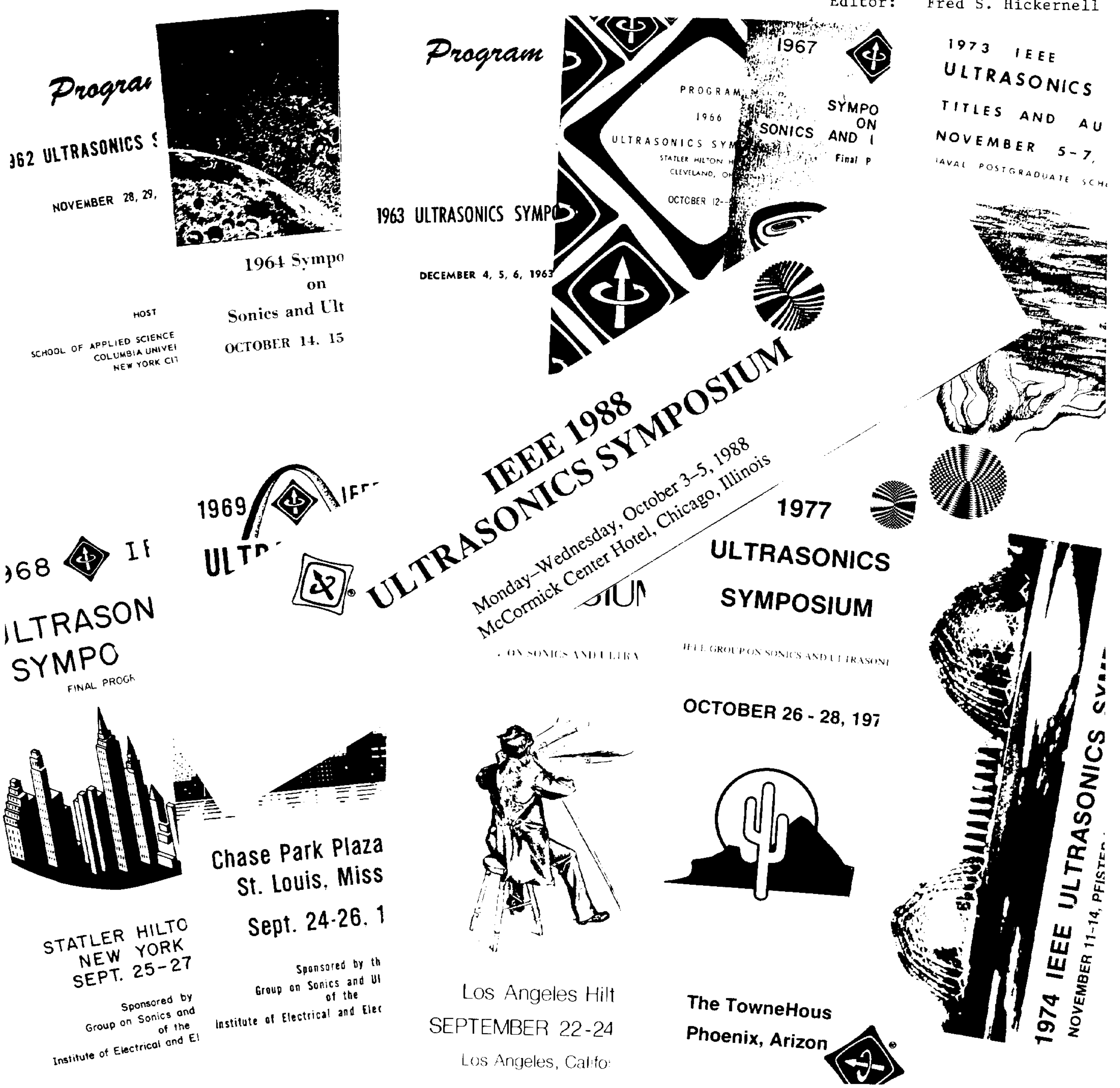
IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY NEWSLETTER

Number 6, September 1988

Editor: Fred S. Hickernell



AdCom Briefs

The first AdCom meeting for 1988 was held on February 8, 1988 at Harvey Hotel, Dallas Texas. Seventeen people attended this meeting; G. W. Farnell, the UFFC-S President called the meeting to order. He then introduced the newly elected members of AdCom; Rolf Weglein, Tom Parker, Nobuo Mikoshiba and Eric Cross. AdCom then extended their congratulations to Herman Van de Vaart, Nobuo Mikoshiba, James F. Greenleaf and Lee Solie who were elected to IEEE Fellows. AdCom will also send a note of thanks and appreciation to Bruce R. McAvoy for his outstanding service as President of the Society for the last two years.

H. Van de Vaart presented his UFFC-S Operating Financial Statement. His preliminary statements show a slight surplus. W.D. O'Brien gave the *Transactions* Report. During 1987 the Transactions published 696 pages which was close to the 700 pages. For 1988 the page budget is 800 pages. Due to heavy backlog of papers, AdCom increased the 1989 page budget to 1100 pages.

R. Moore reported on Chapters, Membership and Distinguished Lecturers. He recommended that this acitivity be called "Membership Services". The UFFC-S speaker's volunteer list will be published in the Newsletter. H. Salvo reported that UFFC-S memberships as of December 31, 1987 was 2,183, a decrease of 150 members from last year. H. Salvo is working vigorously to have drop outs reconsider. M.A. Breazeale the Distinguished Lecturer has given ten lectures in China, six lectures in Japan and five lectures in the United States.

R.H. Trancrell reported on awards. He reported that Thrygve Meeker was selected for the Achievement Award and Jean-Pierre Monchalin for the Best Paper Award. He also recommended certificates for out going AdCom members, Ex-Office members, General Symposium Chairmen, and Symposium Technical Chairmen.

G.W. Farnell had the various Ultrasonics Symposium report. T. Lukaszek's report on the 1987 Denver interim financial report was presented. It showed a net profit of about $15,000.00. W. D. O'Brien presented the 1988 Chicago Report. The call for papers and advanced registration letter have already been sent. He pointed out, this will be the first time short courses will be given, thanks to the hard work of Roger Colvin. H. Van de Vaart reported on 1989 Montreal, the hotel has been arranged, the committee is in place and budget work has started. N. Mikoshiba said he is looking into Japanese companies which owns hotels to improve our current rates for the 1990 Hawaii Symposium. D. Malocha said he has tentative agreement with Hilton Walt Disney World for 1991 Orlando Symposium.

T.E. Parker reported on the Annual Frequency Control Symposia. The 1988 Symposium was held at the Stouffer Haborplace Hotel in Baltimore, MD on June 1-3, 1988 and the 1989 Symposium will be at the Marriott City Center Hitel in Denver, CO on May 31-June 2, 1989. C.E. Land reported on Ferroelectrics. He reported on the 1988 ISAF in which UFFC-S is a cooperating sponsor. A. Ballato stated that standard activities is proceeding nicely. The piezoelective revision to IEEE Standards 176 will be out soon. The final version of the *Ultrasonics Field Parameter Measurement Guide* will be submitted to IEEE Standard Board. F.S. Hickernell reported on the Newsletter and requested inputs.

G. Farnell has asked R. White to replace G.S. Kino who requested to step down as chairman to the fellows committee. J.D. Larson the chairman of the Nomination Committee presented his slate for the coming election. The slate was unanimously approved. D. Hecht reported on "The IEEE Sponsorship Proposal for the Journal of Lightwave Technology" draft of 1/20/88. The proposal was for revising sponsorship.

The next AdCom meeting will be Sunday, October 2, 1988 at 1:00 PM in McCormick Center Hotel, Chicago, ILL.

Reynold Kagiwada
Secretary/Treasurer

Future Symposia

1989 IEEE Ultrasonics Symposium
October 4-6, 1989
Montreal, PQ Canada

For Information:

H. van de Vaart, General Chair
Allied Signal Incorporated
P.O. Box 1021 R
Morristown, NJ 07960
201/455-2482

1990 IEEE Ultrasonics Symposium
Date: December 5-7, 1990
Honolulu, Hawaii

For Information:

R.S. Kagiwada, General Co-Chair
TRW-ESG, MS M5/1007
One Space Park
Redondo Beach, CA 90278
213/535-5515

N. Mikoshiba, General Co-Chair
Research Institute Electrical Communications
Tohoku University Katahira
Sendai 980, Japan
(0222) 27-6200

1991 IEEE Ultrasonics Symposium
December, 1991
Orlando, FL.

For Information:

D. C. Malocha, General Chair
Department of Electrical Engineering
University of Central Florida
Orlando, FL 32816
305/275-2414

Also, periodically a list of meetings sponsored by the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society is published in the IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control.

1988 Ultrasonics Symposium

The IEEE Ultrasonics, Ferroelectrics and Frequency Control Society presents:

1) Seven continuing education SHORT COURSES Sunday, October 2, 1988.

2) IEEE 1988 ULTRASONICS SYMPOSIUM Monday-Wednesday, October 3-5, 1988

at the McCormick Center Hotel, 23rd and Lake Shore Drive, Chicago, Illinois 60616, (312) 791-1900.

The McCormick Center Hotel is near the Field Museum of Natural History, Shedd Aquarium, Adler Planetarium, Art Institute of Chicago, Museum of Science and Industry, Soldier Field, the Loop and the Magnificent Mile with its famous shops, galleries and restaurants.

A year-around, heated swimming pool and a complete health club with steam room, sauna and massage are available to guests. A complimentary limousine service to and from the downtown and Loop area is routinely scheduled.

