The IEEE
Newsletter

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

Metro EMBS:

Sterilizing By Electron Beam Radiation

On February 12, 1992 the IEEE Metropolitan Sections Engineering in Medicine and Biology Society will present a program on "What's New In Disposable Medical Device Sterilization: Electron Beam Radiation Services." The speaker will be Pauline M. Pastore, Vice-President and Director of Marketing and Sales, Chemist and Physiologist, E-Beam Services Inc., Cranbury, New Jersey..

About The Program

The use of Electron Beam Radiation for sterilizing disposable medical devices is growing rapidly. The speaker will describe the nature of Electron Beam Radiation, the method of "Kill," the types of Accelerators, Application Processing and Dosimeter Control Techniques, with Computer Printout. The advantages and disadvantages of Electron Beam Radiation Processing as compared to other techniques will be discussed.

Some members meet for dinner at 5:00 PM at the Starlite Diner Cafe, 1279 First Ave., (West Side between 68th and 69th). Optional informal pre-lecture get together beween 6:00 and 7:00 PM in the Cafeteria Snack Area to the left of the main entrance to the Tower Building.

Time: 7-9 PM, Wednesday, February 12, 1992.
Place: Rockefeller University Tower Building, Room 305, 1200 York Ave., NYC. Free parking available.
Further Information: Robert Heyman (609) 465-7633; Joel Levitt (718) 891-6460; John Frederick (212) 595-2599; Edna Feher (212) 757-0610;

No. Jersey Comp/Comm Soc:

Micro-Mouse History And Demo

Susan L. Rosenbaum, known as Micro-Mom, putting Micro-Mouse Mappy through the maze at the December 10th meeting of the IEEE North Jersey Computer/Communications Systems Chapter, held at Fairleigh Dickinson University, Teaneck Campus.

On-Line Career Fair

The Professional Engineering Employment Registry (PEER) and associated registries have been discontinued. They were found not to be very effective. Instead of presenting a file of resumes to interested companies, an on-line computer bulletin board has been created with employers presenting their current job openings.

To access the ON-LINE CAREER FAIR bulletin board, dial 603-432-2742, using 8 bits, no parity, one stop bit. For pass word use 'newjob' no space. If you have trouble, call an administrator at Response Technology Corp., Londonberry, N.H. at (603) 437-7337.

Another Job Bulletin Board is listed under M.J. Ward Research & Services at 301-977-3041, 8 bits, no parity, 1 stop bit, up to 2400 baud. It is open to the public. For information, voice line is 215-964-2700. Check the Devon Consulting bulletin board for data processing positions.

To advertise other job bulletin boards, please contact Bob Sinusas, PACE Chairman, (201) 228-3941.

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NEWSLETTER STAFF
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445 Hoes Lane, P.O. Box 1331
Piscataway, N.J. 08854-1331
(908) 981-0060
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.

The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7 PM. These meetings are open to all members. Information on meeting agenda is available from Al Connelly, Section Secretary at (201) 616-0755.

Elected Section Officers are listed above.

CHAIRMAN'S CORNER

One month into the year, and our first meeting at a new location was a success. However, it seems to me that our attendance at Section meetings consists of primarily our Executive Committee members. I would like to encourage the attendance of student members and regular members who are interested in the workings of the IEEE. I have requested all of our Chapter Chairmen to be far more active in organizing meetings with exhibits, mini-Symposia, conferences, etc. I implore everyone to attend the meetings and bring us new ideas. In particular, we are interested in ideas for speakers, meeting locations, and as stated above, the increased participation of our general membership. Please feel free to fax me any ideas which you might have to improve the operation of the North Jersey Section.

Dr. Richard V. Snyder, Section Chairman
FAX: (201) 492-2471

North Jersey Section PACE:

The Business Of Inventions And Patents

The February 13, 1992, meeting of the North Jersey Section's Professional Activities Committee for Engineers will present a talk on "The Business Of Inventions And Patents." The speaker will be Edward Dreyfus, Esquire.

