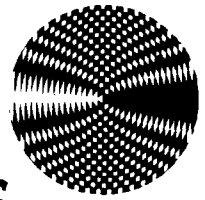




IEEE



SONICS AND ULTRASONICS GROUP NEWSLETTER

NUMBER 50 - APRIL 1981

EDITOR: FRED S. HICKERNELL

G-SU SELECTS



TOM BRISTOL

G-SU PRESIDENT

Dr. Thomas W. Bristol of Hughes Aircraft Company in Fullerton was elected to lead the Group on Sonics and Ultrasonics in 1981.



LARRY KESSLER

G-SU NATIONAL LECTURER

Dr. Lawrence W. Kessler, president of Sonoscan Inc. has been selected as the National Lecturer for 1981-82. Dr. Kessler will speak on the topic, "Acoustic Microscopy: Methods, Applications, Outlook."

Chapter Activities Reports

BALTIMORE/WASHINGTON/NORTHERN VIRGINIA

The Baltimore, Washington, and Northern Virginia Chapter of SU convened three joint meetings this past year. With Acoustics, Speech and Signal Processing we met at Adaptronics in Virginia. Tony Mucciardi presented a very interesting lecture on acoustic methods of finding faults in pipes (before the power plant fails!). As he put it, "Who would have thought pipes were so interesting." The national lecturer, Dr. Richard Williamson, gave our second talk comparing SAW processing techniques with digital techniques. The more sophisticated devices exceed digital techniques substantially in size, power consumption and processing speed. Finally, Dr. Edward Titlebaum of University of Rochester gave his famous lecture on echolocation systems in Nature (Bats, Dolphins and Humans). After an authentic 10-course Chinese dinner and with spouses in attendance, we heard his recordings of the remarkable sounds of sea creatures and bats (slowed down from 40 KHz). This joint meeting with Antennas and Propagation was a grand finish for a successful year.

The newly elected chairman of our chapter is Christopher Vale of Westinghouse. The Vice-Chairman is Zygmund Tursky of Litton Industries and Secretary-Treasurer is Gerry Blessing of NBS.

Christopher Vale
Chairman

SANTA CLARA VALLEY

The program for the Santa Clara Valley Chapter reflects the varied interests of the ultrasonic community in this area. Dr. James Havlice of Diasonics Inc. started this year with a talk on September 16, entitled "Medical Ultrasonic Imaging Using Short Fluid Path Technology." Additional talks on the application of ultrasound to medicine are planned for next spring. Dr. Richard Popp of the Stanford Medical School will discuss acoustic imaging from the user's point of view on March 17, and Dr. Jon Taenzer of SRI International will speak on Doppler ultrasound in medicine on April 21.

Acoustic microscopy will be the subject of a talk by Robert Gilmore of General Electric (Schenectady) on November 18 and a talk by Dr. Lawrence Kessler of Sonoscan, Inc., (this year's Sonics and Ultrasonics National Lecturer) on February 17. The program committee is also planning talks in the areas of surface waves, commercial ultrasound and guided waves.

The chapter officers and program committee for this year are Dr. David Hecht of Xerox, Chairman, Dr. William Shreve of Hewlett-Packard, Vice-Chairman, and Dr. John Larson, of Hewlett-Packard, Secretary-Treasurer.

William R. Shreve
Chapter Vice-Chairman

BOSTON

In '80-'81 the Boston Chapter held five meetings as well as hosted the very successful 1980 IEEE Ultrasonics Symposium. The '81-'82 schedule is off to a strong start, with two meetings being held during September. Richard Williamson of Lincoln Laboratory, Lexington, MA, described "SAW Signal Processing Techniques" at a joint meeting with Acoustics, Speech and Signal Processing. Hugh Larsen and others of Hewlett Packard, North Andover, MA, discussed "Development of Commercial Medical Imaging Instrumentation" at a meeting jointly sponsored with Engineering in Medicine and Biology. Two speakers for '82 have been scheduled to date. On February 10, Lawrence Kessler of Sonoscan, Bensenville, IL, will deliver the SU National Lecture, entitled "Acoustic Microscopy: Methods, Applications, Outlook" at a joint meeting with Engineering in Medicine and Biology. On April 14, James Sethares of Rome Air Development Center, Hanscom AFB, MA, will describe "Magnetostatic Wave Time Delays for Phased Array Technology" at a meeting co-sponsored by Antennas and Propagation. The remaining '81-'82 Wednesday meeting dates are set for 18 November, 13 January, 10 March, and 12 May.

