

IEEE

NEWSLETTER



SONICS & ULTRASONICS GROUP

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Editor:

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Ultrasonics at

1970 IEEE International Convention:

Sessions and Committees



There are two sessions of particular interest to G - SU members at the 1970 IEEE International Convention in New York on March 23 - 26. The first is at 9:30 A.M. Monday on "Electro-Acousto-Opto-Magneto-Elasto-Interactions," chaired by A. Rose of RCA, and featuring papers by A.H. Bobeck, BTL, I.P. Kaminow, BTL, A.H. Firester, RCA, and A.R. Moore, RCA. The second is at 2:00 P.M. Monday, entitled "Acoustics in Oceanography -- Navigation and Object Location." G. Jaffe is the organizer and J. V. Bouyoucos the chairman. Speakers are C. L. Buchanan, NRL, F. A. Andrews, Catholic U., and F. N. Spiess, Scripps Institute of Oceanography. Following their formal talks they will participate in a panel discussion entitled "Challenges for the Future," moderated by J. P. Craven of MIT.

While at the Convention the members of the Program Committee for the 1970 Ultrasonics Symposium will hold a meeting on Wednesday, March 25, at 1:30 P.M. in Room 524 at the New York Hilton. Topic of discussion: Selection and Invitation of Invited Speakers. Committee members are J. de Klerk, D. L. Hammond, M. G. Holland, S. Jacke, C. K. Jones, L. W. Kessler, J. E. May, H. Matthews, J. T. McElroy, R. W. Moss, W. L. Nyborg, D. W. Oliver, E. P. Papadakis, D. A. Pinnow, R. V. Pole, E. K. Sittig, E. Stern, H. F. Tiersten, and R. M. White.

May Announces

TC-TR Conclave

During the 1970 IEEE International Convention the Technical Committee on Transducers and Resonators will meet on Tuesday, March 24, 1970, at 2:00 P. M., in Room 548 of the New York Hilton Hotel. At this time reports will be presented by Chairmen of each of the Subcommittees. In addition it is planned to discuss the following:

1. Piezomagnetic Nomenclature Standard
2. Piezoelectric Crystal Standard
3. EIA proposal for Synthetic quartz

At this point a few comments may be in order by way of organization. After Bill Spencer was elected Chairman of the G-SU Adcom, John E. May, Jr. took over as Chairman of TC-TR. J. H. Eveleth is the new Chairman of the Subcommittee on Delay Lines. The Subcommittee on Medical Ultrasonics has been reorganized to include Peter D. Edmonds, Chairman; George Myers and John Bedford. This group also constitutes a Subcommittee on a similar subject sponsored by G-EMB.

Division Unification

Direction Election

The Group on Sonics and Ultrasonics is now in Division 4 under the IEEE cluster concept. Divisions 3 and 4 will be the first to elect Divisional Directors; nominations are now open, and will close April 30. The Administrative Committee of each Group is to submit not less than two names; others may be offered by the membership by petition containing 100 signatures of Group members. Correspond with the Staff Secretary, Nominations and Appointments Committee, IEEE Headquarters, 345 East 47 Street, New York, N. Y. 10017.

Sonics and Ultrasonics members will find themselves grouped with others with whom they enjoy more or less affinity. The other groups in Division 4 are Antennas and Propagation, Electron Devices, Microwave Theory and Techniques, Parts Materials and Packaging, and Magnetics. Only time will tell how the interactions will work out.

Revitalized Biomedical Committee

Medical ultrasonics has received a shot in the arm with the appointment of Dr. Peter D. Edmonds, Dr. George Myers, and Mr. John Belford to the Subcommittee on Ultrasonics in Medicine, a branch of the Technical Committee on Transducers and Resonators. Dr. John E. May, Jr., of Bell Telephone Labs, Allentown, Pa., TC-TR Chairman, recently announced the appointments. The three can be reached as follows:

Dr. Peter D. Edmonds, Chairman
Moore School of Electrical Engineering
University of Pennsylvania
200 S. 33rd Street
Philadelphia, Pennsylvania 19104

Dr. George Myers
Riverside Research Institute
632 West 125th Street
New York, New York 10027

Mr. John Belford
Hofral Instruments
Moody's Lane
Norfolk, Connecticut 06851

With a slight permutation, one arrives at the membership of the Subcommittee on Ultrasonics in Medicine of our sister group on Electronics in Medicine and Biology; Dr. Myers is chairman of that subcommittee. The duplication of membership should avoid duplication of effort in our two Groups pursuing similar goals in the biomedical field.