About The Talk

In 1991, 50% of the patent filings in the United States Patent Office were owned by foreign companies. By the year 2000, 50% of all the patent filings in the world will be owned by Japanese companies. The time lapse between the 2nd and 3rd millionth patent to issue in the US was 26 years. The time lapse for the last million patents to issue in the US was 14 years. Most foreign patents live 20 years from the date of filing—a US patent still lives 17 years from the date of ISSUE. A patent can be a powerful asset to a corporation—a family of patents growing from the basic invention like a tree can support equity infusion, initial market dominance, and legal protection for a limited period for new avenues of technology development.

Large corporations spend large sums on developing their patent portfolios to protect their design and product freedom, protect their access to the market place, provide defensive tools if they are confronted with infringement by another, and function as intangible revenue or equity producing assets in licensing, cross-licensing, technology transfer and joint venture arrangements.

What do these matters mean to the individual inventor and the small or medium size technology based company? Can and should they try to participate in this ball game and at what expense? How can they improve the strength of their patent position and better assure that their patent or patents will have value. What problems, time frames and surprises can they expect from the patenting process? What is the test of patentability and what must they do to avoid creating a statutory bar to obtaining a valid patent or participating in fraud before the US Patent Office? How can intellectual property be used to raise capital?

These matters and others will be addressed by Ed Dreyfus, a partner in the law firm of Stanger, Stempler, and Dreyfus with offices in Clark and Summit, New Jersey. Mr. Dreyfus has more than 20 years of patent and technology law and business experience. He started his career as a Patent Examiner in the electronics and integrated circuit technologies of the US Patent Office, followed by five years of private practice with an intellectual property firm in Washington DC.

Mr. Dreyfus is a member of the New Jersey and Washington DC Bars and is admitted to practice before various courts and the US Patent Office and holds a BSEE from Washington University and a JD from the George Washington University.

Time: 7:30 PM, Thursday, February 13, 1992.
Place: Jersey Central Power & Light Co., Madison Avenue and Punch Bowl Rd., Morristown, NJ.
Further Information: Robert Sinusas (201) 228-3941.

Check Your Company Bulletin Boards

Do you see IEEE meeting notices posted there? IEEE members and non-members can learn about our interesting and educational activities and meet other engineers with similar interests.

Technical meeting notices are distributed to 23 companies and colleges. If your organization should be added to our mailing list, contact Don Weinstein, Kulite Semi-conductor, One Willow Tree Rd., Leonia, N.J. 07605-2239, (201) 461-0900 ext. 3106.

North Jersey Section Activities
FEBRUARY

February 5, 1992--"North Jersey Section Executive Committee Meeting"--7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road, Totowa, N.J. Al Connelly, Secretary (201) 616-0755.

Feb. 5--"Ideas For Deuterium/Helium-Three Fusion"--IEEE Nuclear & Plasma Sciences Society, 8:00 PM, Princeton Univ.. Dirk Plummer (908) 219-9553.

Feb. 11--"Chamber Of Commerce And The Consultant"--NY Section Consultant's Network, 6:00 PM, Con Edison, 16th Floor Press Room, 14th St., & Irving Place, NYC. Jim Wetterau (212) 321-1999.

Feb. 12--"What's New In Disposable Medical Device Sterlization: Electron Beam Radiation Services"--Metro EMBS, 7PM, Rockefeller University Tower Bldg., Room 305, NYC. Robert Heyman (609) 465-7633.

Feb. 13--"The Business Of Inventions And Patents"--North Jersey Section PACE, 7:30 PM, JCP&L Co., Madison Ave., & Punch Bowl Rd., Morristown, N.J. Robert Sinusas (201) 228-3941.

Feb. 19, March 11, April 8--"NJIT Optoelectronic Seminar Series & Industry Show"--Center for Microwave and Lightwave Engineering, North Jersey Section IEEE & Graduate Student Association. Dr. Gerald Whitman (201) 596-8396/3232.

Upcoming Meetings

Mar. 5--"Harmonics In Power Systems—One Day Seminar"--Joint North Jersey & Princeton Chapter IAS, JCP&L Co., Madison Ave. & Punch Bowl Rd., Morristown, N.J. Registration required. Edward Griffith, Sr., (201) 455-8313.