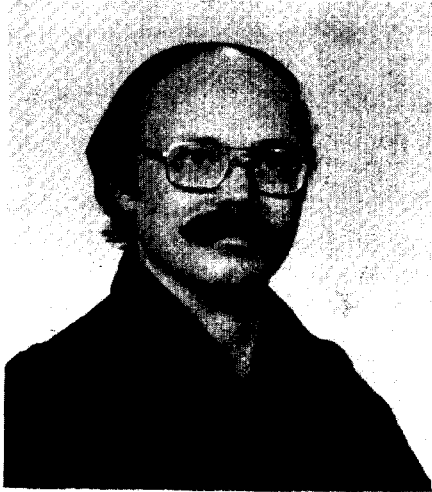
The SU Boston Chapter officers look forward to wide participation in all of the scheduled meetings. For further information, or to make suggestions for topics and speakers please contact:

Richard Ralston, Chairman
MIT Lincoln Laboratory (617) 862-5500,
ext. 358

Thomas Parker, Vice Chairman
Raytheon Research (617) 889-8400 ext. 2475

James Sethares, Secretary-Treasurer
RADC/EEA (617) 861-4663

Richard W. Ralston
Chapter Chairman

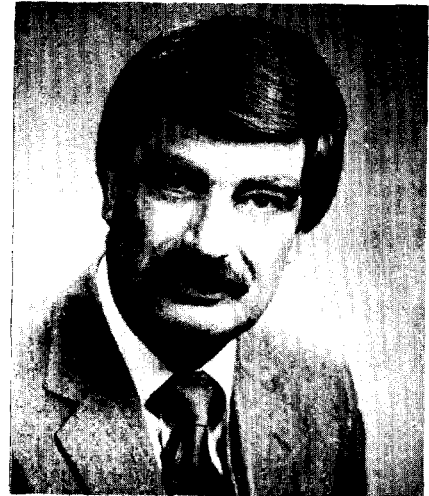


WILLIAM D. O'BRIEN, JR.
G-SU VICE PRESIDENT

Bill was born, bread and buttered in Chicago, Illinois, and attended high school in Arlington Heights. He enrolled in pre-med in 1960 at the University of Illinois and was delayed in his undergraduate schooling by a football injury. He ultimately combined his interest in medicine with engineering in his present work in bioengineering. He received the B.S., M.S. and Ph.D. degrees from Illinois in 1966, 1968 and 1970, respectively.

Bill is an Associate Professor at the University of Illinois. He teaches graduate and undergraduate courses in electrical engineering, bioengineering and biophysics, and is a member of the Radiation Oncology Faculty. He is currently involved in research projects concerning the understanding and application of acoustic microscopy to biological materials and their associated problems, the understanding of ultrasound computer-assisted tomography in the clinical practice of medicine - an analog to X-ray CAT scanning, but using ultrasound as the energy form, the development of an ultrasound dosimetric model, a continuing concern from FDA, the identification and understanding of any potential problems from the use of ultrasound in the clinical practice of medicine, especially as it relates to imaging the human fetus.

In his spare time, Bill teaches Maxwell's Equations to his son Danny, and (with more success) he teaches cardiopulmonary resuscitation (CPR) through the Illinois Heart Association. He is a member of the Champaign-Urbana Kiwanis Club, secretary of his bowling league, and stays active with jogging and racquetball. His best time in the 10km is 42 minutes. The O'Brien's also enjoy camping and skiing.



HERMAN VAN DE VAART
G-SU SECRETARY-TREASURER

H. van de Vaart was born in Arnhem, The Netherlands, on April 11, 1934. He received the Ingenieurs degree in applied physics in 1958, and the Ph.D. degree in 1969, both from the Technological University, Delft, The Netherlands.

From 1958 to 1960, he served in the Dutch Army as a Radar Instructor. He joined Transiron Electronic Corporation, Wakefield, MA, in 1960 where he did research on diffusion processes in silicon. Since 1962, he has been with the Sperry Research Center, Sudbury, MA, where he has been concerned with nuclear quadrupole and ferromagnetic resonances, and with linear and nonlinear phenomena involving spin wave and magneto-elastic waves at microwave frequencies in ferrites. More recently, his work has concentrated on magnetic and acoustic surface-wave device studies. He is presently Manager of the Signal Processing Department in the Systems Laboratory, as well as Acting Director of the Applied Physics Laboratory of the Sperry Research Center, acting for R. W. Damon during his tenure as IEEE President.

Dr. van de Vaart is a member of The American Physical Society. He was appointed Secretary/Treasurer of the IEEE Group on Sonics and Ultrasonics in 1981, after having served as Chairman of the Awards Committee from 1973-1980. He was Secretary/Treasurer (1970-71) and Chairman (1972-73) of the Boston Section of G-SU, and has served on the Ultrasonics Symposium Technical Program Committee since 1976, most recently as Chairman (1980). He is a member of the Society and other Awards Committee and the Candidate Research Committee of the IEEE Awards Board.

New AdCom Members



ARTHUR BALLATO

Arthur Ballato received the S.B. degree in electrical engineering from the Massachusetts Institute of Technology in 1958, the M.S. degree in electrical engineering from Rutgers University in 1962, and the Ph.D. degree in electro-physics from the Polytechnic Institute of Brooklyn in 1972.

In 1958 he joined what is now the U.S. Army Electronics Technology and Devices Laboratory, U.S. Army Electronics R&D Command, Fort Monmouth, New Jersey. Since that time he has worked on analytical and experimental aspects of classical frequency control and selection. Most recently, he has investigated the properties of stress- and thermal-transient-compensated plate vibrators for high precision applications, and has developed acceleration-compensated resonators.

Dr. Ballato is a member of the American Physical Society, the Institution of Electrical Engineers (London), Sigma Xi, and is a member of the Editorial Review Committee, IEEE Instrumentation and Measurement Society and of the Technical Program Committee, Annual Frequency Control Symposium. He was recipient of the 1978 C.B. Sawyer Memorial Award "for contributions in the field of piezoelectric crystals such as: stacked filters, electric circuit analogs and stress effects in doubly rotated plates."