SHORT COURSES REGISTRATION AND FEES

The following seven continuing education SHORT COURSES are scheduled for Sunday, October 2, 1988:

Course 1 (8 am - Noon)

Fundamentals of Elastic Waves in Crystals

Bert A. Auld

Course 2 (1:00 - 5:00 pm)

Theory and Design of SAW Transducers and Filters

Donald C. Malocha

Course 3 (1:00 - 5:00 pm)

Bulk Wave Resonators and Transducers

Arthur Ballato

Course 4 (6:00 - 10:00 pm)

Nondestructive Biological System Evaluation

James F. Greenleaf

Course 5 (6:00 - 10:00 pm)

Acoustic Sensors

Richard M. White

Course 6 (6:00 - 10:00 pm)

Acousto-Optic Devices and Applications

I. C. Chang

Course 7 (6:00 - 10:00 pm)

Applications of SAW Devices

Clinton S. Hartmann

Registration for each short course is on a first come, first serve basis. Advance registration will be accepted with or without the fee up to the time of the Short Courses. However, there is a $10 discount per course if the payment is received in advance. Attendance for each course is limited and the courses may be closed prior to October 2, 1988. We reserve the right to cancel any course due to insufficient registration. Short course fees for each course are as follows.

	Payment in Advance	Payment at Short Course
IEEE Member	$100.00	$110.00
Nonmember	$115.00	$125.00
Student	$ 40.00	$ 50.00

SYMPOSIUM REGISTRATION AND FEES

All Symposium participants and their guests must register and receive badges. The registration fee covers all technical sessions, the Monday evening reception, and (for Members and Non-Members) the cost of one copy of the 1988 Ultrasonics Symposium Proceedings. Registration fees are as follows:

	Payment in Advance	Payment at Symposium
IEEE Member	$220.00	$250.00
Non-Member	$280.00	$310.00
Student	$ 25.00	$ 40.00
Guest	$ 5.00	$ 10.00

There will be no one-day registration at the Symposium.

POSTER SESSIONS

Poster sessions have been used over the past fourteen years at the Symposium and have provided a unique and interesting forum of technical exchange between the author and the participants. For those unfamiliar with the concept of a poster session, reference is made to Science, 28 June 1974. A large meeting room is filled with bulletin boards (4 feet by 8 feet - provided by the Symposium) on which the participants place graphs, diagrams, data, pictures and a small amount of text to illustrate the main points of their presentation. The participants remain with the display for a period of 1½ hours (1:30 pm - 3:00 pm) on Monday, October 3, to expand on the material and answer questions. Symposium participants can wander through the area or go directly to papers that interest them. No other sessions are held during this time. The afternoon break of coffee and soft drinks will be served in the poster session room. The set-up set-up period is provided from 10:30 am and the break-down period is from 4 to 6 pm.

The poster session topics are:

Session PA:	Piezoelectric Materials and Transducers
Session PB:	Demonstration of Clinical Ultrasound Equipment.
Session PC:	Ultrasonic Systems, Equipment and Techniques.
Session PD:	Selected Topics
Session PE:	SAW Devices.

Symposium Information

INVITED PAPERS

The Ultrasonics Symposium Technical Program Committee has the following invited papers to highlight new, emerging and outstanding technical aspects of mechanical wave phenomena:

Acoustic Microscopy Applied to the Real World.

High Temperature Superconductivity: Novel Concepts and Fundamental Issues.

Gigahertz Ultrasound in the High Temperature Superconductor $YBa_2 Cu_3 O_7$.

Correlation Between Ultrasonic Anomalies and Other Physical Properties of High T_c Superconductors.

Ultrasonic Properties of Oriented Ceramic High T_c Superconductors.

Heterojunction Acoustic Charge Transport Technology.

New Piezoelectric and Electrostrictive Materials for Sonic and Ultrasonic Applications.

PZT Inkjet Applications, Technology, New Devices.

Detection of Ultrafine Particles in Ultrapure Water by Laser-Induced Breakdown Effect.

Finite Element Analysis of Piezoelectric Transducers.

Ultrasonic Sensors for Control of Carbon-Carbon-Pyrolysis.

A Comparison of Superconductive and Surface Acoustic Wave (SAW) Signal Processing.

Ultrasonic Backscatter Microscopy.

Methods of Computer Aided Analysis and Design for SAW.

Intravascular Imaging with Ultrasound.

Current Applications and Future Trends for SAW in Asia.

Aberration Correction without the Need for a Beacon Signal.

On-line Statistical Process Control with NDS and Computers.

Nonlinear Behaviour of Sound and its Application to Solution Formation.

Photothermal Measurement of Adhesion.

Ultrasonic Detection of Single Particles.

Current Applications and Future Trends for SAW in Europe.

Present Status of Ultrasound Hyperthermia.

Micro-Scale Mechanics for Sensors and Actuators.

Utilization of Ultrasonic NDE to Modify Product Designs to Guarantee Inspectability.

Demonstration of Clinical Ultrasound Equipment - Hewlett-Packard.

Demonstration of Clinical Ultrasound Equipment - Acuson.

1988 IEEE ULTRASONICS SYMPOSIUM PROCEEDINGS

A soft-cover Symposium Proceedings will be mailed to all paid attendees except students and guests. A hard-cover Proceedings may be obtained instead of a soft-cover Proceedings for an additional $25.

Extra copies of the Symposium Proceedings may be ordered at the Symposium Registration Desk by conference attendees at the following prices:

Soft-cover*	$50.00
Hard-cover*	$75.00

* For overseas mailing addresses, an additional $20.00 is required to partially pay for air freight mailing costs of each additional copy of the proceedings.

EXHIBITS

The 1988 Ultrasonics Exhibition will be held on the second floor of the McCormick Center Hotel, conveniently adjacent to the Registration Desk. The exhibit hours are:

Monday, October 3, 1988	10 am - 5 pm
Tuesday, October 4, 1988	9 am - 5 pm
Wednesday, October 5, 1988 ...	9 am - Noon

SOCIAL PROGRAMS

GUESTS' CONTINENTAL BREAKFAST: A guests' get-together will be held Monday, Tuesday, and Wednesday mornings at 8:00 am, with a continental breakfast served. The location of the breakfast will be made available at the time of registration. Guests' registration badge must be worn.

DAYTIME TOURS

Two tours are scheduled for all interested parties.

Monday: Tour 1 (9:30 am) CHICAGO HIGHLIGHTS $35.00

The "Chicago Experience"

An Adventure of Past and Present Chicago!

At the SEARS TOWER, a short film and display describing the construction of the world's tallest building create a mood for the one minute elevator ride to its 103rd floor. Here, from the observation balcony, visitors have a breathtaking view of the city.

Next, the tour travels to the unique art pieces by Picasso, Chagall, Calder, Miro, Agam, and Nevelson. Tour participants can walk around these imaginative and exciting creations gracing the lobbies and plazas of the newest buildings in the Loop area. As the bus moves from artwork to artwork, the tour director entertains with fascinating facts of history and architecture which have made Chicago so colorful.

Symposium Information

The bus ride continues as this introduction to Chicago includes seeing - the skyline from Meigs Peninsula - the stately buildings of the University of Chicago campus - the elegant brownstone houses on Astor Street near Lincoln Park - the panorama of Lake Michigan from the Outer Drive - that "Great Street," State Street, - and - Michigan Avenue's Magnificent Mile. The vitality of the city can be felt by all on the "Chicago Experience" tour.

Tour will last about 5-6 hours and includes lunch.

Tuesday: Tour 2 (9:30 am) FRANK LLOYD WRIGHT'S OAK PARK $35.00

Just a short ride takes the tour participants to the historic village of Oak Park! In Oak Park and the village of River Forest next door are thirty-two homes designed by a true American genius, Frank Lloyd Wright, the father of the Prairie School of Architecture.

The tour bus moves along the lovely old fashioned street of these quiet villages and reveals the evolution of Wright's unique style and brilliant architectural concepts.

Inside Unity Temple, built in 1908, tour participants witness the first major break with traditional church design. Its contemporary lines are thought provoking.

The final stop will be in Wright's own home and studio just recently fully restored with pictures, furniture and memorabilia. It is easy to get a sense of the lifestyle of Wright and his family in the early 1900's from this re-created historical home.

Tour will last about 5-6 hours and includes lunch.

Wednesday: On your own.

You are offered two suggestions for Wednesday. Meet at the guests' Continental Breakfast and make arrangements for the day. The McCormick Center Hotel provides a complimentary bus service hourly to and from downtown Chicago and the Loop.

ART INSTITUTE, CULTURAL CENTER

The largest collection of Impressionist art is one of the many aspects fo this great art museum. The Art Institute also presents the Thorne Miniature Rooms which trace the history of interior design in a most intriguing manner: the restored Stock Exchange Room with Frank Lloyd Wright touches that make it a fabulous walk through the past; and the contemporary galleries featuring the finest in modern art.

Designed by the same architects and featuring what many consider to be the most beautiful room in the country, the Cultural Center is a must-see stop. Designed in detail by Tiffany, it contains the exquisite Tiffany dome and gorgeous light fixtures all set in the fabulous mosaics. This room is truly breathtaking.

The Art of Paul Gaugin will present (September 7 - December 10, 1988), for the first time, a comprehensive exhibition of Gaugin's greatest masterpieces of paintings, sculpture, ceramics, prints and drawings from collections around the world. During the past twenty years Gaugin's life and work have been extensively studied and written about, creating a context that permits the re-evaluation of Gaguin's art and makes this exhibition possible. The exhibition was co-organized by the National Gallery of Art, (where the exhibit will open in spring, 1988), The Art Institute of Chicago, and the Reunion des Musess Nationaux in Paris. It will be shown at the Musee D'Orsay after closing in Chicago. The Art of Paul Gaugin will be the first special exhibition to be shown in the Art Institute's new south building, which opens to the public in the fall of 1988.