Mar. 11--"Seminar: Accent And Speech Improvement"--12 weeks, Wednesday Evenings, JCP&L Co., Madison Ave. & Punch Bowl Rd., Morristown, N.J. Registration required. John A. Baka (201) 455-8534.

Mar. 11--"Instrumental Conditioning And Its Clinical Applications: Rehabilitation Management For Scoliosis And Other Deficits"--Metro EMBS & NY Academy of Medicine, 7:00 PM, Rockefeller Univ., Tower Bldg., Rm. 305, NYC. Robert Heyman (609) 465-7633.

Apr. 8--"Fusion Plant Planned"--IEEE Nuclear & Plasma Sciences Society, 8:00 PM, David Sarnoff Research Center, Princeton, N.J. Surinder Seehra (609) 390-2972.

Apr. 8--"Advances And Issues In Cardiac Ultrasonography"--Metro EMBS, 7:00 PM, Rockefeller Univ., Rm. 305, NYC. Robert Heyman (609) 465-7633.

SPECIAL SECTION BANQUET NOTICE

April 29--Annual North Jersey Section Banquet and Awards Program at the Birchwood Manor in Whippany. See details in March issue of the "Newsletter."

May 12-14--"9th IEEE Instrumentation & Measurement Technology Conference"--Three-Day Conference, Meadowlands Hilton Hotel. Robert Myers, Conference Coordinator, (213) 287-1463.

May 12-14--"ELECTRO/92"--Hynes Convention Center, Boston, MA. (800) 877-2668.

Members and Non-Members Welcome
PLEASE POST

Princeton/NJ Coast NPSS:

Fusion

On February 5, 1992 the IEEE Nuclear and Plasma Sciences Society (NPSS), Princeton/New Jersey Coast Chapter, is sponsoring a lecture titled "Ideas For Deuterium/Helium-Three Fusion." The speaker will be Dr. Michael E. Mauel, Associate Professor of Applied Physics at Columbia University.

This lecture will address the physics basis for fusion utilizing an advanced fuel. While the present generation of large tokamak experimental fusion devises (the Tokamak Fusion Test Reactor at PPPL; the Joint European Torus at Culham Laboratory, United Kingdom; the Japan Torus 60 in Naka, Japan) are close to demonstrating the scientific feasibility of fusion energy, a next generation of devices will be required to answer the detailed scientific and engineering questions which must be addressed before a working demonstration fusion reactor can be designed. The use of such an advanced fuel would seem to eliminate or reduce radioactivity.

Time: 8 PM, Wednesday, Feb. 5, 1992.
Place: Princeton University Engineering Quadrangle, Convocation Room. C-217.
For Information/Directions: Dirk Plummer (908) 219-9553.

NY-Consultants' Network:

The Chamber of Commerce And Consulting

The February 11, 1992 meeting of the IEEE New York Consultants' Network, will be addressed by a member of the Brooklyn Chamber of Commerce. The subject will be "The Role Of The Chamber Of Commerce And Consulting." The speaker will be Marian Silverman, Associate Marketing Manager.

It is worthwhile for consultants to increase their exposure by learning about business associations, such as the Chamber of Commerce. Ms. Silverman will describe the function and activities and how membership in this organization of over 1000 businesses can aid in furthering consultant exposure and opportunities.

Date: 6 PM, Tuesday, February 11, 1992.
Place: Con Edison, 16th Floor Press Rm, 14th Street, and Irving Place, NYC.
Further Information: Jim Wetterau (212) 321-1999; Hulan Jack (212) 206-3049.

IEEE IAS
Joint North Jersey and Princeton Chapter
One Day Seminar
HARMONICS IN POWER SYSTEMS

Thursday, March 5, 1992
JCP&L Co., 300 Madison Ave., Morristown, NJ

The Industrial Applications Society will present a one day seminar focusing on "Harmonics in AC Power Systems."