His wife Margaret, and two sons, Thomas, 12, and John, 10, contend that pop's biggest hobby is sitting around and reading. They're probably right. When he's in training, though, pop's been known to splash around at the Y, hit a few tennis balls with the kids, listen to his wife's piano playing, watch football games, and feed the tropical fish. Beats cutting the grass, he says.



FRANK E. BARBER

Frank Barber received the A.B. degree in Engineering Science, Dartmouth College, Hanover, NH in 1966; the Ph.D. degree in Electrical Engineering, University of Washington, Seattle, WA in 1976.

In the summer of 1965, he was Research Assistant, Radiophysics Department, Dartmouth College, Hanover, NH; Staff Associate, Forsyth Dental Center, Bioengineering Department, Boston, MA, 1966-1970; Engineer and Principal Investigator on Cardiovascular Instrumentation Research and Development Program Projects, Center for Bioengineering, University of Washington, Seattle, WA, 1970-1975; Associate in Radiology (Physics), Harvard Medical School, 1975-1977; Ultrasound Physicist, Peter Bent Brigham Hospital, 1975-present; Instructor in Radiology (Radiologic Physics), Harvard Medical School, 1977-present; and Assistant Scientist, Sidney Farber Cancer Institute, 1979-present.

Dr. Barber is a member of the Institute of Electrical and Electronics Engineers, the Engineering in Medicine and Biology Society and the Sonics and Ultrasonics Group; the American Institute of Ultrasound in Medicine; the Acoustical Society of America; and the American Association of Physicist in Medicine, New England Chapter. He is also a member of Tau Beta Pi (National Engineering Honorary) and Sigma Xi.

His current research interests are in the development of a Scanning Acoustic Microprobe which is a computer-based system for measuring and producing a graphic reconstruction of the fine scale structural and constituent properties of human tissues for medical diagnosis.



LELAND P. SOLIE

Leland Solie was born in Barron, Wisconsin. After two years at North Park College in Chicago, he transferred to Stanford University where he received his B.S. in EE in 1964. After a year of seminary, he returned to Stanford where he received his M.S. and Ph.D. degrees in Applied Physics in 1967 and 1971, respectively. His thesis work, under the guidance of Dr. B.A. Auld, was a theoretical study of surface wave propagation in anisotropic, piezoelectric layered media. This study first predicted the coupling characteristics of a piezoelectric film on a non-piezoelectric substrate as well as the coupling enhancement of a dielectric film over a piezoelectric substrate.

The next two years were spent working at the Norwegian Technical Institute in Trondheim, Norway. Since 1973, he has been at the Sperry Research Center in Sudbury, Massachusetts, where he has invented and developed an acousto-electric convolver with integrated bidirectional amplification, the offset MSC multiplexer, the fanned MSC filter, and the reflective dot array technique for bandpass and dispersive filters.

Leland enjoys photography, cross country skiing, jogging, and gardening. He is active in his church in teaching and choir, and is presently chairman of the congregation. He is a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi. He is a past chairman of the Boston Chapter of the Sonics and Ultrasonics Group and was on the Symposium Committee for the 1980 Ultrasonics Symposium.

AD COM BRIEFS

The G-SU ADCOM met in Boston during the 1980 Ultrasonics Symposium, the most successful symposia in terms of attendance that had ever been held. G-SU President G.A. Alers (University of New Mexico) introduced R.W. Damon (Sperry Research Center), Division IV Director and IEEE President-Elect, who participated fully in the meeting. Also introduced were the three newly elected ADCOM officers whose terms extend from January, 1981 through December, 1983. Elected were A.D. Ballato (U.S. Army Electronics Technology and Devices Laboratory), F.E. Barber (Harvard Medical School) and L.P. Solie (Sperry Research Center).

G-SU Secretary-Treasurer W.D. O'Brien, Jr. (University of Illinois) reported that the group's financial condition remains strong. In April, 1980 reserve funds in the amounts of 30K and 50K were invested in Investment Options I and II, respectively.

For the first time, the G-SU Achievement Award was awarded to Dr. John deKlerk (Westinghouse Research) for his "many outstanding technical achievements in the field of Sonics and Ultrasonics, and his extremely valuable contributions to the advancements of Sonics and Ultrasonics in his tireless efforts in behalf of the G-SU," announced awards committee chairman H. van de Vaart (Sperry Research Center). Other awards included the 1979 Best Paper Award to R.L. Rosenberg and L.A. Coldren with Honorable Mention to W.J. Tanski.

The first G-SU National Lecturer was announced to be Dr. R.C. Williamson (MIT-Lincoln Laboratory) with the topic "Surface Acoustic Wave Signal Processing in a Digital Age."

A Student Travel Fund Committee was established to enable a few students with interests in ultrasonics to attend the Ultrasonics Symposia. Committee members include G.W. Farnell (McGill University), R.L. Melcher (IBM Watson Research Center) and K.M. Lakin (Ames Laboratory).

