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CHAIRMAN'S MESSAGE

by Ed Palacio

As I discussed in last month's issue of *The Pulse*, we have been very fortunate in obtaining the services of an IEEE distinguished lecturer in the area of Neural Networks. Dr. S.Y. Kung will give a talk on "Neural Networks for Artificial Eyes" this month. More information concerning when and where this talk will take place appears in this issue. Don't miss the opportunity to hear a world-class expert discuss a very interesting topic.

Changing topics, there are still openings on our "Multimedia Requirements and Resources for Electrical Engineers" course. Please contact my office if you want to enroll.

As you may have noticed from reading our Pace column, the Long Island Section has formed a Long Island Economic Development Group with the purpose of stimulating and fostering the development of industry and manufacturing jobs on Long Island. We are now in the process of applying for positions on the Board of Directors of LIFT and LIA. The Long Island IEEE hopes to bring technical expertise and an engineering management viewpoint to these organizations with the final goal of increasing the job situation for our membership. Tom Campbell, our current Vice Chair, is heading up that effort. I'll keep you posted on our success and progress in this column.

With respect to our Annual Awards Banquet, Mr. Wally Read, the IEEE President Elect, has agreed to be one of our keynote speakers. Congressman Rick Lazio is trying to rearrange his calendar to be our other keynote speaker. Dick Ackley, our Region 1 Director, and Joel Snyder, our newly elected USAB Vice President, will also be in attendance. Take advantage of this event and spend a Sunday with us. I guarantee that you'll enjoy the afternoon.

ANNUAL AWARDS BANQUET

The Long Island Section will hold its 1995 Awards Banquet on April 30, 1995, at the Huntington Hilton, between 1:30 and 5:00 PM. The Banquet is held in honor of our 1995 Fellows, Section and Region 1 awards recipients. This affair is open to all members and one guest, at a cost of \$10.00 per person.

If you are planning to attend, please send your check made out to the Long Island Section of the IEEE, by April 10th, to:

E. Palacio
2541 Hyacinth Street
Westbury, NY 11590

EMPLOYMENT ASSISTANCE COMMITTEE IMPROVING THE ECONOMY

By Harvey Altstadter

At our February meeting we completed viewing of the IEEE supplied videotape called "How to Get a Better Job Quicker." The material covered in the second half continues to reinforce the material provided on the SkillStalker video we viewed a few meetings back. This material continued to provoke a good deal of interesting discussions. The tape was well worth seeing.

Last night I had the pleasure of attending the annual Engineers Joint Committee of Long Island National Engineer's Week Celebration dinner. The EJCLI is an organization representing the professional societies of the various engineering disciplines on Long Island. The speakers repeatedly emphasized the important role that engineering continues to play in the economy of Long Island. Dick Gran from Northrop-Grumman put on an impressive presentation on the feasibility of bringing MAGLEV transportation to Long Island. Improvement of our local transportation system deserves a high priority on the list of things that need to be done to revive the economy. Unfortunately, the current atmosphere in Washington and Albany has recently become less supportive of the MAGLEV program.

By now those of you who are members of our database should have received a canvassing letter asking you to confirm your continued interest and to review the data we have entered into the database. If you wish to correct the data add some categories, or otherwise update your data, please make the corrections and return the letter as soon as possible. Certain letters require a response. If you have received such a letter, it is important that you respond, or you will be removed from the database. If you have not yet joined our Skills Inventory Database, please get in touch with us. The job matching service is available to current and recent local IEEE members.

We also have IEEE membership applications if you or your friends should need them.

EAC meetings are held on the third Wednesday of each month at the IEEE offices at AIL in Deer Park. Won't you join us at our next meeting on Wednesday, April 19, 1995 at 7:00 PM. Our meetings are open to all, but you will not be allowed into the AIL building unless you register in advance. Call Harvey at (516) 595-5608 to register and for directions, or for information about becoming a member of our skills database. For information about joining the IEEE, call Tish at (516) 595-5160 or 5170.