The increasing use of power electronic equipment is impacting upon the operation of industrial systems. Resulting problems often cited include, overheating of transformers, motor failures and misaperation of electronic controls. Changes to the power system, such as power factor correction capacitors, can cause voltage distortion exceeding limits recommended by IEEE Standards.

This seminar will provide a comprehensive overview of harmonics including their sources, effects, measurement, and remediation.

Speaker: Nicholas W. Miller

Mr. Miller is a senior member of the Power Engineering Society of IEEE, Tau Beta Pi, and is on the IEEE Working Groups on Harmonics in Power Systems and on Voltage Stability. He is employed by the General Electric Co., Industrial and Power Systems Engineering Department.

The Presentation: Outline

I. Sources of Harmonics

II. Analysis

III. Effects

IV. Filter Design

V. Measurements

VI. Harmonics Standards
  A. IEEE 519-1981
  B. IEEE 519-1991

VII. Discussion Period

Location: Jersey Central Power & Light Co., 300 Madison Ave., (Rt. 24 East of I-287, Exit 31), Morristown, NJ.
When: Thursday, March 5, 1992
Time: 8:30 AM - 4:30 PM
Registration: (Includes Lunch, Coffee Breaks and Course Reference Material)
Cost: IEEE Members $125; non-IEEE Members $175. Student Members - No Charge (pre-registration required - Attendance Limited)
Contact: Mr. Edward P. Griffith, Sr., (201) 455-8313

Registration "Harmonics In Power Systems"

Respond To: Mr. Edward P. Griffith, Sr., Technical Consultant, JCP&L Co., 300 Madison Avenue, Morristown, NJ 07962-1911

Name_____ IEEE No._____

Affiliation_____ Phone No. _____

Address_____

Please enclose required fee made payable to **"North Jersey Section IEEE"**

IEEE North Jersey Section Seminar
ACCENT AND SPEECH IMPROVEMENT COURSE

Wednesdays-12 Weeks, Starting March 11, 1992 - 6:30-9:00 PM
Jersey Central Power & Light Co., 300 Madison Ave., Morristown, N.J.

The North Jersey Section IEEE is offering an evening course titled "Accent and Speech Improvement" which will be conducted in Workshop Format so that participants may receive individual attention. The course will cover the basic principles of American English pronunciation, formal and informal. Participants will practice applying these principles when they read out loud, converse with others, attend meetings, and speak before a group.

In addition, participants will learn and practice techniques for more effective oral presentations and communication in the workplace.

Instructor: Dr. Anita Sircroff.

Course Objectives: Lasting improvement in comprehensibility, fluency, and accent reduction. Heightened self-confidence.
Course Content: Primary focus is on pronunciation, with some attention to grammatical or vocabulary errors that interfere with fluency. Secondary focus is on public speaking: at meetings or giving presentations.
Assignments: Participants are urged to make short weekly recordings which the instructor will review and comment on. The purpose of the tapes is to give feedback and monitor progress.

Week 1 - Introduction: What constitutes an accent; How it affects communication; How English differs from other languages. An overview of American English Pronunciation: Sounds, Rhythm, Stress, & Intonation. Realistic individual goals for a 12-week course. How to practice and improve.

Week 2 - Introduction continued: Speech organs and the articulation of vowels and consonants; Phonetic symbols. Non-verbal communication. How to stand before a group.

Week 3 - Voicing; Vowel lengthening; Ear training for production of vowels. Guidelines for reading phrases and sentences: Practice. Standing and introducing yourself or a co-worker to a group.

Week 4 - Practice with vowels according to group and individual needs. Stress patterns in problem areas. Sentence stress: how it affects meaning. Getting your point across. Eye contact.

Week 5 - Problem sounds. Rules for pronouncing -ed and -s, -es. Suggestions for correlating spelling and pronunciation. Practice. Standing: what to do with your hands.

Week 6 - Pronouncing technical terms. Reading technical material. Practice. Putting it together: eye contact, standing, hands and feet.

Week 7 - Basic Intonation Patterns: Questions (yes/no, wh--), statements, comparisons, direct address. Practice speaking.