In order to promote SU Chapters, the ADCOM approved funds which could be used to establish Chapters. R.A. Moore (Westinghouse Electric Co.) is G-SU Chapters Coordinator.

Future Ultrasonics Symposia are planned for Chicago (October 14-16, 1981), San Diego (October 27-29, 1982), Atlanta (October 31 - November 2, 1983) and Dallas (October, 1984).

The ADCOM elected officers for 1981. They are T.W. Bristol (Hughes Aircraft Co.) for President and W.D. O'Brien, Jr. for Vice-President. H. van de Vaart was appointed Secretary-Treasurer.

W.D. O'Brien, Jr.
Secretary-Treasurer
G-SU ADCOM

CHAIRMAN'S REPORT

1980 IEEE ULTRASONICS SYMPOSIUM

The 1980 IEEE Ultrasonics Symposium was held at Park Plaza Hotel in Boston, Massachusetts on Nov. 5-7, 1980. This was the largest symposium ever held by the Sonics and Ultrasonics Group: the registration was the largest ever; a record number of papers were contributed and presented; and we had the largest foreign participation of any symposium. An unfortunate corollary of the increased interest in the Ultrasonics Symposium was the necessity of rejecting a record number and record percentage of contributed papers. Total registrations at recent symposia were:

1975	Los Angeles	384
1976	Annapolis	396
1977	Phoenix	452
1978	Cherry Hill	395
1979	New Orleans	400
1980	Boston	555

The local committee for the symposium consisted of Richard C. Williamson, General Chairman, Herman van de Vaart, Technical Program Chairman, Alan J. Budreau, Local Arrangements, Lawrence C. Lynnworth, Publications, Thomas E. Parker, Finance, and Leland P. Solie, Publicity. The symposium attendees and guests particularly appreciated the efforts of Diana Hughes Budreau who set up an extensive and well-received guests' program.

One of the non-technical highlights of the symposium was the cocktail party and New England Feast at the Kennedy Library. The extensive arrangements for this event were handled by Alan Budreau with assistance from Thomas Szabo. Unfortunately, because of the larger-than-anticipated registration, it was not possible to accommodate all who wished to attend the New England Feast. The organizing committee and the attendees appreciated the donations of the seven commercial sponsors whose contributions defrayed the cost of the cocktail party and New England Feast.

As in previous years, the technical program was in two parts, the official technical papers presented in the meeting rooms and the unofficial, but equally important, "other" meeting held in the hallways. The hotel arrangements with adjacent meeting rooms facilitated "session hopping" and enhanced the shoulder-rubbing nature of the "other" meeting. Coffee breaks were held in the poster session room so that poster papers alone received the benefit of being presented to all of the symposium attendees.

R.C. Williamson
General Chairman

LARRY KESSLER

G-SU NATIONAL LECTURER

The Administrative Committee of the Group on Sonics and Ultrasonics has announced the selection of Dr. Larry Kessler as the G-SU National Lecturer for 1981-82. As the National Lecturer Dr. Kessler will be available to speak before SU Chapters, graduate and undergraduate student university seminars and other appropriate local interested groups. Dr. Kessler's topic for these talks will be :

ACOUSTIC MICROSCOPY:

METHODS, APPLICATIONS, OUTLOOK

The establishing of the National Lecturer program and providing a stipend to cover travel expense by SU is indication of the interest of the AD COM in supporting the activities of groups interested in sonics and ultrasonics. In addition to present SU Chapters, groups which are considering chapter formation, university groups and other IEEE groups which have an SU interest are encouraged to schedule the national lecturer. It is urged that interested groups should contact the national lecturer as early a date as practical so that he can organize his talks and schedules to best fit the groups' needs. Please feel free to xerox or extract from the full page announcement of the national lecturer elsewhere in this newsletter. A short biographical sketch of Dr. Kessler follows.

Lawrence W. Kessler was born in Chicago, Illinois in 1942. He earned his B.S.E.E. degree from Purdue University in 1964 and the Ph.D. in Electrical Engineering from the University of Illinois in 1968. Through 1973 Dr. Kessler was employed by Zenith Radio Corporation where he was involved with the development of ultrasonic imaging systems and their applications. In 1974 he founded Sonoscan, Inc. (formerly Sonoscope, Inc.), a high technology based company that is involved with acoustic microscopy; he is President of the company.

Professional activities have played an important part in Dr. Kessler's career. He served a three year term on a Statutory Advisory Committee of the FDA and held the offices of Secretary, Treasurer and President of the IEEE Sonics and Ultrasonics Group. He has been an active member of the "Ultrasonics Symposium" program committee since 1969, was Program Chairman for the 1974 Symposium and is Co-Chairman of the 1981 meeting. He organized the Seventh International Symposium on Acoustical Imaging and Holography in 1976.

Dr. Kessler is listed in "Who's Who in the Midwest" and "American Men and Women of Science." He is adjunct Professor of Information Engineering at the University of Illinois, Chicago Circle. Dr. Kessler has authored over 50 technical publications and he holds four patents.