SIGNAL PROCESSING CHAPTER TO HOST TALK ON NEURAL NETWORKS FOR ELECTRONIC EYES

The Signal Processing Chapter will host a talk on neural networks for electronic eyes on Thursday, April 13, 7:00 PM at the Polytechnic University Auditorium, Route 110, Farmingdale. The Electronic Eye program was conceived as a US-European Consortium, aiming at high-speed image/vision applications. Learning and adaptive techniques will be useful at a variety of levels including active sensing and data acquisition, low-level processing, high-level processing, and system integration and control. Our goal is to integrate learning capability into traditional vision techniques so that systems display the flexibility and reliability that is inherent in biological vision systems. The main thrust hinges upon a thorough understanding of several key issues regarding temporal dynamical system modeling, including model unification, hierarchical network structure, training efficiency, and numerical and parallel processing techniques. On the neural net front, we have proposed a decision-based neural network (DBNN) which can be applied to many information processing levels, from feature extraction to object recognition and scene analysis. In particular, it has been successfully applied to face recognition experiment for recognizing a face database with 80 different people. For each person, 20 images have been taken under natural indoor, but somewhat different illumination conditions. The warped image will then be normalized (intensity normalization) and reduced to 8x8 (resolution reduction). Due to the reduced resolution, the accuracy of the image warping/alignment is not critical, thus providing very robust features. The DBNN achieves a perfect 100% recognition accuracy 80-person face recognition based on testing face images never seen by the network before. More impressive is perhaps the very fast process speed: the whole recognition process including eye localization, feature extraction, and classification using DBNN, takes less than 0.2 seconds by SUN SparcIO workstation.

In order to make DBNN more appealing to real application requirements, it is important to incorporate various confidence measures into training neural networks, which would permit the classifier to provide its confidence of acceptance and/or rejection. Moreover, this leads to a sensor fusion neural network. The hierarchical structure of the DBNN is very amenable to combining various sensor sources. This leads to a hybrid EM (expectation-maximization) and DBNN version of multi-channel fusion network. In the fusion experiment based on intensity and edge features, the class-dependent fusion network was reported to achieve 100% recognition of 6 car models with various viewing angles. Videotape will be used to help illustrate the application demonstrations.

The speaker, professor S.Y. Kung, IEEE Distinguished Lecturer for Signal Processing received his Ph.D. Degree in Electrical Engineering from Stanford University. From 1977 to 1987, he was a professor of Electrical Engineering Systems of the University of Southern California, Los Angeles. Since 1987, he has been a professor of Electrical Engineering at Princeton University. His research interests include spectrum estimations, digital signal/image processing, VLSI array processors, and neural networks.

Since 1990, he has served as an Editor-In-Chief of the Journal of VLSI Signal processing. He is now an Associate Editor of the IEEE Transactions on Neural Networks. He is presently serving on technical committees on VLSI Signal Processing and on Neural Networks. He has served as a founding member and General Chairman of various IEEE Conferences, including IEEE Workshops on VLSI Signal Processing in 1982 (L.A.) and in 1986 (L.A.), International Conference on Application Specific Array Processors in 1990 (Princeton) and 1991 (Barcelona), and IEEE Workshops on Neural Networks and Signal Processing in 1991 (Princeton) and 1992 (Copenhagen).

Dr. Kung is a Fellow of IEEE. He received in 1992 the IEEE Signal Processing Society's Technical Achievement Award for his contributions on "parallel processing and neural network algorithms for signal processing." He was appointed as an IEEE-SP Distinguished Lecturer in 1994. He has been invited as Keynote Speaker for numerous international conferences, including the First International Conference on Systolic Arrays, Oxford, 1986. He has authored more than 300 technical publications and two textbooks.

For further information please call Robert Hong, at (516) 921-4446

EMC SOCIETY TO HOST TALK ON EMC SPECIFICATIONS

The EMC Society will host a talk by Mr. Walter A. Poggi on EMC specifications related to medical devices on Tuesday, April 25, 1994, at 6:30 PM at ILC Data Devices Corporation in Bohemia. The presentation will address recently developed as well as developing EMC specifications related to Medical Devices. The EMC requirements related to the latest FDA "Guidance Documents" as well as those related to the European Union's Medical Directive will be examined with an emphasis on the similarity between the two and the dependence on international standards. Potential changes to the FDA's 510K approval process as well as a presentation of the various compliance routes with the EC Medical Directive will also be reviewed.

Walter A. Poggi is president of Retlif Testing Laboratories, a conformity assessment laboratory headquarters in Ronkonkoma, NY. A NYIT graduate, Mr Poggi is the federally appointed EMC expert assisting and accompanying the U.S. Dept. of Commerce on trade talks with the European Union.

ILC Data Devices is located at 105 Wilbur Place, Bohemia. Take exit 57 east on the Long Island Expressway (Vets Highway) to Orville Drive (1 block west of McArthur Airport).

