marketing, at ITT Avionics Division. During the 1970s he was active in engineering and marketing management for ITT for the AN/FPN-44A and FPN-45A transmitters procured by the USCG for implementation of the West Coast LoranC Chain and later, the turnkey implementation of the Loran-C Chain in the Kingdom of Saudi Arabia.

James P. Van Etten is a Senior Member of IEEE, and served as Technical Chairman of IEEE AES PLANS 80 and 82. He is a member of the Institute of Navigation (ION).

## 1991 David Sarnoff Award

### Federico Capasso

Federico Capasso is Head of the Quantum Phenomena and Device Research Department at Bell Laboratories, Murray Hill, where he has been responsible for management of device research and related technology transfer in the areas of II-V electronics, detectors, process and device modeling, semiconductor physics, low temperature physics including superconductivity, solid state theory.

Dr. Capasso's seminal work on band gap engineering of semiconductor devices has opened up new important areas of research in electronics and optoelectronics. In a series of pioneering contributions he demonstrated that with appropriate combinations of artificially structured semiconductors, band gap and doping profiles one can engineer the energy band diagram of heterojunction devices in a nearly arbitrary and continuous way and thus tailor their electronic and optical properties for specific applications. The name coined by Capasso for this approach, band gap engineering, has since become of common use in solid state electronics and semiconductor science. In particular Dr. Capasso invented new multilayer avalanche photodiodes for low noise detection, the first solid state photomultiplier, new superlattice photoconductors, and demonstrated a new depletion

scheme capable of yielding ultralow capacitance independent of the device area and doping. He and his coworkers also made important contributions in the area of heterojunction bipolar transistors including the first demonstration of a graded gap base bipolar and of the enhanced velocity in its base. In recent years Capasso pioneered the field of quantum effect electronics by first proposing and implementing resonant tunneling bipolar transistors and multi-state quantum transistors. The complexity of many circuits can be greatly reduced using these new transistors. Dr. Capasso's creative efforts have led not only to many innovations in solid state electronics but also to the discovery of new phenomena in semiconductor heterostructures. Capasso's current research interests include: nonlinear optical properties of superlattices, quantum transport in nanoscale devices and superconductor/semiconductor devices based on the proximity effect.

Dr. Capasso received his doctorate in Physics from the University of Rome in 1973. From 1974 to 1976 Dr. Capasso was a staff scientist at Fondazione Bordini in Rome. After winning a Rotary International Fellowship in 1976, he joined Bell Laboratories, Holmdel first as a visiting scientist in 1976-1977 and then as a temporary Member of Technical Staff in 1977-1978. In 1978 he joined the Optical Electronics Research Department in Bell Laboratories, Murray Hill as a permanent Member of Technical Staff, where he carried out research in semiconductor physics and devices.

Dr. Capasso is a Fellow of the Optical Society of America, the American Physical Society and is listed in "Who's Who in America." In 1984 he received the AT&T Bell Laboratories Distinguished Member of Technical Staff Award and the Award of Excellence of the Society for Technical Communications. He is Associate Editor of *Photonics Technology Letters* and has served on the Program and Advisory Committees of over twenty international conferences. He has been Cochairman of the 1989 and 1990 SPIE Symposium in Advances in Semiconductors and Superconductors. He has co-authored over 130 papers, edited four volumes and given over 80 invited lectures and talks at international conferences in the U.S. and abroad.

## 1991 Morris N. Liebmann Award

### Morton B. Panish

Morton B. Panish is a Member of Technical Staff at AT&T Bell Laboratories, Murray Hill, N.J. Dr. Panish received his BS in Chemistry from Denver University in 1950 and the MS and PhD degrees in Physical Chemistry from Michigan State University 1952 and 1954 respectively. From 1954 to 1957 he investigated the thermodynamic properties of molten salts at Oak Ridge National Laboratory. From 1957 to 1964 at the AVCO Corporation, he was engaged in thermodynamic studies of refractory materials at very high temperatures. In 1961 he was appointed to head the Physical Chemistry Section with responsibility for studies in very high temperature chemistry. In 1964, he joined Bell Labs as a Member of the Technical Staff and was concerned with elucidating phase equilibria in III-V systems, and in III-V dopant systems as a precondition for understanding crystal growth, dopant incorporation, and diffusion of impurities into III-V compounds. In 1969 Dr. Panish was appointed head of the Materials Science Research Department at Bell Labs, a post that he held until 1986 when he returned to full time research.