Week 8 - Problem sounds, consonant clusters, and fluency practice. Contractions, blending, intonation. Meetings: interrupting techniques.

Week 9 - Problem sounds; How to achieve fluency. Meetings: contradicting and explaining a point.

Week 10 - Participating in a meeting to discuss a chosen problem; Techniques for interrupting, getting a point across, opening and closing a meeting. The significance of body language.

Week 11 - Oral Presentation Techniques: How to prepare for the presentation; How to deal with nervousness; Voice projection: how to appear calm and self-confident; more eye contact; audio-visual aids.

Week 12 - Wrap-Up. Individual short talks. Feedback from group to instructor and from instructor to group. Questions answered.

Class size will be limited to a maximum of 10 with a minimum registration of 8. Early registration is recommended. Phone reservations will **NOT** be accepted.
Where: JCP&L Co., 300 Madison Ave., Morristown, N.J.
When: Twelve sessions, Wed. evenings, starting March 11, 1992 from 6:30-9:00 PM.
Cost: IEEE Members $400 ; non-IEEE Members $485. Text Book included.
Contact: Mr. John A. Baka at (201) 455-8534 (Business)

Registration "Accent & Communication Improvement Course"

To: Mr. John Baka, Distribution Engineering, Jersey Central Power & Light Co., 300 Madison Ave., Morristown, N.J. 07960

Name_____ IEEE No._____

Affiliation_____ Phone No. _____

Address_____

Please enclose required fee made payable to **"North Jersey Section IEEE"**

Metro EMBS:

Instrumental Conditioning: Rehab for Scoliosis

On March 11, 1992 the IEEE Metropolitan Sections Engineering in Medicine and Biology Society and the New York Academy of Medicine Sections for Biomedical Engineering, will present a program on "Instrumental Conditioning And Its Clinical Applications: Rehabilitation Management For Scoliosis And Other Deficits." The speaker will be Gordon Silverman PhD., Chairman of the Electrical Engineering Dept., Manhattan College, Riverdale, N.Y. Dr. Silverman is a member of the Adjunct Faculty, Rockefeller University.

About The Program

Careful application of the laws of instrumental learning may facilitate the treatment of some diseases. Learning is a set of processes associated with practice or experience leading to relatively permanent changes in the behavior of an organism. Properly designed shaping/training systems employing modifications of performance criteria can produce faster learning and better asymptomatic performance. A behavior shaping automata to treat idiopathic Scoliosis is discussed. Its potential for management of other deficits and rehabilitation is described. A video demonstrates how the posture training system for treatment of Scoliosis is used.

Time: 7:00 PM, Wednesday, March 11, 1992.
Place: Rockefeller University Tower Building, Room 305, 1200 York Ave., NYC. Free parking available.
Further Information: Robert Heyman (609) 465-7633; Joel Levitt (718) 891-6460; Edna Feher (212) 757-0610;

Princeton/NJ Coast NPSS:

Fusion Plant Planned

On April 8, 1992 the IEEE Nuclear and Plasma Sciences Society (NPSS), Princeton/New Jersey Coast Chapter, will present a lecture "The Steady State Tokamak Physics Experiment." The speaker will be Dr. G.H. Neilson.

About The Lecture

Construction of a fusion demonstration plant around the year 2025 has been set as a goal for the international development of fusion energy. To accomplish this will require some major facilities beyond the present generation of fusion devices, which will achieve breakeven conditions in the 1990's. The new facilities are needed to perform nuclear testing of reactor materials and components, to study the physics of burning plasmas, and to optimize the tokamak for steady-state operation. The cancellation last fall by the Department of Energy of the U.S. Burning Plasma Experiment (BPX) means that the burning plasma mission will now be borne by the much larger International Thermonuclear Experimental Reactor (ITER) project, with a delay of at least five years. In replanning, the U.S. fusion community is focusing on a facility for the steady-state mission. It will be used to develop steady-state operating modes in which the tokamak configuration is sustained only by self-generated (bootstrap) and non-inductively driven currents. It will also permit the exploration of advanced tokamak control techniques to improve plasma confinement, reactor economics, and operational reliability. One of the interesting engineering challenges of this facility is to furnish the necessary flexibility and maintenance access in a device with a non-trivial dd neutron yield.