NORTH SHORE SUBURBS, LONG GROVE, BAHAI HOUSE OF WORSHIP

Nothing is lovelier than a drive along the shore of Lake Michigan through the North Shore suburbs where some of the most beautiful homes in the midwest are found.

View the campus of Northwestern University and its marvelous collection of gothic and contemporary buildings that make it such a very attractive campus.

A stop at that architecturally splendid Bahai House of Worship affords a visit to the sanctuary and time to walk throught he lovely gardens surrounding this magnificent structure.

Long Grove, the town that time forgot, offers shops that make shopping great fun. Antiques, boutiques, ethnic shops and intriguing handcrafted items make this the kind of day that women on a holiday adore.

Chicago, the heart of Mid-America, has attracted some of the finest restaurants and chefs of every nationality. Whether you are a fancier of international cuisine or strictly a beef and potato devotee, prepare yourself for an endless round of pleasure in Chicago's fine restaurants and dining rooms.

Chicago and environs offer a year-round variety of drama and musicals featuring starts from Broadway, Hollywood, radio and TV. There are Downtown Theaters, Cabaret Theaters, Dinner Theaters, Community and College Theaters.

Shopping in Chicago is supreme. Shop on - State Street - North Michigan Avenue's Magnificent Mile. Shop at - Old Town - New Town - Water Tower Place. Shop in - Chicago's spectacular suburban shopping malls which include Woodfield, the world's largest enclosed regional shopping center.

EVENING SOCIAL EVENTS

Two evening events are scheduled for all interested parties.

Monday: Social Gathering (6:00 pm - 7:30 pm)

Enjoy an excellent opportunity to meet your friends and colleagues at the cash bar reception to be held in Room 6 on the second floor of McCormick Center Hotel. Appetizers will be served to accompany the good conversation. The social will end in time for you to plan dinner at one of the famous Chicago restaurants.

Tuesday: Second City, Current Review (6:15 pm - 11 pm) $40.00

Transportation is provided to the exciting near north side of Chicago. There we enjoy notorious Chicago-style pizza at Ranalli's, one of Chicago's most popular pizzarias. After dinner we will attend Chicago's Improvisational Theater - Second City where we enjoy dessert along with the show.

Symposium Committee

General Chair

WILLIAM D. O'BRIEN JR.

WIlliam D. O'Brien, Jr. was born in Chicago, IL, on July 19, 1942. He received the B.S., M.S., and Ph.D. degrees from the University of Illinois at Urbana-Champaign in 1966, 1968, and 1970, respectively.

From 1971-1975 he was with the Bureau of Radiological Health (currently the Center for Devices and Radiological Health) of the U.S. Food and Drug Administration, where he was the program project officer for the ultrasonic bioeffects area. Since 1975, he has been at the University of Illinois where he is a Professor of Electrical and Computer Engineering and of Bioengineering, College of Engineering, and Professor of Bioengineering, College of Medicine.

His research interest involves the many areas of ultrasound-tissue interaction including spectroscopy, risk assessment, biological effects, tissue characterization, dosimetry, blood flow measurements and acoustic microscopy, for which he has published over 90 papers. He is Editor-in-Chief of the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.

Dr. O'Brien is a fellow of the Acoustical Society of America and the American Institute of Ultrasound in Medicine. He was the recipient of an IEEE Centennial Medal (1984) and the AIUM Presidential Recognition Award (1985). He was President (1982-1983) of the IEEE Sonics and Ultrasonics Group (currently the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society), Co-Chair of the 1981 IEEE Ultrasonics Symposium and General Chairman of the 1988 IEEE Ultrasonics Symposium. Within AIUM he was chairman (1979-1981) of its Bioeffects Committee, a member of the Board of Governors (1979-1985) and the AIUM Treasurer (1982-1985). He is currently AIUM's President (1988-1991). He is on the Editorial Boards of Journal of Ultrasound in Medicine, Journal of Cardiovascular Ultrasonography, and Journal of Diagnostic Medical Sonography.

Technical Chair

JAN BROWN

Jan Brown was born in Wyoming and grew up in the Rocky Mountains of Utah, Montana, and Washington. She was educated in St. Louis, MO, at Washington University where she earned her A.B., A.M. and Ph.D. degrees in Physics in 1972, 1974, and 1978, respectively.

From 1978-1984 she was a member of the professional staff at Schlumberger-Doll Research in Ridgefield, CT, where she was primarily involved in investigations of materials, devices, and techniques for pressure and temperature measurements in extreme conditions. Since joining Fisher Controls in Austin, TX, in 1984, she has continued materials and sensor research and applications including development of thin films for arduous applications, and sensor materials research for pressure, temperature, flow, pH and liquid level measurements.

Jan has been an elected member of the GSU Administrative Committee (1984-1986), a member of the Ultrasonics Symposium Technical Program Committee (1980-Present), a member of the Frequency Control Symposium Technical Program Committee (1984-Present), and is Technical Chair of the 1987 and 1988 IEEE Ultrasonics Symposia. Currently, she is Associate Editor for Materials for the IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control as well as Vice-President of the UFFC Society. She is a member of the American Physical Society and of Sigma XI.

Jan enjoys the Hill Country of Central Texas, outdoor recreation, woodworking, reading and UT Women's Volleyball and Basketball.

Symposium Committee

Local Arrangements

DONALD E. YUHAS

Donald E. Yuhas received his B.A. in physics from Northwestern University in 1970 and his Physics Ph.D. in 1974 from Washington University, St. Louis. From 1974 to 1976 he was a National Institute of Health post doctoral fellow where his research involved medical applications of ultrasound.

In 1976 Don joined Sonoscan Inc. where he became Vice-President and directed the Acoustic Microscopy Applications Laboratory. In 1982 he joined Magnaflux Corporation and carried out research in several areas including X-ray imaging, ultrasonics, and machine vision.

In 1985 Don took a position, directing the Engineering Science Group at Allied-Signal's Engineered Materials Research Center in Des Plaines, IL. His present research interests include development of nondestructive measurement methods for advanced composites. His group has active efforts in composite fabrication, failure analysis, engineering modeling and mechanical testing.

Don is a member of the Institute of Electrical and Electronic Engineers (IEEE), American Society for Non-Destructive Testing (ASNT), and the Society for the Advancement of Material and Process Engineering. He has served as steering committee chairman for the Transactions on Medical Imaging.

Don, his wife and daughter reside in the suburbs of Chicago. He is active in community programs and is particularly proud of the 1988 League Champion Glen Ellyn Girls Ponytail Softball Team which he coached.

Proceedings Editor

BRUCE R. McAVOY

Bruce McAvoy has been the Editor and formerly the Co-editor with John de Klerk of the Ultrasonics Symposium Proceedings since 1976. He is currently an Advisory Scientist in Microwave Acoustics at the Westinghouse R&D Center in Pittsburgh, PA, having been active in the area of SAW and bulk mode devices since 1972. He has published over 50 papers in the microwave field concerning effects in bulk and junction semiconductors in addition to microwave acoustics. Currently, his work includes new designs and processing techniques for microwave bulk mode delay lines, high overtone bulk mode resonators and various SAW devices. He holds 9 patents in these areas with several pending.

Bruce has served as the Meetings Chairman of the Group from 1975 to 1981 and was General Chairman of the 1982 Ultrasonics Symposium in San Diego. He has served two terms as Vice President of the Group on Sonics and Ultrasonics and as President of the Ultrasonics, Ferroelectrics and Frequency Control Society. He has been a member of the Finance Committee and Meetings Committee of the Technical Activities Board and he currently represents this Board on the Defense R&D Committee.

* * * * * * * * * *

Happy Anniversary UFFC-S

Notes from the Technical Program Committee

The purpose of the Technical Program Committee is to set the theme and format of the Ultrasonics Symposium. They accomplish this by selecting and soliciting invited papers, judging and selecting contributed papers, and finally, organizing all the papers in symposium sessions. The committee meets twice each year to carry out this process.

This years committee consists of 83 UFFC members representing industry (48%), government (19%) and universities (33%). Nine of the committee members are from outside the U.S. including Japan, France, West Germany, The Netherlands, and Canada.

For ease of evaluating the papers in all the diverse technical areas represented in the Ultrasonics Symposium, the committee is divided into four working groups with a Vice-Chair of each group.

Group 1:	Medical Ultrasonics	Jim Greenleaf
Group 2:	NDE and Sensors	Gerry Blessing
Group 3:	Physical Acoustics	Art Ballato
Group 4:	SAW	Gary Montress

The Second Technical Program Committee Meeting was held in Chicago July 8 and 9. The committee reviewed 292 papers from 21 countries and 24 states of the U.S. The final program which was put together consists of 44 technical sessions including 4 regular poster sessions and one session demonstrating clinical ultrasound equipment. Of the 252 papers accepted 46% are from outside the U.S. including 27 papers from Japan.

The committee is excited about the strnegth of the papers in this years symposium. One particular highlight of the symposium will be the sessions on Ultrasonic Investigations of High Temperature Spuerconductors. The following are selected comments about some of the sessions for the IEEE 1988 Ultrasonics Symposium.

- Medical Ultrasonics
  - Several manufacturers of clinical imaging instruments will demonstrate the imaging, doppler, and flow mapping methods in use today.
  - Non-doppler techniques of blood flow measuring flow normal to a sound beam will be described.
  - Topics dealing with phase aberrations resulting from sound propagation in innomogeneous tissue include limits imposed on conventional focusing and methods to achieve quantitative measurements and reduce speckle.
  - A review of finite element analysis of acoustical radiators will be followed by papers on arrays and beamsteering.
  - Current topics in Medical Imaging including tomographic imaging of bone and its surrounding tissue, imaging based on catheter tip transducers for use inside blood vessels and volume imaging will be presented.
  - Additional topics in the areas of hyperthermia, biophysics, and piezoelectric materials are included in the program.