For further information on the talk, call Mr. Poggi at (516) 737-1500. For further information on the EMC Society, call Bob Berkovits at (516) 754-5051.

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The PULSE of Long Island is published monthly except July and August by the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47th Street, New York, NY 10017-2394. \$1.00 per member per year (included in annual dues) for each member of the Long Island Section. Second class postage paid at New York, NY, and at additional mailing offices. Postmaster send address changes to IEEE PULSE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. (USPS 450-540).

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LONG ISLAND IEEE CALENDAR

(No membership requirements, no registration, no fees at meetings unless otherwise noted. IEEE Office is in the AIL Main Building, Commack Road, Deer Park, LIE Exit 52)

APRIL 5 — Networking - LI Consultants Network - 7:00 PM - LILCO Ttraining Center, 131 Hoffman Lane, Hauppauge - for info, call Stewart Senator at (516) 654-1426.

APRIL 5 —The application of Speech Recognition Therapy - EMBS - 6:00 pm (Pre-meeting reception) - New York Academy of Medicine - a Presentation by Harry Levitt, PH.D. See article in this issue for details. For further information please call Joel Levitt, at (718) 891-6460, Andrew Baxt, at (516) 764-2060, or Susan Baxt, at (516) 678-6563.

APRIL 7 — Microstrip Spiral Antennas - Joint Weber Research Institute, Polytechnic University and MTT/AP Societies - 11:00 AM - Polytechnic University Auditorium (Route 110, Farmingdale)- Design and Analysis by Dr. Shih-Chang (Gary) Wu. See article in this issue for details. For further information please call Professor Nirod Das (Polytechnic University) (516) 755-4228.

APRIL 13 — Neural Networks for Electronic Eyes - 7:00 PM - Polytechnic University Auditorium - A talk by IEEE Distinguished Lecturer S.Y. Kung. See article in this issue for details. For further information please call Robert Hong at (516) 921 -4446.

APRIL 19 — Employment Assistance Committee - 7:00 PM - IEEE Office. For information, call Harvey at (516) 595-5608,

APRIL 24 — EXCOM meeting at 6:00 PM - IEEE office at AIL.

APRIL 25 — EMC Specifications in Relation to Medical Devices - 6:30 PM - ILC Data Devices Corp., 105 Wilbur Place Bohemia, N.Y. See article in this issue for details. For further information please call Mary O'Grady at (516) 567-5600, X 7405.

APRIL 30 — Annual Awards Banquet - 1:30 PM to 5:00 PM - at the Huntington Hilton Hotel (see article in this issue).

MAY 18 — Wireless Personal Communications - Communications Society (NY Chapter) - 8:30 AM - 4:30 PM - United Engineering Center, 345 East 47th Street, New York City. See article in this issue for further details

JUNE 1 — Call for Papers - 1995 Wireless Communication Systems Symposium (Wireless Trends in the 21st Century). For further information please call Donald Grieco, Technical Program Chair at (516) 773-1900 or Dr. Nader Bolourchi, General Chair at (516) 686-7863.

JOINT WEBER RESEARCH INSTITUTE, POLYTECHNIC UNIVERSITY, and MTT/AP SOCIETIES To HOST SEMINAR ON MICROSTRIP SPIRAL ANTENNAS

The Joint Weber Research Institute, Polytechnic University, and IEEE Long Island MTT and AP societies will host a seminar on microstrip spiral antennas: design and analysis, by Dr. Shih-Chang (Gary) Wu on Friday, April 7, at 11:00 AM, in the auditorium of Polytechnic University, Route 110, in Farmingdale.

Spiral antennas are known as circularly polarized radiating elements having an ultra-wide bandwidth in free space. There has been a growing interest in utilizing them in printed wire (microstrip configuration) antenna applications, especially in phased arrays. From the axial ratio point of view, the bandwidth of a microstrip spiral has been significantly reduced due to the backed conductor plane. To confront the challenge in effective design of a broadband microstrip spiral, a computer-aided-design software (WIREFMAP) based on the full-wave space-domain method has been implemented. In the application of phased arrays, perturbation in spiral layout provides a solution to design the microstrip spiral with an arbitrary input impedance. This can contribute to the reduction in complexity of the antenna feeding network. In this presentation, extensive parametric studies of the radiation characteristics of various microstrip spirals, such as Achimedean spirals and equiangular spirals will be reviewed, New method of impedance control mechanism for spiral antennas by perturbing the antenna layout will be outlined. Detail antenna characteristics of these perturbed microstrip spirals will be presented.