About The Speaker

Dr. Neilson is a visiting scientist at the Princeton Plasma Physics Laboratory, where he was formerly Deputy Head of Project Physics for BPX. He is now a member of a national team that is defining the requirements and design concept for a steady-state tokamak facility to be proposed to the U.S. Department of Energy.

Time: 8 PM, Wednesday, April 8, 1992.
Place: David Sarnoff Research Center, Princeton, N.J.
Information/Directions: Surinder Seehra (609) 490-2972; Dirk Plummer (908) 219-9553.

ELECTRO/92 In Boston

ELECTRO, the Northeast's largest electronics industry event for design, test and production engineers and engineering and corporate managers, will return to Boston May 12-14, 1992 at the Hynes Convention Center, with an expanded technology focus featuring exhibits and programs exploring software for the engineering environment. The exhibit floor will feature a dedicated software section, along with areas for design, test, production EDA tools and semiconductors.

More than 20,000 engineering professionals are expected to attend ELECTRO/92. They will have an opportunity to view more than 800 exhibits of the latest in semiconductors; EDA tools; design, development, test and production software; semiconductors and passive components; test, measurement and analysis instrumentation; and production equipment and materials.

ELECTRO's expanded focus on software for the engineer will address the increasing importance of the software industry in the Eastern United States. For the first time, ELECTRO will feature the SoftSTORE, a hands-on selling environment located near the exhibit floor, where attendees can "test drive", then buy, the latest software products.

Other software-oriented events include one-day short courses on X-Windows and Object-Oriented Programming.

The Technical Conference also will include sessions on software engineering, object-oriented programming and several areas of application.

For more information about ELECTRO/92, write to: ELECTRO/92, 8110 Airport Blvd., Los Angeles, CA 90045, or call (800)-877-2668.

ELECTRO is sponsored by Region 1, CNEC and METSAC, the Institute of Electrical and Electronics Engineers, and the New England and New York Chapters, Electronics Representatives Association. It is produced by Electronic Conventions Management, Los Angeles.

IMTC/92 May 12-14

The ninth IEEE Instrumentation and Measurement Technology Conference (IMTC) will be held May 12-14, 1992, at the Meadowlands Hilton Hotel. There will be three full days of technical sessions and an exhibition featuring test and measurement instruments and services.

Speakers and attendees will explore practical applications of instrumentation and measurement. The materials and discussions in the technical sessions will be supported by products on display on the exhibition floor. IMTC/92 is planning a separate track of workshops, hands-on sessions with presentations directly tied to the exhibition. Major companies in instrumentation and measurement will be invited to conduct these workshops. The exhibits hall will be adjacent to the technical sessions and registration will be at the exhibits entrance.

Companies wishing to exhibit at this event should contact one of the following:

Milton Lichtenstein, Exhibition Chairman, 52 Sprain Valley Rd., Scarsdale, NY 10583 (914) 725-2589; Leon Seldin, Exhibition Co-Chairman, P.O. Box 26, River Edge, NJ 07661 (201) 839-4614; or Robert Myers, Conference Coordinator, 3685 Motor Ave., Ste 240, Los Angeles, CA 90034 (213) 287-1463; FAX (213) 287-1851.

Professional Activities Committees for Engineers NEWS

By Richard F. Tax

Rutgers University And Montclair State Cry Shortage

Like a cheap serial movie with the monster returning each year to wreak havoc on the community our engineering "Shortage Shouters" return once again to seduce our youth to the engineering colleges with cries of shortages and promises of golden opportunities. Each year National Engineers Week (NEW), assumed to honor our nation's engineering community, is misused to recruit our youth to the engineering colleges with fabrications of engineer shortages and unfulfilled promises. This year is no exception; however, New Jersey educators have a head start. Again, the false National Science Foundation paper is used by educators to sell college credits to the naive public.