- NDE and Sensors
  - Advances in the art of ultrasonic sensing are being enhanced by peripheral but complementary developments in areas such as fiber optics and nueral networks. Examples which include some useful and novel sensor applications in liquid and gaseous media will be presented.
  - Piezoelectric materials are being combined with other structural materials to make electrostatic motors which are compact and replace electromagnetic motors for some applications. These will be highlighted along with composite construction design methods to produce new and more efficient transducers for ultrasonic coupling.
  - Topics in process monitoring and control will include measurements on red-hot steel, and coal slurries in pipelines, as well as applications of artificial intelligence.
  - Materials evaluated using NDE techniques will address alloys, multilayered structures, composites, and high temperature superconductors.
  - Methods of acoustic microscopy will be compared and applied to practical problems in "real world", industrial environments. The two sessions on AM will provide a broad description of the field and will be especially beneficial to newcomers.

Technical Program Committee

- SAW and microscale mechanical devices are finding useful applications for sensing liquids, gases, electric fields, force, pressure, position, flow and for generating mechanical actuation on a microscopic level. This new development in ultrasonics technology is exciting, and promises a whole new class of electronic systems.

- Physical Acoustics

  - Two sessions are scheduled for ultrasonics in high temperature superconductors including such topics as Flux Lattices, Gigahertz Propagation, Attenuation, Microsctructure and correlations with other superconducting properties. A discussion of high temperature superconductors and their applications will also be presented.

  - Several sessions on resontors will include such topics as nonlinearities, soliton formation, effects of acceleration, vibration, noise and surface contamination on performance, multilayer superlattice transducers, thin film resonators, and modeling techniques.

  - Acoustic-optic imaging, filtering, and signal processing devices will be presented. Applications of AO devices will be discussed including imaging, spectrum analysis, optical switching, and phase shifting.

  - Using photothermal techniques the results of the measurement of the adhesion of layers and micro-defects in semiconductors will be described. Other photothermal topics will include pulsed photothermal spectroscopy, acoustic detection of subatomic particles, and measurement techniques.

  - The design and principles of new piezoelectric printing devices will be covered as well as comparisons to other techniques currently in use.

- Surface Acoustic Waves

  - Topics in SAW signal processing will include programmable tapped delay line devices and their applications, monolithic and hybrid device configurations using GaAs and silicon, heterojunction acoustic charge transfer technology, dispersive delay lines with applications in spectral analysis and radar pulse compression systems, and a comparison of SAW and superconducting signal processing devices.

  - Computer aided analysis and design of SAW filters will be presented as well as applications of SAW resonators and filters.

  - A session on SAW materials and propagation will include a model for propagation effects in chirped slanted SAW devices and a model for metal strip SAW waveguides yielding better agreement with measurement.

  - A discussion of the SAW device market in Asia and in Europe will be included.

  - A novel cochlear prosthesis without wires and tubes utilizing a SAW filter bank will be presented.

We hope you will be as excited about this year's symposium as we are. We look forward to seeing you in Chicago October 2-5, 1988.

On behalf of the TPC

Jan Brown
Technical Chair

* * * * * * * * * * * * * * *

HAPPY ANNIVERSARY UFFC-S
35 YEARS OLD
AND STILL SOUNDING OFF

Technical Program Committee

Group 1: Greenleaf throws a kiss to the photographer

Group 1: Smith signals "Steady as she goes".

Group 1: "It's got to be here somewhere".

Group 2: "Now if we use the right hand rule Gerry..."

Group 2: "OK everybody find paper 1047".

Group 3: Nice tie and coat combination Art.

Group 3: "Maybe if we all get down on our knees..."

Group 3: "Sometimes if you scratch it helps".

Group 4: "Just a simple hello or hand shake would have been enough".

Group 4: "Now if you guys can see it my way...."

O'Brien and Yuhas set up the Social Program.

"It's been a long day".

Conference on Coatings and Sensors

The International Conference on Coatings and Sensors is to be held May 1989 at Penn State. The following information is particulars on this conference.

Name: INTERNATIONAL CONFERENCE ON COATINGS AND SENSORS for Acoustic and Electromagnetic/Optical Applications.

Place: Pennsylvania State University

Date: May 9-11, 1989

Submission of Abstracts: By October 1, 1988

Contact: Professor Vijay K. Varadan, Dept. of Eng. Science & Mechanics, 227 Hammond Building, University Park, PA 16802 (USA) (814) 865-2410

Frequency Control Symposium

The 42nd Annual Symposium on Frequency Control was held on June 1-3, 1988 at the Stouffer Harbor Place Hotel, Baltimore, MD. The 364 people attending, of which 68 were from outside of the U.S. and 21 were from academic institutions, were enlightened by 86 technical presentations and enriched by the pleasant ambiance of the hotel and the Inner Harbor area.

The social highlight of the Symposium was a dinner cruise in Baltimore Harbor on the cruise ship, the Bay Lady. A capacity crowd of 200 enjoyed a buffet dinner, good entertainment and a view of historic Fort McHenry.

This years award winners were Baldwin Sawyer - Cady Award, Gernot Winkler - Rabi Award, and Charles Adams - Sawyer Award.

The proceedings can be ordered from the IEEE, 445 Hoes Lane, Piscataway, NJ 08854. The cost is $59.00 and the document number is 88CH2588-2. The pictures on the accompanying page were taken at the Symposium.

Tentative After 1990

IEEE ULTRASONICS, FERROELECTRICS AND FREQUENCY CONTROL SOCIETY

FORTHCOMING FREQUENCY CONTROL SYMPOSIA

Year	Dates	City	Hotel	General Chairman	Tech. Prog. Chairman	Local Arrange-ments Chairman	Comments
1988	Jun 1-3	Baltimore	Stouffer Harbor Place	J. Vig	T. Meeker	M. Driscoll	
1989	May 31 - June 2	Denver	Marriott City Center	D. Allan	T. Meeker	S. Stein	NBS Seminars to follow
1990	May 30 - June 1	Boston (Tentative)	Park Plaza	D. Allan	T. Parker	M. Garvey	
1991	June ?	San Francisco area (Tentative)		R. Filler	T. Parker	R. Brey	
1992	June ?			R. Filler			
1993	June ?						

Frequency Control Symposium

The registration desk.

Helmut Hellwig, Rabi Award presenter; Gernot Winkler, Rabi Award recipient.

John A. Kusters, Sawyer Award presenter; Charles A. Adams, Sawyer Award recipient.

Baldwin Sawyer, Cady Award recipient; Arthur Ballato, Cady Award presenter.

Charles A. Adams, Sawyer Award; Gernot Winkler, Rabi Award; Baldwin Sawyer, Cady Award.

Committee and award recipients; John Vig, General Chairman far left, Thrygve Meeker, Technical Program Chairman far right.

Membership Report

As of May 31, 1988, the Ultrasonics, Ferroelectrics, and Frequency Control Society consisted of 1822 members. This membership is broken down as follows:

83	Fellows
233	Senior Members
1245	Members
105	Associates
149	Students
7	Affiliates

Members are urged to help recruit persons interested in the ultrasonics, ferroelectrics and frequency control areas. UFFC membership materials can be obtained from:

Dr. Harry L. Salvo, Jr.
333 Gordon Avenue
Severna Park, MD 21146

We wish to welcome the following new members who joined the society during the first half of 1988.