Dr. Shih-Chang (Gary) Wu received the B.S.E.E. degree from National Cheng Kung University, Taiwan, in 1983, the M.S.E.E. degree from the University of Texas at Arlington in

1987, and the Ph.D. degree from the University of California, Los Angeles, in 1991. In 1992, he joined the Department of Electrical and Computer Engineering, New Jersey Institute of Technology, where he is currently Assistant Professor. His research interests include numerical modeling of printed circuit antennas and microwave/millimeter-wave integrated circuits, scattering, high-speed interconnects, and microwave-lightwave interaction. Dr. Wu is a member of the IEEE.

For further information, contact Professor Nirod Das, Polytechnic University, at (516) 755-4228.

COMMUNICATIONS SOCIETY (NEW YORK CHAPTER) TO HOST A SEMINAR ON WIRELESS PERSONAL COMMUNICATIONS

The Communications Society is hosting a seminar on wireless personal communications on May 18, 1995, 8:30 AM to 4:30 PM at the United Engineering Center, 345 East 47th Street, in New York City. The telecommunications industry is undergoing a revolution: markets, players, and business opportunities are being redefined. Future telecommunications players must possess a clear understanding of competing technologies, emerging applications, and future network options.

This seminar brings together speakers from most of the major equipment suppliers, service providers and current users of wireless networks. The seminar will provide a clear picture of wireless communications technology and applications designed to benefit a wide audience.

Telecommunications executives, communication managers, engineers and members of the financial services community will benefit from this seminar. The advanced registration fee schedule is \$150 for members and \$175 for nonmembers. For further information, please call Jim Barbera at (212) 594-7688.

THE PATENT CORNER

by Victor M. Serby, P.E.

Answers to Reader's Questions.

1. Q. How does one get a copy of a patent if he knows the patent number?

A. Copies of issued patents are available directly from the U.S. Patent and Trademark Office (PTO). The current fee is \$3.00 for each U.S. patent copy requested, and \$25.00 for each foreign patent copy requested. Send a check made payable to "The Commissioner of Patents & Trademarks" for the correct amount and mail it to: Commissioner of Patents & Trademarks, Washington, D.C. 20231. (There is no street address; the PTO has the entire zip code). Unfortunately, turnaround time may be slow using this method. The PTO also has an Electronic Ordering Expedited Service option for \$25.00 for copies of U.S. patents only. The NYC Public Library on 42nd St. and 5th Ave. has a Dept. of Commerce depository library, and has copies of all U.S. and many foreign patents on microfiche. The cost is \$0.30 per page to make copies. Also, there are many private patent document suppliers which typically charge \$3.00 per patent and have faxback service.

2. Q. Is there a list of patents by subject matter and how can one access it?

A. Patents are classified in classes and subclasses. The PTO for a fee of \$3.00 will supply a list of patents in a specified subclass. Unfortunately, as stated above, the PTO service is slow. An additional problem is determining which classes and subclasses the "subject matter" falls into. The Manual of Patent Classification, which is available in the NYC Public Library, will allow such a determination. Also available in the NYC Public Library is a computerized search system known as CASSIS. A

Boolean keyword search on this system is an option for finding patents containing specific words in the title or abstract. However the best (and of course least convenient) way to do a patent search is in the Public Search Room of the USPTO where actual patents are filed by subject matter and full text searching computer services are available in a system known as APS or automated patent system. The Public Search Room of the PTO is located in Crystal City Virginia.

Address questions, comments, or topic requests for this column to me at 255 Hewlett Neck Rd., Woodmere, NY 11598.