In 1970, Panish and his collaborator Dr. Izuo Hayashi, presented the first experimental evidence for 300K cw operation of a (heterostructure) injection laser. Subsequently, emphasizing efforts useful for the growth of heterostructures, Panish continued studies of III-V thermodynamics, crystal growth, materials, and device properties. In the 70's he emphasized studies that lead to an understanding of the crystal growth, improvement in crystal quality and control of doping, and application of the new beam epitaxy methods to the growth of heterostructures in the GaInAs(P)/InP semiconductor system. The MBE methods that have evolved from this work permit extraordinary control for the growth of such structures for optoelectronic and high speed applications.

Dr. Panish is a Fellow of both the American Physical Society and the IEEE, and a member of the Electrochemical Society and the Materials Research Society. In 1972, he received the Electrochemical Societies' Electronics Division Award. In 1979, he was the Solid State Medalist of the Electrochemical Society. In 1986 he was elected as a member of the National Academy of Engineering and also was awarded the C & C prize (Japan). In 1987 he was elected as a member of the National Academy of Science and was appointed as Distinguished Member of the Technical Staff at Bell Labs. In 1990 he received the International Crystal Growth award.



## **Princeton/NJ Coast NPSS:**

# **Radiation Threats To Spacecraft**

On May 22, 1991 the IEEE Nuclear and Plasma Sciences Society (NPSS), Princeton/New Jersey Coast Chapter, is sponsoring a lecture titled "Protection Of Spacecraft Against Natural Radiation." The speaker will be Dr. James M. Loman, GE Astro-Space Div., Valley Forge, PA.

Since obtaining his PhD in Physics from the University of Delaware in 1980, Jim Loman has worked at Ford Aerospace and the GE Space Center at Valley Forge, hardening satellite systems against these natural hazards. His talk covers the ways to predict and compensate for, radiation effects on space electronics, and gives examples that show in part why our satellite fleet survived—albeit with a few glitches—the '89 solar flares that would have knocked out the previous-generation fleet.

**Time:** 8PM, Wednesday, May 22, 1991.  
**Place:** The Lounge at the David Sarnoff Research Center, Princeton, N.J.  
**Information/Directions:** Surinder Sehra (609) 490-2972.

## **North Jersey Section PACE:**

# **Resource Recovery**

The North Jersey Section's Professional Activities Committee for Engineers will meet on Thursday, May 9, 1991. The topic at this meeting will be "Resource Recovery." The speakers will be Larry Smith and Laurie Cooper of American Ref-Fuel Company of Essex County.

## **About The Talk**

Smith, general manager of the Essex County Resource Recovery Facility, will explain how garbage, "a resource too valuable to be thrown away," can be converted into electrical power equivalent to what would be produced by burning three million barrels of oil a year. American Ref-Fuel sells the extra electricity to Public Service Electric & Gas Company, providing revenue which helps reduce the cost of garbage disposal for Essex County taxpayers.

## **About The Speakers**

Larry Smith, who holds a Bachelor of Science Degree in Mechanical Engineering from Grove City College, Grove City, PA, is responsible for plant operation, contract management and waste flow at the facility. Prior to joining American Ref-Fuel, Smith was production manager for Air Products and Chemicals in Kentucky, and head of the maintenance department for Union Carbide Chemicals and Plastics in Texas.

Laurie Cooper holds a Bachelor of Science Degree in Chemistry from the University of Oklahoma and is currently pursuing a Master's Degree in environmental science from New Jersey Institute of Technology. An environmental scientist

with American Ref-Fuel, she previously served as an environmental specialist for ITT Avionics Division, Nutley, N.J. and technical manager for CycleChem, Inc., Elizabeth, N.J. Cooper is a member of the American Chemical Society, the American Institute of Chemical Engineers, the Institute of Hazardous Materials Management, the National Fire Protection Association and Nutley HAZMAT (hazardous materials) team.

Members and non-members are welcome.

**Time:** 7:30 PM, Thursday, May 9, 1991.  
**Place:** ITT Tower, 500 Washington Ave., Nutley, N.J.  
**Further Information:** Robert Sinusas (201) 228-3941; Stacey Waring (201) 902-9000.