Adelberg, Brad
Aharoni, Abraham
Allan, David W.
Ampt, Peter I.
Azimi, Masud E.
Baghai-Wadji, Alireza
Bailey, Dana S.
Bailey, Jeffery C.
Baltaji, Fawaz S.
Barta, Daniel J.
Barthe, Peter G.
Basile, Mathew A.
Beizis, Socrates
Belleval, Jean F.
Bennett, Kim
Bertrand, Gaborit
Bloxham, Laurence H.
Boetzkes, Peter C.
Bolino, Zenon M.
Bradley, Byron L.
Breccia, Stefano
Brodeur, Pierre
Burton, David A.
Calabrese, Paul R.
Canals-Riera, F. J.
Carrica, Oscar
Chan, King-Shan
Chini, Ahmad
Cohen, Anna F.
Colla, Gregory A.
Costa, Eduardo T.
Cox, Duncan B. (Jr.)
Daft, Chris M.
Dallago, Enrico
Da Silva, Jorge H.
Davis, Louis B. (Jr.)
De Belleval, Jean F.
Deel, Elmer L. (Jr.)
Delsing, Jerker
Dexter, Charles E.
Drenthen, Jan G.
Dolby, Thomas L.
Duve, Jeff W.
Edwards, Charles A. (II)
Emeloff, Micheal R.
English, Thomas C.
Emmons, Donald A.
Erickson, John J.
Factor, Jeffery L.
Feld, James A.
Fiddy, Michael A.
Fiorillo, Antonino S.
Fischer, Michael J.
Fooks, Elik I.
Gesell, Leslie H.
Giffard, Robin P.
Giura, Marco D.
Glass, Alastair M.
Glasser, H.
Greenhall, Charles A.
Greer, James A.
Haertling, Gene H.
Hall, Ronald A.
Hanley, Clark W.
Hao, Chang Chung
Hay, N.
Herfel, Helmut H.
Hoffa,Michael D.
Hofmeister, Joel T.
Hojsak, Peter J.
Holland, Scott K.
Hotz, David F.
Hugo, Herman P. M.
Hwang, Juin-Jet
Jacobs, Wallace K.
Jarosz, Boguslaw J.
Jen, Shen
Kaczorowski, Edward M.
Katzka, Patrick J.
Keim, John E.
Kenny, Desmond W.
Keros, George W.
Kibblewhite, Ian E.
Kim, Whan W.
Kitney, Richard I.
Knights, John E.
Kobayashi, Kouji
Korovesis, Pete C.
Koymen, Hayrettin
Knoll.Alois C.
Krishna, Suresh
Kugler, Felix
Kuramochi, Naimu
Kwapien, Donald J.
Kwon, Young-Heon
Lake, John A.
Leach, Mark D.
Lee, Dong-Wook
Lee, Jaehyun
Lehtola, Patricia J.
Letourneau, Jack L.
Lin, Wei Jyh
Ma, Kui L.
Masum, Mehdi
Matthiesen, Duane J.
McEnroe, Martin P.
Medero, Maria A.
Merrill, Robert A.
Merse, Tim G.
Minich, Irene B.
Misura, James B.
Modarreshasemy, Mahmood
Moore, Thomas M.
Moraveji, Farhood
Moreno, Victor M.
Musso, Giorgio
Nagle, Daniel T.
Ninic, Nebojsa
Novak, Jurica
Palmieri, Robert A.
Pao, Tsang L.
Park, Timothy D.
Peraud, Ernesto J.
Pfundner, Peter A.
Pinto, Robert J.
Prost, Leon
Rahnavard, Mohammad H.
Ratanathammaphan, S.
Rector, Robert E.
Reynolds, Rollin K.
Riewruja, Wanchai
Sakurai, Kikukazu
Salathe, Willi A.
Sanghera, Jas
Schronen, Micheal B.
Sellars, Linda M.
Selwyn, Michael J.
Shima, Takeshi
Siegel, Donald J.
Smiley, Richard F.
Song, Hyeonjoo
Sopko, Joseph A.
Sorenson, James A.
Sosrodjojo, Peter S.
Stage, Bjarne
Strutz, William F.
Sume, Ain
Sundin, Gunnar
Sutanto, Djoko
Sutardja, Pantas
Sylvain, Ronald W.
Takahashi, Sumio
Tanaka, Mitsuru
Tchaplia, Ilya
Thavathurai, Helena A.
Tucker, Gerald C.
Tuli, Samir K.
Vandrunen, Micheal J.
Van Rooyen, Eugene
Voss, Peter H.
Warren, John M.
Wasno, Gregory
Waszak, John P.
Weigel, Robert
Wenzel, Stuart W.
Wilcox, Gary W.
Wilhjelm, Jens E.
Winters, Ronald K.
Wu, Junru
Wuchinich, David
Yamada, Hiroaki
Yannoni, Nicholas F.
Yaron, Nikolai I.
Zanchi, Pjer
Zeroug, Smaine
Zhou, Meng Qi
Zook, David F.
Zoufonoun, Ramin

Membership Services Committee

Though you may not realize it, the UFFC-Society has decreased slightly in membership for the past two or three years. Prior to that the society was increasing very gradually in membership. Why this trend reversal when the society is, in fact, taking on greater scope than ever before? We don't have all the answers. We do have some guesses which we will share with you. Also, we are beginning to inquire of people who drop (do not renew) membership in the society while maintaining IEEE membership (the IEE queries people dropping IEEE membership). For one thing the UFFC-S is not the embodiment of a single central technology but is, rather, in a grouping of several, at least four, technology areas which have grown of application of ultrasonic phenomenon. I can immediately bring to mind medical ultrasound, industrial applications, SAW, frequency control and ferroelectrics. In addition, there is, of course, the more basic study of ultrasonics phenomena frequently referred to as physical acoustics.

As a result of the very broad diversity of interest, few of us are deeply knowledgeable of the subtle trends in all the potential areas of interest. With my association with SAW and frequency control, I can observe trends in these areas. Two important trends in these areas relative to membership seem to be important: (a) we have yet to receive applications in significant numbers from frequency control oriented people since taking on the Frequency Control Symposium, (b) with the maturing of the SAW areas, we have begun losing a significant number of people with SAW interests. These trends alone suggest an intensified membership effort in the newer areas of UFFC-S technology coverage. They also suggest reconsidering a coverage of maturing areas, for example, should we extend our SAW coverage further into SAW application technology than we have and try to pick up a greater percentage of engineers from the SAW user community. Are other areas of society technology scope maturing in the same sense as the SAW such that membership might be leaving? We should be asking these questions and invite your response.

The Membership Service Committee through its membership development and chapter support efforts is going to invigorate its effort to improve our membership coverage of people interested in Ferroelectrics and Frequency Control. We also feel the Society should debate the question of extending its coverage with maturing technologies such as SAW. Does it want to see greater transactions and symposium coverage of SAW applications, i.e., such as systems architectures using SAWs and signal processing? Questions like this need to be debated so that our membership efforts can be most effectively focus. Again, we would appreciate your comments.

R.A. Moore
Chairman
Membership Services

Letters from the Other Side

With the kind permission of our Editor I would like, from time to time, to share with you some topics not normally found in these pages. Having not been elected to the Board of Directors representing Division IX, I landed a job on the IEEE Defense R&D Committee. It meets three to four times a year in Washington, D.C. One of its principle activities is the preparation of position papers with attendant testimony before committees of Congress. To date, I have attended one meeting and already have gotten the sense that the technical side of the house (us) is viewed as being at some distance: this is a USAB (United States Activities) related committee. I have no immediate quarrel with this attitude in that most trafficking with the Congress has to do with R&D within the U.S. Many of our technical societies have international scope with members known around the world. That makes it very difficult to take a position that suits everyone. But the nagging truth is we have to do more and more in this area. I will tell you why.

As of now there are about five million farmers in the United States. There are four and a half million of us! That is four and a half million people employed in various endeavors in science and engineering. But with little exaggeration I believe that our present clout with our government is on a par with that of a regional florist's association. How else would the tax reform law require taxation of University Fellowship income and work-while-learning income or reduce tax credits for R&D by 20% while Japan and West germany have <u>increased</u> theirs by 25 to 30%? Clearly some of this activity is at cross purposes and I think most of us would agree should be rectified.

If you have any comments or inputs, I would be glad to hear from you.

Bruce McAvoy
Westinghouse R&D Center
1310 Beulah Road
Pittsburgh, PA 15235

Financial Assistance for Chapters

All chapters chairmen are reminded that financial assistance of $250.00 is available <u>every year</u> for UFFCS Chapter Activities. This money can be used to enhance the chapter activities, paying for speakers who cannot afford travel, buying audio visual equipment etc. for your chapter. Application forms for this stipend can be obtained from:

Dr. Narendra K. Batra
Code 6385
Naval Research Laboratory
Washington, D.C. 20375-5000

It is recommended that you apply for this stipend as soon as your next year's chapter committee is elected.

Chapter Activities

BOSTON CHAPTER

The Boston Chapter of the UFFCS had an interesting and varied collection of speakers covering a wide range of topics during the 1987-1988 meeting year. Average attendance was 23 for each meeting. The meeting dates and the topics/speakers for the 1987-1988 year were:

DATES	TOPIC/SPEAKER
November 18, 1987	"A 300 MHz Digitally Compensated SAW Oscillator," W. D. Cowan, RADC.
December 9, 1987	"Extremely Low Noise SAW Resonators and Oscillators: Design and Performance," T. E. Parker, Raytheon Rsearch Div.
January 20, 1988	"A Comparison of SAW - and CCD - Based Signal-Processing," R. W. Ralston, M.I.T. Lincoln Laboratory.
February 3, 1988	"Physics and Engineering Principles of Nonlinear Acoustics," M. A. Breazeale, University of Tennessee, 1987 IEEE UFFC Society Distinguished Lecturer.
March 16, 1988	"Programmable Transversal Filters: Applications and Capabilities," J. H. Cafarella, MICRILOR, Inc.
April 7, 1988	"Millisecond Pulsar Rivals the Best Atomic Clock's Stability," D. W. Allan, National Bureau of Standards.
May 18, 1988	"Heterojunction Acoustic Charge Transport Device Technology," S. W. Merritt, United Technologies Research Center.

Chapter officers for the 1987-1988 year were:

Chairman:	Gary Montress Raytheon Research Div. Lexington, MA
Vice-Chairman:	Alan Budreau Sanders Associates Nashua, NH
Sec./Treas.:	Tom Shoup Hewlett-Packard Andover, MA

Elections for 1988-1989 officers were held at the May 18, 1988 meeting. Officers for the upcoming year:

Chairman:	Alan Budreau
Vice-Chairman:	Tom Shoup
Sec./Treas.:	Dan Oates M.I.T. Lincoln Laboratory Lexington, MA

While details of nexy year's speakers and their topics are incomplete at this time, the first meeting is tentatively planned for either September or October 1988.

Gary Montress
Chapter Chairman, 1987-1988

TOKYO CHAPTER

The Tokyo Chapter sponsored the 17th International Symposium on Acoustic Imaging held on May 31 - June 2 in Sendai, the city 200 miles north of Tokyo. There were 144 attendees with roughly one third from outside Japan, and 89 selected papers were given including two invited talks by Professor W. Tanaka and Professor G.A.D. Briggs. The symposium proceedings will be published by Plenum Press.

The Tokyo Chapter also sponsored the International Conference on Ultrasonic Micro-Spectroscopy for Material Characterization (UMS Conference) held in Sendai after the above Symposium. This conference was a closed meeting with 72 limited attendees: researchers actively working on acoustic microscopy: scientists intending to apply the technology for their research: and engineering making the commercial systems. There were six sessions for panel discussion besides the lecture sessions.