IEEE - SONICS & ULTRASONICS GROUP

NATIONAL LECTURER PROGRAM

presents

ACOUSTIC MICROSCOPY: METHODS, APPLICATIONS, OUTLOOK

by

DR. LAWRENCE W. KESSLER

SONOSCAN, INC., 530 EAST GREEN STREET

BESENVILLE, ILLINOIS 60106

WHEN _____

WHERE _____

ABSTRACT

Acoustic microscopes produce images based on materials properties which affect sound transmission: density, elastic modulus, acoustic attenuation. High resolution is achieved by employing frequencies up to several GHz. This new technology has found widespread applications in nondestructive testing and biomedical research, making it possible to obtain important information about materials characteristics and structural defects that cannot be observed with optical or electron microscopes. Because ultrasound easily penetrates most materials, regions deep inside solid samples can be imaged. Live tissues can be studied without the need for fixatives or histochemical stains. Two different types of acoustic microscopes have become prominent. In the first, an acoustic lens produces a sharply focused spot and the sample is moved rapidly across the spot to produce an acoustic output signal. In the second type, the sample is flooded with ultrasound and a focused laser beam scans the acoustic wave pattern, providing an optical output signal. In both instruments the acoustic image is displayed on a CRT in or near real time.

The lecture will discuss methodologies and give illustrative examples of applications in materials testing, quality control and biomedical research. It will also offer some thoughts on future directions.

Dr. Kessler received his B.S.E.E. from Purdue University in 1964 and the Ph.D. in 1968 from the University of Illinois. His current position is President of Sonoscan, Inc., a company he founded in 1973. Prior to this at Zenith Radio Corporation, he was involved in ultrasonic visualization system development and applications. Dr. Kessler is a member of ASNT, ALUM, ASA and a senior member of IEEE. He has served as President, Secretary and Treasurer of the IEEE Professional Group on Sonics and Ultrasonics and has been actively involved in the organization of the annual IEEE Ultrasonics Symposium since 1968; he is co-chairman of the 1981 meeting.

CHAPTER ACTIVITIES REPORT

It is truly delightful that all four current chapter chairmen attended the fall SU Administration Committee meeting in Boston. By attending administrative committee meetings, chapter chairmen are performing their function of helping SU develop to best serve its membership. Certainly, meeting with membership in this area three or more times each year and continuously seeking program material of interest to their members, sharpens their judgment of membership interest. To insure that their chairmen receive an invitation to each administrative committee meeting is one important reason each chapter should be sure the current officer's names are on file with the chapter activities coordinator. Chapter chairmen of record presently are:

Boston - Mr. Alan J. Budreau (617)
861-3768
Santa Clara Valley - Dr. W. R. Shreve
(415)
857-2664
Pittsburgh - Mr. B. R. McAvoy (412)
256-7267
Washington - Dr. Kenneth Davis (202)
767-3008

Persons interested in the activities of any chapter are encouraged to call the local chapter chairman directly. Each year chapters provide a series of interesting programs. This year all of the chapters were able to schedule SU's first national lecturer, Dr. Richard C. Williamson. Dr. Williamson spoke to over twenty groups providing exposure for SU in university groups and industry as well as our chapters. L. W. Kessler, SU National Lecturer for 1981-82 will provide an excellent foundation around which chapters and SU interested groups can form an outstanding program series. Groups developing their 1981-82 program series should call Mr. Kessler early at (312) 766-7088 to be assured of a spot on his speaking itinerary.

It is good news to be able to announce two chapters in formation at Irvine, California and Stonybrook, Long Island, New York. Those interested should contact their organizers.

Dr. Herbert R. Carleton
Dept. of Material Science
SUNY
Stonybrook, N.Y. 11794
(516) 246-5980

Dr. Chen S. Tsai
School of Engineering
Univ. of California Irvine
Irvine, CA 92717
(714) 833-5144

Both organizers have concluded their areas have sufficient membership interest to support chapter activities and will soon seek actual petition signatures necessary for chapter application. We will be looking forward to announcing two new chapters - perhaps as early as the Fall News Letter.

All chapter presidents and chapter organizers should have received updated copies of SU membership and the attendance for the most recent Ultrasonic Symposium for their geographic areas. Both lists should be a resource for increasing participation in chapter activities. Symposium attendees, who are not SU members, do not receive meeting notices mailed through IEEE. Separately contacting those symposium attendees may lead to some interest in local activities as well.

Chapters should be having elections for next year's officers through the spring so that the new officers will be in place and can plan next year's programs in a timely fashion. Chairmen are requested to send a copy of the new officers to the Chapter Activities Coordinator at 1243 Balfour Drive, Arnold, Maryland, 21012. He should also be called (301) 765-4027 (B) or (301) 647-0968 (H) for any means by which he might be helpful to a chapter. This will help to facilitate our liaison and assures the new chairman an invitation to the Fall Administrative Committee meeting.

Robert A. Moore
Chapter Activities
Coordinator

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BOSTON

For 80-81 the Boston Chapter, Sonics and Ultrasonics has had the following speakers:

-September, D. Hauden of Laboratoire de Physique et Metrologie des Oscillateurs du CNRS (Besancon, France) on "Analysis of Nonlinear Properties of SAWs on Quartz."

-October, T. E. Parker of Raytheon Research Division on "Long-Term Frequency Stability of Quartz SAW Devices."

-In November, we hosted the SU Symposium.