## **North Jersey Section-PES:**

# **High Voltage Optical Metering And Relay Systems**

At the May 8, 1991 meeting of the North Jersey Section IEEE Power Engineering Society the topic will be "High Voltage Optical Metering and Relay Systems." The speaker will be Mr. Harley S. Gilleland.

## **About The Talk**

In 1986, the first successful transmission voltage field installation of an optical current sensing and revenue metering system was installed on TVA's 161kv system. Over the next three years other metering systems were installed at 138kv (Houston Lighting and Power), 161kv (TVA), and 345kv (Con Edison). In 1991, the first optical current sensing and protective relaying system was installed at 161kv (TVA). The optical system components include an optical sensor, located on the substation bus; an electronic module located remote from the high voltage conductor in the substation control house; and the optical fiber that connects the electronics module and the optical sensor. The system operates on the Faraday effect where polarized light passing through the glass rotator or optical sensor will rotate in proportion to the current flow in the high voltage bus. The electronic module includes the optical to electronic circuitry, signal processing and either or both the electronic meter or the electronic relay.

## **About The Speaker**

Harley Gilleland's career with ABB, formerly Westinghouse Electric Corporation, has included Marketing, Purchasing, and General Management assignments in several manufacturing operations in Pennsylvania, as well as the corporation headquarters in Pittsburgh. He is currently in Raleigh, North Carolina at the World Headquarters of the ABB Electric Metering Business Area, part of the ABB Power T&D Company. His responsibility is with optical metering and relaying systems.

Mr. Gilleland is a graduate of the University of North Carolina with a BS in Physics,

and attended the Penn State University School of Business.

**Time:** 7:00 PM, Wednesday, May 8, 1991.  
**Place:** JCP&L Punchbowl Rm, Punchbowl Rd., and Madison Ave., Morristown, N.J.  
**Further Information:** Augie Franzoni (908) 964-2130.

## **North Jersey-IAS:**

# **LF Fields—Are They Hazardous?**

On May 30, 1991, the North Jersey Section Industrial Application Society will host a presentation on "Low Frequency Electric And Magnetic Fields—Are They Hazardous?" The speaker will be Mr. George V. Fantozzi.

## **About The Talk**

Electric and magnetic fields know no boundaries and exist in residential, commercial, industrial or utility environments. Daily exposure to 60 HZ low frequency electric and magnetic fields (EMF) is common because virtually all household appliances, video display terminals (VDTs) as well as utility equipment produce such fields. Recently, certain reports have raised public concern over potential adverse health effects from electromagnetic fields. Laws are in effect in North California on the use of VDTs.

The presentation will cover all the above issues including a review of the Science of magnetic fields, comparison of field intensities between home, VDTs and power lines culminating with a demonstration of a portable battery powered instrument for measuring and mapping the temporal and spatial variation of 60 HZ magnetic fields.

## **About The Speaker**

George V. Fantozzi was recently employed by Ebasco Services Inc., as General Manager, Electric Power Systems Division. Before he joined Ebasco, he was with Florida Power and Light Co. in Juno Beach, where for 22 years he was involved in a number of different technical and managerial capacities focusing on Planning, Engineering and Operations of the Transmission, Substation and Distribution facilities. He is a Senior member of IEEE and a member of BEMS (Bioelectromagnetics Society). He is a member of the EEI (Edison Electric Institute) EMF Task Force, member of the AEIC (American Electric Illuminating Companies) Electric Apparatus Committee and presently Chairman of the IEEE-PES EMF AD-HOC Committee.

## **Pre-Meeting Buffet Dinner**

The pre-meeting buffet dinner starts at 6PM and the presentation begins at 7PM.

**Time:** 7:00 PM, Thursday, May 30, 1991. (6:00 PM, buffet dinner.)  
**Place:** ITT Auditorium, 500 Washington Ave., Nutley, N.J.  
**Information/Reservations:** Vital Rebapragada; (201) 804-2011; Max C. Schramm (201) 887-1120.



# PACE NEWS

## Past North Jersey Section Chairman To Be VP Of AEA

The American Engineering Association is very pleased to announce that Richard F. Tax has been appointed to fill the position of Vice-President of AEA. In this capacity Richard will also serve as a member of the Board of Directors.

Richard is a graduate of Fairleigh Dickinson University with a BSEE degree and is a Senior Member of the Institute of Electrical and Electronics Engineers. Richard has served the engineering community through his professional activities since 1974 and has held many leadership positions within the IEEE since then.