CANDIDATES FOR L.I. SECTION OFFICERS NAMED

The nominating committee of the L.I. Section has announced the following slate of candidates for the 1995-1996 Executive Committee Officers. They are:

Chair	Thomas Campbell
First Vice Chair	Dr. Nader Bolourchi
Second Vice Chair	Harvey Altstadter
Secretary	Amnon Gilaad
Treasurer	Dr. Babak Beheshti

Additional nominations can be made by petition during April. Petition nominations must be in writing, include the membership numbers and include the signatures of at least 10 members of the L.I. Section, and must be delivered no later than April 28, 1995 to:

Mel Drossman, Chair, Nominating Committee
26 Locust Road
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·What rights does a patent give you	·Ingredients for start-up companies	·Venture capital investors as partners
·Who has rights in your inventions	·Licensing and royalty rates	·Expectations of venture capitalists
	·Manufacturing vs. licensing	·Investment strategies for new enterprises

Guest Speakers:

Phillip Gilman, Esq. I.P. Attorney Strook, Strook & Levan	George M. Kaplan, Esq. I.P. Attorney Dilworth & Barrese	Russell L. Parr Valuator of I.P. AUS Consulting	Mitchell Stein, Esq. I.P. Attorney Stein & Associates	Fred Nazem Venture Capitalist Nazem & Company
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PACE REPORTER

by Irwin Weitman

The IEEE Long Island Economic Development Group (EDG) has been officially recognized by the Executive Board of the Long Island Section. Tom Campbell has been appointed to the position of chairman, by Ed Palacio, our Section Chairman. The purpose of EDG is to identify actions that our technical community can undertake to support and guide existing groups such as LIFT and LIA that have the public and political clout to help bring Long Island back to prosperity.

The consensus of the group is that in order to bring money into the area, we must expand present manufacturing and develop new manufacturing businesses. Of course, government subsidies and support, reduced taxes and a reduction of the NIMBY syndrome would be a big help, but bringing a steady stream of new money into the area is the only realistic solution. I'm not going to list all the things that are wrong because I'm sure you already know them. The bottom line is that we need a steady CASH FLOW into the area. I have heard many people say that it's hopeless because it is too expensive to manufacture on Long Island. There are many companies in our midst that are effectively competing with both domestic and offshore companies. Apparently no

one has informed them that they can't do it.

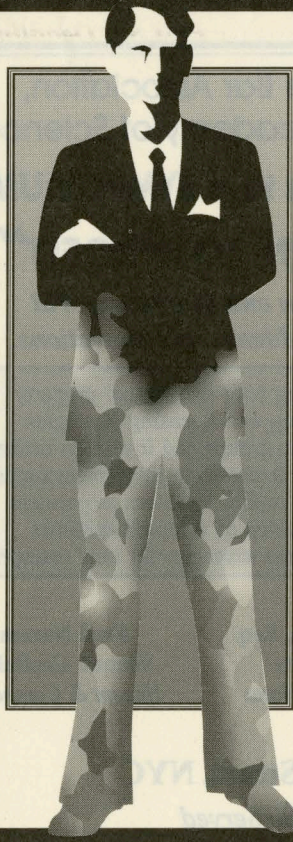
Several members of EDG have already met with members of both LIFT and LIA and they have expressed an interest in working with us.

Ed Dowdell presented an excellent talk at the March 1 meeting of the IEEE Consultants Network of Long Island. The subject was "Pricing the Delivery of Services." Ed has many years of experience in upper level management and was able to give us insight into the thinking of businessmen. The points he made were instructive to both consultants and anyone else who has something to sell. One point he made was that the price bid should be based on value. However, if the manager who reviews the proposal is of the Bean Counter type then he probably has no idea of the true value because he can't estimate the time it takes to do it. His usual approach is to try and bargain the price down by some percentage so he is doing his job. The technically knowledgeable manager will look at what the product he is buying will ultimately bring him when he sells his product to his customer.

I have heard that there may be a few consultants on Long Island who are not members of IEEE Consultants Network of Long Island. Even if they have all the work they can handle, I recommend that they join because they can learn from the experiences that members discuss at our meetings.

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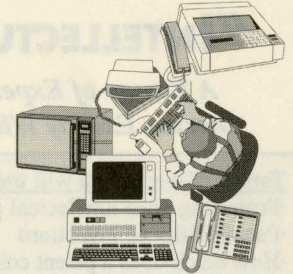
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EMBS HOSTS PRESENTATION ON THE APPLICATIONS OF SPEECH RECOGNITION TECHNOLOGY

The Engineering in Medicine and Biology Society (NY/North Jersey/LI Chapter) together with the New York Academy of Medicine's Sections on Biomedical Engineering and Otolaryngology and the New York Special Interest Group on Computers and Human Interface (of the Association for Computing Machinery) will host a presentation on the applications of speech recognition technology for people with hearing loss.