-March, R. C. Williamson (SU National Lecturer) of Lincoln Lab on "SAW Signal Processing in a Digital Age."

-April, F. H. Barber of the Harvard Medical School on "The Scanning Acoustic Microprobe" (joint meeting with Engineering in Medicine & Biology Boston Chapter).

-May, F. Massa and D. Massa of Massa Products Corp. on "Products Based on Advanced Ultrasonic Transducer Design Combined with Microprocessors."

The meetings were held at 6:00 PM in Boston area laboratories, with coffee & donuts before the meeting and dinner with the speaker afterwards.

The S.U. Boston Chapter officers were:

Alan Budreau of RADAC, Hanscom AFB, Chairman
Richard Ralston of Lincoln Lab, Vice Chairman
Thomas Parker of Raytheon Research Div.,
Secretary/Treasurer

The nominations for 81-82 are:

Richard Ralston, Chairman
Thomas Parker, Vice Chairman
James Sethares of RADC, Hanscom AFB,
Secretary/Treasurer

Alan Budreau
Chairman

* * * * *

SANTA CLARA VALLEY

In our first year of activity, our programs have been aimed at serving the diverse interests of IEEE members in this area. An interest survey was sent to the 104 SU members in the section and the 25 members who responded showed their major concerns are as follows:

- Imaging and Medical Applications (76%)
- SAW Signal Processing (56%)
- Physical Acoustics (48%)
- Acousto-optics (48%)
- Bulk Wave Devices (48%)
- Non-Destructive Evaluation (36%)
- Saw Filters (36%)

So far, our attendance at meetings has averaged about 50. We have had (or will have) the following meetings:

October, "Ultrasonic Hyperthermia of Deep-Seated Tumors," by Thomas Anderson (Hewlett-Packard) and Douglas Pounds (Stanford Medical Center).

December, "Ultrasonics Imaging at SRI," by David Wilson (Stanford Research Institute).

January, "Multi-Dimensional Hybrid Signal Processing Architecture," by Harper Whitehouse and Jim Speiser (Naval Oceans System Center).

February, "A Phased-Array Imaging System for Medical Use," by H. Edward Karrer and John D. Larson (Hewlett-Packard).

March, "Non-Destructive Testing" by Gordon Kino (Stanford University).

April, "Surface Acoustic Wave Signal Processing in a Digital Age," by Richard Williamson (MIT Lincoln Laboratory).

April, "Acousto-Optic Devices and Applications," by I.C. Chang (ITEK) and David Hecht (Xerox).

May, "Acoustic Transducer Arrays," by Charles DeSilets (Precision Acoustic Devices).

June, "Bulk Wave Resonator Devices," by John A. Kusters (Hewlett-Packard).

Chapter officers this year were William Shreve, Chairman (Hewlett-Packard); David Hecht, Vice-Chairman (Xerox); and John Larson Secretary-Treasurer (Hewlett-Packard).

W. R. Shreve
Chairman

PITTSBURGH

R. C. Williamson will speak to the Pittsburgh Chapter on Thursday, April 9. Dick will be the guest of the Westinghouse R & D Center and will address Center employees for the Interdepartmental Physics Colloquium as well as the area membership of GSU. The meeting is also sponsored by the Group on Electron Devices.

Future Chapter meetings are being planned with speakers on NDE and Medical Applications with the co-sponsorship of other interested area chapters.

B. R. McAvoy

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WASHINGTON/BALTIMORE/NORTHERN VIRGINIA

The Washington/Baltimore/Northern Virginia Chapter is pleased to report that we are still very healthy in our third year. Our policy of organizing all our meetings with joint sponsorship from other IEEE chapters has helped us sustain good meeting turnouts. In November, Dr. Anthony Mucciardi of Adaptronics, Inc., spoke about "Digital Signal Processing in Ultrasonic NDE." The meeting, which was co-sponsored by the Acoustics, Speech, and Signal Processing chapter, was held at Adaptronics and included a laboratory tour. Of particular interest was the demonstration of a computer-controlled apparatus designed to detect cracks near welds in oil pipelines. In January, Dr. Richard Williamson of Lincoln Lab delivered the SU National Lecture at a joint meeting with the Aerospace and Electronic Systems chapter. Dick's talk was excellent, and it received considerable audience response. Our third meeting, which is scheduled for May 18, will be held jointly with the Antennas and Propagation chapter and the IEEE Washington Section. The meeting will be a spring social event held at a Washington restaurant. The speaker will be Professor E.L. Titlebaum of the University of Rochester (the 1978 Ultrasonics Symposium Plenary lecturer). He will present a "technical after-dinner" level talk for members, guests, and spouses on "Echolocation Systems in Nature: Bats, Dolphins, and Humans."

Chapter officers for 1980-81 are:

Kenneth Davis NRL, Chairman
Christopher Vale, Westinghouse, Vice Chairman
Douglas MacDonald, Adaptronics, Secretary/Treasurer

K. L. Davis
Chairman

1981 ULTRASONICS SYMPOSIUM

General

The 1981 Ultrasonics Symposium will be held in Chicago at the McCormick Inn on Wednesday, October 14 through Friday October 16, 1981. The Ultrasonics Symposium will continue to emphasize the role of providing a forum for the interaction and exchange of ideas between engineers and scientists working in both applied and fundamental aspects of ultrasonics. The Symposium will be designed to cover the wide range of interests encompassed by the SU group by means of invited and contributed papers.