Richard has served as Chairman of the Professional Activities Committee for Engineers (PACE) for the 6000 member North Jersey Section from 1976 to 1990. He was Vice Chairman of the Section during 1984-1985 and Chairman of the Section from 1985 thru 1986. He has been an active member of IEEE's Manpower Committee from 1980 to 1991, a period of more than 10 years. Richard resigned his position as PACE Chairman to become more active with AEA in January 1991.

In 1987 and 1988 he served as Chairman of the Metropolitan Sections Activities Council (METSAC) with some 20,000 members there. In 1985 he chaired the North Jersey Ad Hoc Committee that critiqued and condemned a Northeastern University report that claimed engineers were obsolete at age 35. He has held many other offices at various levels with IEEE.

For his efforts he received the North Jersey Section Award for Leadership in 1979, the United States Activities Board (USAB) Regional Professional Activities Award in 1981, the IEEE Centennial Medal in 1984, the USAB Citation of Honor in 1984, the USAB Professional Achievement Award in 1988, and the Region I Award for Outstanding Contributions to Engineering Professionalism in 1989.

Mr. Tax has organized many IEEE PACE meetings and has published over 70 articles dedicated to professional activities. In addition, he authored the USAB's Entity Position Statement "Enhancing U.S. Productivity Through Improved Utilization of Engineers."

In making the announcement, AEA president Billy E. Reed said "To say we are pleased to have a person of Richard's stature within the profession and his obvious dedication to the needs of the professional community is a gross under-statement."

"Richard's help and contributions to date with AEA have been outstanding. He has been the driving force in our successful efforts to merge with the late Irwin Feerst's Committee of Concerned EEs. Richard's energy and drive would be an asset to any organization.

## North Jersey Section PACE: Logic And Young Mathematicians

The North Jersey Section's Professional Activities Committee for Engineers will meet on Thursday, June 13, 1991. The topic at this meeting will be "Young Mathematicians." The speaker will be Allan Boschen, member of IEEE's Pre-college Education Committee.

### About The Talk

The mind of a very small child automatically recognizes logical relationships and builds upon them. Evidence of this is adequately demonstrated as the child 'analogizes' in learning to speak, producing such words as 'goed', 'comed', 'runned', 'singed', 'mans', 'childs', etc. We should take careful note of such tendencies and shape educational efforts

around them. Materials that neatly fit together in logical terms are eagerly embraced and mastered. Items that are complex and confusing, or even interlaced with direct contradictions tend to be rejected, serving seriously to discourage learning.

Allan will give us an analytical treatment of the old controversy of rote memory vs thinking skills development, carrying this into another controversy that rages on and on, reappearing again and again sometimes in new form, but with little attempt to get to its roots—phonics vs look-say. Mr. Boschen will identify the roots of the attendant problems and demonstrate in detail his approach to their resolution, for which he has slides. He applied these techniques

## Intelligent Sensor Technologies Program

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I not only look for, but expect great things from him in the future.

Tax stated "With current levels of unemployment and immigration, the problems facing engineers are reaching critical levels. I choose to work through AEA because we can be more aggressive and react quicker to meet and solve problems in the professional arena." He also noted that the AEA is not a substitute for the IEEE, nor is AEA in competition with IEEE, but it is a way for members to supplement IEEE's efforts in the area of professional concerns. (Send a SASE to Richard Tax at 630 Montview Pl., River Vale, NJ 07675, for a complementary copy of AEA's publication the "AMERICAN ENGINEER."

in teaching his son, Daniel, to read, fluently, in Esperanto, before Daniel was three as part of their play together. Thereupon, on his own initiative, Daniel 'glued himself to Sesame Street', on TV, and mastered the reading of English, fluently, before he was four. Daniel is now an EE, and a member of IEEE.

The next PACE meeting will be held on July 11th. The topic planned is "Serving Members Worldwide With IEEE Technology" with a focus on Volunteer Effectiveness. The speaker will be Terry Burns of IEEE Field Services.

Members and non-members are welcome.

**Time:** 7:30 PM, Thursday, June 13, 1991.

**Place:** ITT Tower, 500 Washington Avenue, Nutley, N.J.

**Further Information:** Robert Sinusas (201) 228-3941.