In January, a TV program entitled "The Science Gap," sponsored by Rutgers University, shows Dr. Vaughn Vandergrift of Montclair State College quoting the false NSF report as the foundation for their shortage cries and college recruiting campaign. The program was aired many times on stations WNET (PBS) and WNJN (PBS) for millions of viewers to see. Surrounded by other shortage shouters, Vandergrift has gone to TV crying "wolf," to promise rewarding engineering careers to the viewers. Would it be indelicate of me to mention that the "shortage shouters" are usually employed in the public sector and should have some loyalty to their employer, the U.S. tax payer?

Let's set the record straight. In September, 1991, the Engineering Manpower Commission, of the American Association of Engineering Societies, sponsored a conference to consider the engineering manpower issue. The following "Conferees Say No Shortage Exists," from IEEE's "IMPACT" by Frank Lord, Editor, Career Activities Council, blows away the shortage argument and the NSF paper.

Conferees Say No Shortage Exists

I was among a group of members of IEEE-USA's Manpower Committee who participated in a conference on September 11-12 in Washington, DC, sponsored by the Engineering Manpower Commission of the American Association of Engineering Societies. With the theme *Engineering in America's Future: Shortage or Surplus?* the conference addressed the question of the reliability of supply and demand projections and the likely impact of demographic and other trends on such forecasts. The answer was a judgement of no shortage, now or in the foreseeable future.

People of all persuasions explored the question, including industry leaders, practicing engineers, government statisticians, and engineering professors, most of whom were able to maintain objectivity. The program content flowed smoothly from the first day's sessions on *Statistical Background* and *Future Scenarios* to the *Employer Requirements* session on the morning of the second day. The keynote address was given by D. Allan Bromley, Director of the White House Office of Science and Technology Policy. The first day closed with the presentation of *Congressional Perspectives* by Congressman Don Ritter (R-Pennsylvania), the only Ph.D. engineer in Congress.

Most members of the conference's first panel seemed convinced that a manpower shortage exists, and they were there to speak about various aspects of it. Only the panel moderator put some caveats on what might be concluded from the present about the future. I was most astonished by a panelist from the National Science Foundation (NSF), who spoke about such deficiencies of the infrastructure as communications and transportation, attributing those inadequacies to a shortage of engineers. This notion appears equivalent to concluding that street people in U.S. cities indicate a shortage of home builders. I thought it ironic that a person unable to distinguish between societal and economic needs would be speaking at a conference examining supply and demand.

Circumstances did not get any better when another panelist displayed some graphs, which showed engineering salaries increasing at an average rate of 4.4 percent, and declared that engineers were doing well. He neglected to point out that had the curves been normalized to constant dollars, the graphs would depict engineering salaries as barely keeping up with inflation.

Keynote speaker Bromley did not foresee an impending crisis. He did believe that students should concentrate on science and mathematics to keep the so-called "pipeline" full. Bromley said we need people who can function and contribute in a competitive industrial society. He did not say that the sole purpose of the pipeline was to direct young people into the study of science and engineering at the college level. He asserted that national policy as well as market forces should influence our industrial capability.

IEEE-USA Manpower Committee member Robert Rivers surprised the afternoon audience by declaring that there was no need to hold the conference. He explained that in a free market economy there is no such thing as a shortage or a surplus, only an equilibrium point between supply and demand that may shift position over time. Rivers cited elements of Economics 101 as applied to the engineering manpower arena. From that point on, I sensed a transition among the speakers to more caution in statements and more couching of answers to questions.

Congressman Ritter questioned the actual demand for engineers in the year 2000, seeing it as "less than certain, given the coming contraction in defense procurement and possible further declines in certain U.S. manufacturing industries and their continued growth offshore." He did not shy away from using such words as *laid-off*, *underutilized*, and *slump* in describing the current engineering employment situation. Ritter spoke of the need for national ability in production, quality, and competitiveness. In effect, he shifted the focus of the conference from academic views and bureaucratic concerns to the real world of engineering.