The following five technical meetings have been held during the past half a year.

1.	Feb. 23 1988	6 papers	Tokyo
2.	March 22	7 papers	Tokyo
3.	May 23	4 papers	Tokyo
4.	June 27	9 papers	Tokyo

All meetings had an average audience of 30 persons.

The 9th Symposium on Ultrasonic Electronics will be held on Dec. 7-9 in Sendai.

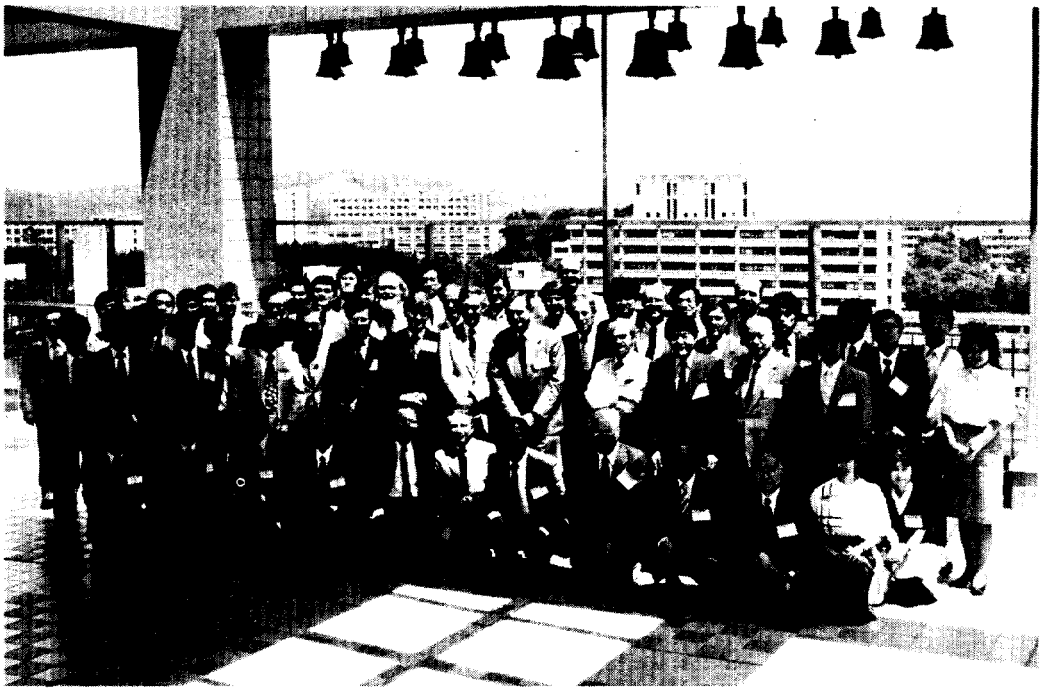
Kenshiro Takagi
Vice Chairman

New UFFCS Members Chapters

Several UFFCS members have expressed the feeling that they do not have any local UFFCS Chapters. I take this opportunity to invite all those UFFCS members who want a chapter in their region and can take leadership role to start a new chapter. Please contact me for guidance and assistance on "How to Start and Run a New Chapter".

Narendra K. Batra
UFFCS Chapter Coordinator

Professor Chubachi proposes a toast at the banquet of
the 17th International Symposium on Acoustic Imaging



UMS Conference (June 6-8, 1988) at Tohoku University

The attendees of the International Conference on
Ultrasonic Microspectroscopy for Material Characterization

New AdCom Members

DONALD C. MALOCHA

CELIA E. YEACK-SCRANTON

Donald C. Malocha (S'69-M'74-SM'84) was born in Chicago, IL in 1950. He earned his B.S. degree in electrical engineering/computer science and his M.S. and Ph.D. degrees in electrical engineering from the University of Illinois, Urbana in 1972, 1974 and 1977 respectively. He holds three patents, several copyrights on computer software and has over twenty publications.

From 1977 to 1978, Don was a research associate in the Coordinated Sciences Laboratory at the University of Illinois working on Surface Acoustic technology. From 1978 to 1980, he was a member of the Wave Electronics group of the Corporate Research Laboratories at Texas Instruments, Dallas, working on SAW based modulator and convolver systems. From 1980 to 1982, he was the Manager of Advanced Product Development for Sawtek, Orlando, developing low loss transducer technology, data acquisition techniques and bidirectional filters. Presently, Don is Professor and group leader of the Solid State Devices and Systems Laboratory at the University of Central Florida, Orlando. His research group is currently working on SAW based technology which includes single-phase transducers, diffraction analysis, CAD techniques, SAW based systems and quartz resonator measurement techniques.

Don has served both locally and nationally in the professional community. He has served on the Ultrasonics Symposium technical program committee since 1986, as Vice Chairman for the Frequency Control Symposium technical program committee for 1987 and 1988 and is serving as the General Chairman for the 1991 Ultrasonics Symposium. He was the 1986 IEEE Orlando Section Chairman and has served many positions in the local chapter executive board. Don founded the UFFC Orlando Chapter and currently serves as Chairman.

Strong interest in Ultrasonics began at Washington University (B.S. '74) with 10 MHz medical applications, and continued at Stanford University (Ph.D. '80), where her thesis topic was nonlinear and off-axis microwave acoustic microscopy. Since joining the IBM Research Division (1979), she has explored a broad range of topics in ultrasonics and in magnetic recording, including piezoelectric investigations of head-disk interactions, novel air bearing designs for high-density recording, the development of a piezoelectric technique for monitoring laser ablation processes, and the invention of a piezoelectric positioner for the scanning tunneling microscope. She received an Outstanding Technical Achievement Award (1983), two Invention Achievement Awards (1984, 1987), and has fourteen publications, two patents, and several patent applications.

These research efforts have been complemented by activities aimed at making the technologies a reality. Part of this has been through technical management. Another important component is technical society participation, which facilitates cross-field and university industry exchanges. To help make the conferences a success, she is the Industrial Support Chairman for the MMM Conference, a member of the Ultrasonics Symposium Program Committee, and Chairman of the Magnetics Society Membership Committee.

* * * * * * * * * *

Malocha (cont'd)

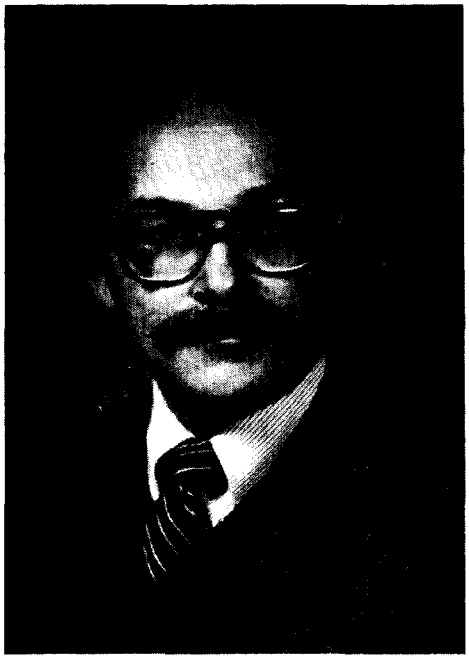
Don and Karen, his wife, have been married since 1972 and they have two children, Linnette, 13, and Curtis, 9. Whenever he can find time, he enjoys beating his graduate students at basketball and handball and attempts to bike and weight train a few times a week.

New AdCom Members

HELMUT ERMERT

Helmut Ermert was born in Hagen/Westfalen (Germany) on April 2, 1941. From 1960 to 1965 he was a student of electrical engineering at the Rheinisch-Westfalische Technische Hochschule (RWTH) Aachen (West Germany) where he received the Diplom-Ingenieur (Dipl.-Ing.) degree in 1965. In 1966 he became a research assistant at the Institut fur Hochfrequenztechnik of this university and received the Doktor-Ingenieur (Dr.-Ing.) degree with a thesis on ferrite measurements in the millimeter wave region using quasi-optical resonators. In 1970 he joined the University of Erlangen-Nurnberg (Bavaria, West Germany) as a senior research assistant at the Institut fur Hochfrequenztechnik and worked on microwave measurement techniques and microwave integrated circuits. In 1975 he completed a Habilitation-thesis on the computation of dispersion and field distribution of microstrip wavemodes and received the Dr.-Ing. habil. degree. In 1978 he became a Professor of Electrical Engineering at the University of Erlangen-Nurnberg and started research on microwave and acoustic imaging and applications in medical diagnostics and nondestructive techniques. Since 1987 he is holding a position of a Professor of Electrical Engineering and Director of the Institut fur Hoch- und Hochstfrequenztechnik (High-Frequency and Microwave Engineering) at the Ruhr-Universitat Bochum (West Germany).

Dr. Ermert published about sixty papers on electromagnetic, acoustic and thermal fields and waves and their applications including reconstructive imaging techniques. He is a member of the "Verband Deutscher Elektrotechniker (VDE/ITG)", of the Germany Society of Biomedical Engineering (DGBMT), and of the German Society of Non-Destructive Testing (DGZfP). He is also a member of the IEEE and the UFFC, AP, IM, MTT, EMB and GRS Societies.



JAMES GREENLEAF

James F. Greenleaf was born in Salt Lake City, UT, on February 10, 1942. He received the B.S. degree in electrical engineering from the University of Utah, Salt Lake City, in 1964, the M.S. degree in engineering science from Purdue University, Lafayette, IN, in 1968, and the Ph.D. degree in engineering science from the Mayo Graduate School of Medicine, Rochester, MN, and Purdue University in 1970.