Significant strides have been made in automatic speech recognition (ASR) technology in the past several years. Relatively inexpensive, functional, and practical personal computer (PC) based systems are now available. Applications of this technology offer considerable promise for persons with hearing loss. A readily realizable application is voice operated teletype (TTY). Speech from a hearing person can be input into an ASR system, where it is encoded, and transmitted over a communications channel (telephone line, computer network, radio channel, etc.) to a person with hearing loss. The person with hearing loss can receive and respond to the message either orally, or through a typed message using a conventional TTY or PC. Via either method the response from the person with hearing loss can be orally output to the hearing person (hardware of the original ASR system can usually be used as a text-to-speech converter if needed). Research applying ASR technology is also being conducted to develop speech recognition/speech synthesis (SRSS) hearing aids. In an SRSS hearing aid, speech is recognized using a microelectronic ASR device, the output of which is custom adjusted to provide re-synthesized, exaggerated phonetic cues improving intelligibility for the person with hearing loss. These and other applications will be discussed.

The Speaker, Harry Levitt, Ph.D, is a Distinguished Professor of Speech and Hearing Sciences at the City University of New York. He is a Fellow of the Acoustical Society of America, a Fellow of the Speech, Language, and Hearing Association, and a Fellow of the New York Academy of Medicine. He obtained his Ph.D in Electrical Engineering from the Imperial College of Science and Technology, London, England, in 1964. He subsequently joined the staff of AT&T Bell Laboratories, where he conducted research on binaural hearing, adaptive testing in psychoacoustics, and digital speech processing. At Bell Laboratories, Dr. Levitt became interested in the design, development, and evaluation of special telephones and communications aids for persons with hearing loss. In 1969 he joined the faculty of the City University of New York, where he played a prominent role in establishing the Center for Research in Speech and Hearing Sciences. Dr. Levitt's research contributions include development of computer-assisted adaptive test procedures for use in speech and hearing, computerized visual and tactile speech training aids, computer speech synthesis for diagnosis of speech impairments, a digital master hearing aid, digital signal processing techniques for matching speech signals to residual auditory function, noise reduction techniques for hearing aids, and computer synthesis of video speech signals for studies in lipreading.

Meeting Details:

Date: Wednesday, April 5, 1995

Place: New York Academy of Medicine, Fifth Avenue at 103rd St. (Manhattan)

Pre-Meeting Reception Time: 6:00 PM (Optional)
Cocktails & hors d'oeuvres. Reception cost is \$25.
Reservations requested prior to April 2.

Program Time: 7:30 PM, no charge.

For more information, please call NYAM at 212-876-8200 ext. 235, Joel Levitt at (718) 891-6460, Andrew Baxt at (516) at 764-2060, or, Susan Baxt at (516) 678-6563

30 YEARS AGO

By Rod Lowman (Historian)

For all the members, friends and spouses, Dr. John Kanwisher, of the Woods Hole Oceanographic Institution, divulged how telemetry was being used to acquire physiological data on whales and porpoises under something approaching natural conditions as they frisk about the ocean depths. Whales and porpoises are homothermous mammals that must maintain the same high body temperature of man, despite the hundred-fold increase in the cooling power of water over air. Their surface layer of blubber provides the static insulation against heat loss. This is shunted when necessary by a highly evolved circulatory system. One feature of this is the arteries within the veins (coaxial for you electricals) that function as countercurrent heat exchangers.

Since they must breathe at the surface, yet hunt food at great depth, a premium is placed on breath holding, which is an unavoidable part of diving. With temperature, time and depth sensors, Dr. Kanwisher used both acoustic and radio telemetry to track the activities of these playful mammals as they cavorted below the seas. Gee, what fun! And they pay people to do this? Where do I apply?

I wonder if Dr. Kanwisher is still hunched over his telemetry receivers aboard a yacht in the South Pacific missing all those Polynesian hula dancers on the beaches as he passes. It was a most interesting and entertaining evening. It would be interesting to have him back to see what else he has learned about whales and porpoises in the last 30 years.

ELECTRO '95

Electro International has announced that it has significantly expanded the scope of its upcoming Electro '95 trade show to include a major emphasis on surface mount technology and contract manufacturing. The show will be held at the Hynes Convention Center (Boston, MA) on June 21 - 23, 1995. Electro '95 is sponsored by Region 1, METSAC and CNEC of the IEEE, and the New York and New England Chapters of the Electronic Representatives Association (ERA). Electro '95 will feature:

- * A surface-mount technology (SMT) and electronic manufacturing services conference track.
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