The Technical Programs Committee met in March and has configured a program which will provide coverage of those developments which reflect the technical coverage of those developments which reflect the technical direction of the SU group. A series of invited papers will be selected to illuminate areas of current interest and activity. Abstracts of contributed papers will be due on June 15, 1981; details will be included in the Call for Papers mailed in March.

Technical Subjects

Sessions are planned in the following areas:

AE Acoustic Emission
AM Acoustic Microscopy
ACE Acousto - Electric Effects and Devices
AO Acousto - Optic Effects and Devices
AOS Acousto - Optic Signal Processing
ABS Arrays and Beam Steering
BB Bioeffects and Biophysics
BW Bulk Wave Effects and Devices
CU Consumer Ultrasonics
DMC Defect and Material Characterization
F Ferroelectrics
IU Industrial Ultrasonics
MSW Magnetostatic Waves and Devices
MU Medical Ultrasonics
NDE Nondestructive Evaluation
O Other
PAS Photoacoustic Spectroscopy
PA Physical Acoustics
SFT SAW Filters and Transducers
SMP SAW Materials and Propagation
SRO SAW Resonators and Oscillators
SSP SAW Signal Processing
SSA SAW System Application
TFT Thin Film Acoustic Technology
TC Tissue Characterization

Student Travel Assistance

Some limited travel assistance is available to support student attendance at the 1981 Ultrasonics Symposium in Chicago. Awards will be made on a competitive basis and will provide for economy return air fare for travel to the Symposium, registration and three nights hotel accommodation (maximum \$500 per student).

To be eligible students must be registered in a degree program (graduate or undergraduate) and be interested in the ultrasonics area. Preference will be given to authors or co-authors of papers submitted for presentation at the Symposium.

Application forms can be obtained from G. W. Farnell, Dean, Faculty of Engineering, McGill University, 817 Sherbrooke Street, West, Montreal Canada H3A 2K6. (Telephone 514-392-5859).

The deadline for the submission of applications is June 15, 1981.

Further information concerning the Symposium can be obtained by contacting the Symposium Co-Chairmen:

Dr. William D. O'Brien, Jr.
Bioacoustics Research Laboratory
University of Illinois
Urbana, IL 61801
217/333-2407

Dr. Lawrence W. Kessler
Sonoscan, Inc.
530 East Green
Bensenville, IL 60106
312/766-8795

FUTURE ULTRASONIC SYMPOSIUM MEETINGS

1982 SAN DIEGO - October 27, 28 and 29 at the Town and Country Hotel

For further information, contact:

B. R. McAvoy
Westinghouse R&D Center
1310 Beulah Road
Pittsburgh, PA 15235
(412) 256-7267 or 3595

1983 ATLANTA - October 31, November 1 and 2 at the Marriott Hotel

For further information, contact:

M. Levy
Department of Physics
University of Wisconsin
Milwaukee, WI 53201
(414) 963-4474

1980 ULTRASONICS SYMPOSIUM PROCEEDINGS

This year's Proceedings was issued in two volumes due to the very ample author response. Shipments in the Continental United States and Canada were by United Parcel; overseas addresses are being handled by KLM Royal Dutch Airlines. Extra copies of the 1980 Proceedings, 80CH1602-2 may be purchased from IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. The cost is \$45 for members and \$60 for non-members.

PAPER STATISTICS
1980 ULTRASONICS SYMPOSIUM

A total of 288 abstracts were received including 21 invited. Of the 276 contributed abstracts, 2 were withdrawn, 14 abstracts were combined into 7 and 34 were rejected. The distribution of contributed abstracts according to classification was as follows:

	<u>REC'D</u>	<u>% OF TOTAL</u>	<u>REJECTED</u>
NI	39	14.7	6
PA	28	10.6	1
MI	33	12.5	6
AE	22	8.3	5
AO	18	6.8	4
BW	22	8.3	3
SR	16	6.0	2
SF	35	13.2	5
SP	16	6.0	2
SM	25	9.4	7
MSW	11	4.2	0
TOTAL	265	100	41

The surface wave area (AE + SR + SR + SP + SM) accounted for 114 abstracts, or 43% of the total.

The distribution of contributed abstracts according to country of origin was as follows:

	<u>RECEIVED</u>	<u>% OF TOTAL</u>	<u>REJECTED</u>
USA	173	65.3	26
UK	18	6.8	3
Japan	17	6.4	3
Canada	14	5.3	1
France	11	4.1	2
Germany	7	2.6	1
Israel	6	2.2	1
Italy	5	1.9	0
India	3	1.1	1
Austria	3	1.1	0
PRC	2	0.8	0
Egypt	2	0.8	2
Poland	2	0.8	1
Norway	1	0.4	0
Finland	1	0.4	0
TOTAL	265	100.0	41

H. van de Vaart, Chairman
Technical Program Committee

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NOMINATIONS WELCOMED

The various committees of the G-SU welcome suggestions from our membership for AdCom members, national lecturer and awards. If you would like to serve as a member of AdCom or know of someone you would like to have as a representative, please send this information to the nominating committee chairman, Moises Levy, Dept. of Physics, University of Wisconsin - Milwaukee, Milwaukee, WI 53201. Suggestions for national lecturer may be sent to R. A. Moore, Westinghouse Defense and Electronics Systems Center, P.O. Box 1521, MS 3608 Baltimore, MD 21203. Our Awards Chairman is R. Adler, Extel Corp., 3005 MacArthur Blvd., Northbrook, IL 60062.