He is currently Professor of Biophysics and Medicine, Mayo Medical School, and Consultant, Biodynamics Research Unit, Department of Physiology, Biophysics, and Cardiovascular Disease and Medicine, Mayo Foundation. He has served on the IEEE Technical Committee for the Ultrasonics Symposium for five years. He served on the IEEE-UFFCS Subcommittee on Ultrasonics in Medicine/IEEE Measurement Guide Editors, and on the IEEE Medical Ultrasound Committee. Dr. Greenleaf has 3 patents and is recipient of the 1986 J. Holmes Pioneer award from the American Institute of Ultrasound in Medicine and is a Fellow of IEEE and AIUM. His special field of interest is in ultrasonic biomedical imaging science and has published more than 126 articles and edited 4 books in the field.

His outside interests are skiing and racquetball and keeping up with his two young children.

Distinguished Lecturer Report

The UFFC Distinguished Lecturer Mack A. Breazeale has finished the lecture series with a smile on his face and enough breath to give words of encouragement to his successor Joe Heyman. In addition to the lectures reported in April, Professor Breazeale lectured at the following places:

April 5 - Marquette University
Dept. of EE & Computer Science
Milwaukee, WI

April 13 - The University of Tennesse - General Lecture
Space Institute in Main Auditorium
Tullahoma, TN

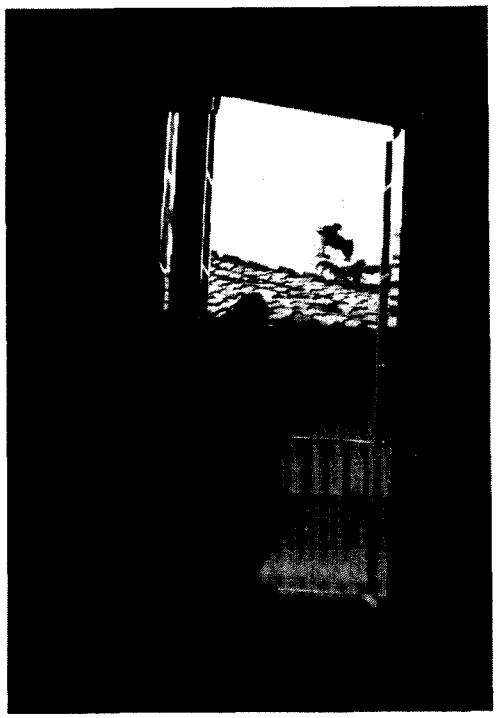
May 6-22 - Department of Physics Eight Lectures to
University of Perugia students & faculty
Perugia, Italy

May 25 - Denmark Section, IEEE
Technical University of Denmark
Lyngby, Denmark

June 30 - University of Texas Lecture in Main
Applied Physics Laboratory Auditorium, Texas
Austin, TX Chapter, Acoustical Society of America.

In all he gave a total of 35 lectures, many two hours in length, to more than a thousand people in five countries on three continents and enjoyed every minute of it. He considers the Distinguished Lecture Program to be an important means of spreading scientific information and good will on behalf of the Society, and is honored to have been able to represent the Society in this way.

Professor Breazeale and Palmieri (Perugia University) at historic "Running of Candles" in Guluo, an annual event since the Middle Ages.



Mirror of a quieter moment in Perugia.

Conferences

ISWASS '89

The Second International Symposium on Surface Waves in Solids and Layered Structures (ISWASS) will be held in Varna, Bulgaria, the 14th to the 19th of September 1989. Information on this conference, which is being held concurrently with the International Scientific Technical Conference on Acoustoelectronics "Acoustoelectronics '89", can be obtained by writing:

Dr. Ivan Avramov
Institute of Solid State Physics
Bulgarian Academy of Sciences
72, Lenin Boul.
1784 Sofia, Bulgaria

U.R.S.I.

The twenty-third General Assembly of the International Union of Radio Science (URSI) will be held in Prague, Czechoslovakia, 28 August to 5 September 1990. For further information on this conference contact Professor V. Zima, Institute of Radioengineering and Electronics, Czechoslovak Academy of Sciences, 182 51 Phraha 8, Czechoslovakia.

UFFC Finance

Recently some of the UFFC members may have questioned the reason for the increase in membership dues, as well as the sharp increase in conference registration fees and the institution of overlength page charges for the Transactions. Therefore, I though it might be useful to review our finances and discuss the reason for the increases.

Like any commercial operation, UFFC has certain income items as well as expense items. Each year a budget is prepared and, at the end of the year, a statement of operations and a balance sheet are put together. However, unlike a commercial business, the aim is not to maximize profit, but rather to provide services to our members and at the same time maintain a reasonable level of reserves. In fact, being a non-profit organization, we do not have a profit or a loss but instead a surplus or a deficit. If the Society's surplus keeps increasing year after year, we obviously charge too much for the services we provide or we don't provide enough services. On the other hand, if the Society's reserves decline year after year,we either don't charge enough for the services we provide or we provide services we cannot afford. Maintaining a balance between the two and having sufficient reserves on hand for emergencies are obviously the goals for a healthy financial operation. Recently our Society found itself in a financial bind. Our reserves had fallen to nearly zero and we actually went briefly in the red at the beginning of 1987.

Before we look at what happened, let's first examine where our income comes from and where our expenses go. Table 1 shows our income and expense items for the years 1983-1987. The major items are the Transactions and the Symposia (which includes the Proceedings). Together they represent 96.8% of our income and 95.5% of our expense for the year 1987. Membership dues contribute only 3.9% of income. Interest on reserves is at present negligible because of our precariously low reserves. Administration (both IEEE services to UFFC and UFFC-AdCom administrative expenses) takes up 3.4% of expense, while this Newsletter represents only 1.0%. Let's now look at the major items in more detail.

Transactions income. As a Society that is part of a larger organization, namely the IEEE, we are bound by certain guidelines and we have only limited control over the Transactions subscription rates. The major income items are the All Transactions Package (ATP) subscriptions (these are libraries that subscribe to all transactions and magazines as a package), the individual non-member (INM) subscriptions (again primarily libraries who subscribe to one or a limited number of Transactions), the voluntary page charge (VPC) return and, starting in 1989 for UFFC, the overlength page charges (OPC). To provide a certain degree of uniformity for the Societies, both the INM and the ATP subscription prices are related to the number of issues and pages; the base rate is equal to 1.5 times the number of issues plus 3.8 times the square root of the number of pages, from which the INM rate can deviate at the society's option by plus or minus 25%. The ATP rate is discounted base rate plus a factor that takes the "popularity" of the Transactions into account. The VPC is set by IEEE and is presently $110 per page; the OPC, if any, is at the option of the Society. The UFFC OPC rate has been set by AdCom at $175 per page. The actual Transactions income, again for 1987, is shown in Table 2. Please note that the ATP and INM subscriptions income represent 82% of the total.

Transactions expense. To give a complete explanation of the cost of printing the Transactions would take a separate issure of this Newsletter. The cost is a complicated combination of a set-up cost, cost per issue, cost per page and cost per copy. We can simplify matters by assuming that the number of subscribers, and thus the print run, is at best a slowly varying function of time over which we have little control. For our society, the number of subscribers is approximately 3400 (2000 members, 1000 ATP and 400 INM). Taking this number as a constant, we can then determine the cost of the Transactions per page since we do have control over the number of pages. Subtracting the subscription handling charge, we find that the cost per page for 1987 was $186 per page, made up of the various charges shown in Table 2, or 93% of the total.

Those of you who have stayed with me so far may have realized that there is a built-in problem with the Transactions. While the income is a square root function of the number of pages, the expense is a linear function of the number of pages. At some point, there is a crossover and the expenses will be higher than the income. For our Transactions without OPC, that crossover point was 700 pages as is evident from Table 2. The way to boost the crossover point is to increase the number of subscribers (which is a very slow process), increase the voluntary page charge return (difficult to do because this is largely handled by the IEEE), or institute or increase the mandatory overlength page charges. Since we desperately wanted to increase the number of pages of our Transactions because our paper backlog was recently more than 12 months, AdCom decided to institute mandatory overlength page charges.

Symposia. UFFC now runs three Symposia. These are the annual Ultrasonics Symposia (US), the annual Frequency Control Symposium (FCS) and the tri-annual International Symposium on Applications of Ferroelectrics (ISAF). While in total the Symposia did not lose any money, neither did they provide a sufficient surplus to compensate for the Transactions deficit, at least not until 1986 as can be seen from Table 1. (Please note that for 1983 and 1984 the income and expense numbers are incomplete, although the net is correct). While there is nothing wrong with a break-even operation for the Symposia, we are now faced with building up our reserves, hence the increased registration fees for both US and FCS.

Membership dues. Membership dues were held at $7 for many years. During the years that we had a reasonable level of reserves, this was OK. But when we got into financial difficulties in 1985 and 1986, AdCom decided to increase the dues to $10 in 1987 and to $15 in 1988. Also, when the ratio of non-member to member cost for the Transactions exceeds a factor of ten (the INM subscription rate is now $130), the IEEE is in danger of losing its special tax status and postal rates.

What happened? Table 1 shows where things went wrong. In 1985 we increased the number of pages in the Transactions from 500 to 800 without increasing the subscription rate. The result was a $61.5K deficit. By the time we realized what happened, the rates and the number of pages for 1986 were already set, and we incurred another $33.9K deficit. Fortunately the Symposia income for 1986 was $41.9K, offsetting the deficit. Nevertheless, by the close of 1986 the reserves had dropped to $45.3K, of which $42.2K was outstanding loans and accounts receivables, leaving us with just $3100 in the bank. Not a very healthy situation, to say the least. Figure 1 shows UFFC's case and net worth on a month by month basis for the years 1984 to present; the drop in 1985 and the low cash position in 1986 and the beginning of 1987 are obvious.