I saw no evidence of shortages in the second morning's sessions. A major computer manufacturer is spending a great deal on continuing education, but nevertheless, also laying off engineers. The U.S. Department of Defense does not have an employment goal. A utility company is successfully employing former full-time employees on a part-time contract basis.

In contrast to the mainstream, one participant apparently still quoted the discredited NSF shortfall figures as shortage numbers. He was experiencing an engineering shortage in his area of endeavor, because his particular business with its low salaries kept him out of the normal marketplace. The conference moved a giant step closer to what seemed to be its inevitable conclusion.

In the last session, *Conference Wrap-Up*, the bulk of the effort fell on Alan Fechter, Executive Director of the National Research Council's Office of Scientific and Engineering Personnel. He noted that three major issues had been addressed: shortage or surplus, technical competency, and reliable data.

On the first issue, Fechter expressed mild surprise at the ease with which a consensus of no shortage was reached, with an almost total lack of contention. He saw no indicators of crisis, only normal concern about the future amidst uncertainties.

In his closing remarks, Fechter distinguished between making judgments and drawing conclusions. He pointed out that judgments are based on evidence. Unfortunately, determinations are sometimes based on minimal evidence. In the case of this conference, a preponderance of evidence led to the judgment. While judgments can be modified over time, it is more awkward or embarrassing to change a conclusion.

This conference was a valuable forum. In aggregate, the whole carries more weight and is less confusing to the public than a collection of statements that might have been issued by the same presenters. The deduction was that there is no imbalance between supply and demand for engineers at the present time, nor is there likely to be one in the foreseeable future.

THE NEW JERSEY INSTITUTE OF TECHNOLOGY

1992 Optoelectronics Seminar Series and Industry Show

sponsored by

The Center for Microwave and Lightwave Engineering
North Jersey Section IEEE & Graduate Student Association

Planning Committee: M. Ettenberg, DSRC; E. Gordon, NJIT; H. Grebel, NJIT; W. Kosonocky, NJIT; R. Leheny, Bellcore; T. Li, AT&T; S. Nagel, AT&T; E. Niver, NJIT; I. Reingold, Geo-Centers; G. Whitman, NJIT; J. Yardley, Allied Signal.

I. ERBIUM DOPED FIBER AMPLIFIERS AND THEIR APPLICATIONS

February 19, 1992, Wednesday, 3-5 pm
Guttenberg Information Technologies Center, Room 1400

Technology and Applications of Erbium Doped Amplifiers for Long Haul Communications
Jay R. Simpson, AT&T Bell Laboratories

Applications of Optical Fiber Amplifiers in Broadband Optical Networks
Chinlon Lin, Bellcore

II. PASSIVE OPTICAL COMPONENTS

March 11, 1992, Wednesday, 3-5 pm, Alumni Center

OPTOELECTRONICS INDUSTRY EXHIBIT
2-6 pm, Alumni Center

Silica on Silicon Passive Optical Device Technology
Tadashi Miyashita, Photonic Integration Research, Inc.

Electronically-Tunable Optical Filters
David A. Smith, Bellcore

III. ADVANCES IN IMAGE SENSORS AND DISPLAYS

April 8, 1992, Wednesday, 3-5 pm, Alumni Center

Advances in Image Sensors
Walter F. Kosonocky, NJIT

Thin Film Transistor/Liquid Crystal Flat Panel Displays
Webster E. Howard, IBM

Location:	NJIT Alumni Center, Newark, NJ
Registration:	By mail, telephone, or in-person. Those who register in advance will be sent a map. There is no registration fee. Refreshments will be served.
Directions:	Garden State Parkway to Exit 145, Route 280 East; take King Blvd. Exit 14A and turn right at the traffic light. Continue straight and after three traffic lights, turn right onto Central Avenue. Take the first left, Summit Street, into campus. Proceed to the guardhouse. Reserved parking in lot #7. From Route 280 West; take the King Blvd. exit; make a left at the foot of the ramp, go one block and make a left at the stop sign onto King Blvd. After four traffic lights, turn right onto Central Avenue. Follow directions above.
For Information:	Contact Dr. Gerald Whitman (201) 596-8396/3232.