SU TRANSACTIONS REPORT

The joint SU-MTT special issue on SAW applications will appear as the May 1981 issue. The guest editors, Dr. Richard Williamson and Dr. Tom Bristol, together with the Transactions editorial staff wish to express their thanks to the authors for their contributions to this special issue.

The IEEE editorial staff requests that all authors use their complete mailing address with their manuscripts in order to minimize non deliverable galley proofs and other correspondence. Although all of the transactions are now fully edited by IEEE, they wish to remind authors that proofreading of galleys and their prompt return are of utmost importance in keeping the publication schedule on time. This is especially true for foreign authors because of the mail delivery times involved.

The National Lecturer topic "Surface Acoustic Wave Signal Processing in a Digital Age" presented by Dr. Richard C. Williamson will be published in the September 1981 issue of the Transactions. This publication will become an annual event with the National Lecturer writing a paper on his topic which may also incorporate any new technical information uncovered during his lecture presentations.

Stephen Wanuga
Editor, Transactions on
Sonic & Ultrasonics

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CONGRATULATIONS TO NEW IEEE FELLOWS

Each year, the IEEE Board of Directors elevates a group of the Institute's Senior Members to the grade of Fellow. This election is a great honor because, according to the IEEE Bylaws, the Fellow grade is one of "unusual professional distinction, to be conferred upon a person of outstanding and extraordinary qualifications and experience in the fields of electrical engineering, electronics, radio, allied branches of engineering, or the related arts and sciences, who has made important individual contributions to one or more of these fields." We extend our congratulations to the following people associated with the ultrasonics area who have been elected to this prestigious group.

Arthur D. Ballato For contributions to the theory of piezoelectric crystals and frequency control.

Allen H. Meitzler For developments in ferroelectric and piezoelectric devices and materials.

John C. Munson For leadership in acoustics research and development, especially in the area of sonar signal processing.

Our Fellows Chairman, Gordon Kino and his committee welcome suggestions and nominations for this award.

A MESSAGE FROM THE DIVISION IV DIRECTOR

The seven Groups and Societies of Division IV currently enjoy active leadership in their technical areas, excellent publications, a schedule of successful meetings and symposia, and financial strength. Membership growth of the Division is at about ten percent per annum. At the three Adcom meetings I have attended so far this year I have seen the kind of responsive leadership that will lead to further improvement of our technical activities.

At the February meeting of the Technical Activities Board there was a discussion of the formation and funding of Chapters. The concern is that Chapters receive the support necessary for effective functioning and growth from the Sections and Societies. If you have any comments or suggestions on this topic please send them to me at RADC/EE, Hanscom AFB, MA. 01731.

Good financial practices are important to the success of any operation, and one problem area has been the late reporting of the finances of some conferences and meetings. TAB passed a bylaw change requiring an interim financial report within 90 days, and a final report within a year of the end of a conference.

Among the items waiting in the wings is the allocation of general and administrative (G&A) costs to the segments of the Institute. The TAB Finance Committee has been wrestling with this topic. There is not too much dispute over what these costs are: on the list are corporate expenses, accounting charges, and similar costs that have not been assigned either as direct charges or as overhead. The controversial issue is how to allocate these charges, and a commonly accepted practice (although it brought selective howls of protest) is to make them proportional to the expenses of the various entities. There will be much more debate on this topic before any formula meets with general acceptance.

Another issue of concern to TAB is the representation of the Groups, Societies, and Councils on the Board of Directors. A plan has evolved to increase the number of Divisional Directors to ten and to restructure the Divisions accordingly. The Society Presidents have been involved in this activity, and at their meeting in February, set the following goals:

1) The assignment of Societies to Divisions should be based on a commonality of technical areas of interest, and not arbitrarily to accommodate goals such as equal numbers of members per Division.

2) Alternate possibilities of having Directors-at-large or increasing the numbers of Directors in accordance with memberships should be considered.

3) The composition of the Divisions should recognize and accommodate the large range of membership numbers of the Groups, Societies and Councils, and any plan should be matched, as much as possible, to forecasts of the future IEEE composition.

This topic has been referred to the IEEE Long Range Planning Committee. Any comments you send to me will be relayed to that committee.

The year 1831 saw the discovery of electromagnetic induction by Michael Faraday and the birth of James Clerk Maxwell. This year the IEEE has prepared an exhibit to celebrate the accomplishments of these two pioneers of electromagnetism. The exhibit will make its first appearance at Electro 81 in New York City, and later at the MTT-S/AP-S Symposium in Los Angeles. The display, which is available for scheduling at other meetings, is the work of the new IEEE Center for the History of Electrical Engineering and is a precursor to the activities planned for the IEEE Centennial in 1984.

Allan C. Schell
Director, Division IV

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