The future. Realizing where our income comes from, where our expenses go, and to what degree we have control over them were the first and most important steps in our return to financial health. In 1986 and 1987 UFFC AdCom took a number of specific measures to accomplish this. Some of these were already mentioned above. For the Transactions, overlength page charges were instituted, which should yield at least $30K in 1989. At the same time, IEEE has beefed up the voluntary page charge return process. Up to 1986, the VPC return was a dismal 15%. In 1987, it was up to 33% and the forecast for 1988 is 55%. With the increase in VPC and the projected income from OPC for 1989, AdCom approved an increase in the number of pages from 800 to 1100 to reduce the backlog of papers. This time, the INM subscription rate will reflect the increase in the number of pages! Also, in 1986 AdCom passed a motion specifying that the Symposia budgets should show a 15% surplus. The 1986 Ultrasonics Symposium had a healthly surplus of $41.5K or 29% and the 1987 Symposium is expected to show a $29K or 20% surplus. However, the Frequency Control Symposia have more difficulty reaching this goal; 1986 was break-even, while 1987 only had a $7.3K or 11% surplus. The next ISAF for which we have financial responsibility will not be held until 1990. We have also reduced our administrative expenses as much as possible (no more free lunch for the Symposia Program Committees!), and publication of the Symposia abstracts in the Transactions has been stopped. With all these measures, the budgeted surpluses for 1988 and 1989 are $17.4K and $42K, respectively. The long term goal for our reserves, as recommended by IEEE for a Society our size, should be at least 50% of expenses, currently about $500K. Finally, AdCom created a Finance Committee, a standing committee of AdCom with responsibility for periodically reviewing the financial status of the Society, previewing the Symposia and Transactions budgets and preparing the Society's budget. With this Committee now in place, we hope that we will never find ourselves in a financial straitjacket again.

H. van de Vaart
Chairman, UFFC Finance Committee

TABLE 1

ULTRASONICS,FERROELECTRICS AND FREQUENCY CONTROL SOCIETY INCOME AND EXPENSE 1983-1987

	1983			1984			1985			1986			1987		
	INC.	EXP.	NET	INC.	EXP.	NET	INC.	EXP.	NET	INC.	EXP.	NET	INC.	EXP.	NET
MEMBERSHIP DUES	13.8	0.0	13.8	13.7	0.0	13.7	14.0	0.0	14.0	14.1	0.0	14.1	19.0	0.0	19.0
INTEREST	7.3	0.0	7.3	8.5	0.0	8.5	9.1	0.0	9.1	1.6	0.0	1.6	-4.3	0.0	-4.3
TRANSACTIONS	92.9	80.7	12.2	95.4	100.9	-5.5	106.2	167.7	-61.5	133.7	167.6	-33.9	137.4	139.4	-2.0
NEWSLETTER	0.0	3.2	-3.2	0.0	3.8	-3.8	0.0	4.1	-4.1	0.0	5.5	-5.5	0.0	4.8	-4.8
SYMPOSIA/PROCEEDINGS	6.4	11.5	-5.1	13.0	17.3	-4.3	78.9	73.1	5.8	152.9	111.0	41.9	329.1	295.2	33.9
ADMINISTRATION	0.0	17.5	-17.5	0.0	15.3	-15.3	0.0	16.0	-16.0	0.0	16.5	-16.5	0.0	15.6	-15.6
OTHER	3.7	2.5	1.2	0.7	5.3	-4.6	2.7	5.2	-2.5	0.8	3.0	-2.2	0.8	5.3	-4.5
TOTAL	124.1	115.4	8.7	131.3	142.6	-11.3	210.9	266.1	-55.2	303.1	303.6	-0.5	482.0	460.3	21.7
RESERVES 12/31			112.3			101.0			45.8			45.3			67.0

UFFC Finance

TABLE 2

1987 TRANSACTIONS INCOME AND EXPENSE
NUMBER OF PAGES : 700

INCOME	
INDIVIDUAL NON-MEMBER SUBSCRIPTIONS	53.6
ALL TRANSACTIONS PACKAGE	58.5
VOLUNTARY PAGE CHARGES	25.3
TOTAL INCOME	**137.4**
EXPENSE	
PRINTING AND DISTRIBUTION	78.8
INDEXING	3.3
VOLUNTARY PAGE CHARGE EXPENSES	3.7
EDITING	30.1
PUBLICATION ADMINISTRATION	3.6
MISCELLANEOUS	3.0
EDITOR'S EXPENSES	7.7
SUBSCRIPTION HANDLING	9.2
TOTAL EXPENSE	**139.4**
SURPLUS/DEFICIT	**-2.0**

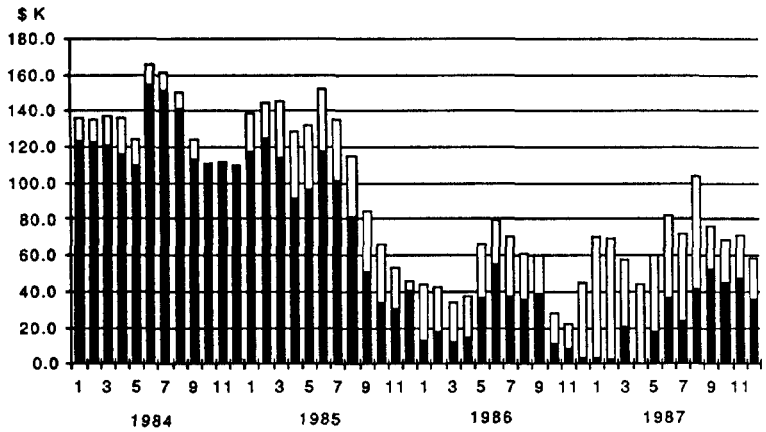


FIGURE 1 : UFFC CASH AND NET WORTH

* * * * * * * * * * * * * * *

Congratulations

Calvin F. Quate (F) of Stanford University in California received the 1988 Medal of Honor, the IEEE's highest award, for "the invention and development of the scanning acoustic microscope." The award is given by the IEEE for a particular contribution "which forms a clearly exceptional addition to the science and technology of concern to the Institute". The UFFC Society congratulates Cal on this achievement.

Acknowledgments

The editor wishes to thank all those who submitted articles and photographs for this issue of the UFFC-S Newsletter. Also a special thank you to Liz Rau for typing the manuscript. Articles of interest to UFFC-S members are welcome. For inclusion in the spring issue, please send by March 1, 1989, to Fred Hickernell, Motorola Inc., Government Electronics Group, 8201 E McDowell Road, Scottsdale, Arizona 85252.

* * * * * * * * * * * * * * *

Meetings Sponsored by the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society

42nd Annual Frequency Control Symposium

June 1-3, 1988
Venue: Baltimore, MD

J. R. Vig, *General Program Chair*
US Army LABCOM
SLCET-EQ
Fort Monmouth, NJ 07703
201/544-4275, 4805

1988 IEEE International Symposium on Applications of Ferroelectrics and First European Conference on Applications of Polar Dielectrics

August 29-September 2, 1988
Zurich, Switzerland

P. Gunter, *General Program Chair*
Swiss Federal Institute of Technology
Honggerberg
CH-8093 Zurich
Switzerland

1988 IEEE Ultrasonics Symposium

October 3-5, 1988
Chicago, IL

W. D. O'Brien, Jr., *General Program Chair*
Department of Electrical
and Computer Engineering

University of Illinois
1406 W. Green St.
Urbana, IL 61801
217/333-2407

J. Brown, *Technical Program chair*
Fisher Controls
1712 Centre Creek Drive
Austin, TX 78754

43rd Annual Frequency Control Symposium

May 31 - June 2, 1989
Denver, Colorado

T. R. Meeker, Technical Program Chair
Bell Laboratories (ret.)
2956 Lindberg Ave.
Allentown, PA 18103
215/437-3310

1989 IEEE Ultrasonics Symposium

October 4-6, 1989
Montreal, PQ Canada

H. van de Vaart, *General Program Chair*
Allied Signal Incorporated
P. O. Box 1021 R
Morristown, NJ 07960
201/455-2482

K. V. Montress, *Technical Program Chair*
Raytheon Research Division
131 Spring St.
Lexington, MA 02173

44th Annual Frequency Control Symposium

May 30 - June, 1990
Boston, Massachusetts, (tentative)

1990 International Symposium on Applications of Ferroelectrics

June, 1990
Urbana, IL

D. A. Payne, General Program Chair
Department of Ceramic Engineering
University of Illinois
105 S. Goodwin Ave.
Urbana, IL 61801
217/333-1770

1990 IEEE Ultrasonics Symposium

Date: To be announced
Honolulu, Hawaii

R. S. Kagiwada, *General Program Co-Chair*
TRW-ESG, MS M5/1007
One Space Park
Redondo Beach, CA 90278
213/535-5515

N. Mikoshiba, *General Program Co-Chair*
Research Institute Electrical Communications
Tohoku University Katahira
Sendai 980, Japan
(0222) 27-6200

K. H. Yen, *Technical Program Chair*
TRW-ESG, MS R6/1164
One Space Park
Redondo Beach, CA 90278
213/535-0637

45th Annual Frequency Control Symposium

June 1991
San Francisco Area (tentative)

1991 IEEE Ultrasonics Symposium

December, 1991
Orlando, FL

D. C. Malocha
Department of Electrical Engineering
University of Central Florida
Orlando, FL 32816

* * * * * * * * * * * * * * *

The INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS, Inc.
445 Hoes Lane · Piscataway, N.J. 08854

Non Profit Org.
U.S. Postage
PAID
IEEE
Permit #52