Bill Spencer New Chairman

The G-SU Administrative Committee has elected William J. Spencer to be Group Chairman in 1970. He will do double duty as Program Chairman of the 1970 Ultrasonics Symposium, also.

William J. Spencer was born in September, 1930, in Kansas City, Missouri. He attended local grammar and secondary schools before enrolling at William Jewell College. He received his A. B. degree from this college in Mathematics in 1952, and his M. S. from Kansas State University in Mathematics in 1956.

From 1953 to 1955 he served in the U. S. Army Corps of Engineers. In 1959 he was awarded his Ph. D. in Physics from Kansas State University. His thesis work was concerned with imperfections in Alkali Halide Microcrystals. Prior to joining the Bell Telephone Laboratories in 1959, he had worked at Atomic International and the Sandia Corporation.

Since joining the Bell Laboratories, Dr. Spencer has been involved in quartz crystals, defects in solids, X-ray diffraction and acoustic wave propagation. He is a member of Sigma Xi, the American Physical Society and is a Senior Member of IEEE.

Biosketch by J. E. May, Jr.

Wet Behind The Ears

I take up the blue pencil as your new Newsletter editor with some trepidation, realizing that I have to keep up the standard of quality handed on by John May, and not being much of a journalist myself. With the help of the membership and the officers I hope to be able to put together a passable newsletter. Of great help on this issue have been Dan Bolef, Cliff Jones, John May, Al Meitzler, and Erhard Sittig. With my only earlier experience being the writing of a college news column for an ethnic newspaper, my style may leave something to be desired. Writing about dance band and class picnics was something different! If "who, what, when, where, why" doesn't get answered in the first sentence, please bear with me. I would like to ask the help of every member of the Group in assembling news of interest to the whole group or any appreciable segment of it. Most attention will be given to items written up in coherent paragraphs, and comprising 5 to 25 sentences. As for taking stands, the editor has no editorial position and will not editorialize.

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The Chairman Tells It Like It Was

Looking back on 1969, the pending reorganization of the IEEE technical activities seems to be the event of outstanding importance. The groups will be clustered into 6 divisions, each being represented by one director on the IEEE board of directors. This may foreshadow closer cooperation of clusters of groups on everything from meetings to publications. I hope G-SU will maintain a vigorous life and a discernible identity in the years to come, even if we are one of the smallest groups.

This year's IEEE Ultrasonics Symposium took place in St. Louis, Missouri, September 24-26. We had about 300 participants, somewhat fewer than at previous symposia. Since about the same number of papers - approximately 100 - were presented, this seems to reflect more a shortage of travel funds than lack of interest. The number of papers on surface waves was conspicuous. I want to thank the chairman D. I. Bolef, and the Program Chairman C. K. Jones, as well as their assistants, for making this meeting a success.

The 1970 Symposium will take place at the Jack Tar Hotel in San Francisco, October 21-23, 1970, A. J. Bahr being chairman. The 1971 Symposium is planned to be at the Carillon Hotel in Miami, December 6-8, 1971, J. E. May being chairman.

Some time in December, all our members will receive a copy of the November issue of Transact. -MTT, a special issue on microwave acoustics. We are indebted to G-MTT for this special service to our membership.

Your Ad. Com. has elected W. J. Spencer to be chairman in 1970. For the same time, E. P. Papadakis will be vice-chairman, as well as taking over from J. E. May as editor of the Newsletter.

Thoughts about the future. Our group seems to have attained a stationary size somewhere near 1200 members. The attendance at our Symposia seems leveled out at about 400. Our Transactions are slowly growing, indicating vigorous activity in a number of areas. However, costs will rise. We appear to be financially viable for the foreseeable future. Let's keep up the good work!

E.K. Sittig
Chairman, G-SU, 1969.

Broad Interest at 1969 Ultrasonics Symposium

The technical program of the 1969 Symposium covered most of the major areas of Ultrasonics, with 19 invited, and 82 contributed papers. A special program on Macrosonics embracing several of the sessions attracted wide international interest, with contributions being received from the principal centers in Europe as well as North America. The activity in microwave ultrasonics continues unabated, with work on surface and guided wave systems predominating, presumably because of the inherent compatibility of devices in this format with modern integrated circuit techniques. No less than four out of the total of twelve sessions of the Symposium were devoted to this field. An invited session on Relaxation Processes

Critical Phenomena indicated the continuing commonality of interest with physical acoustics in this fast-moving area of research.

C. K. Jones
Program Chairman

1969 Symposium Report

Prof. Dan Bolef of Washington University, the General Chairman of the 1969 Ultrasonics Symposium, has submitted his report. We quote from his comments:

"Fewer contributed papers were submitted to the 1969 symposium than in previous years, possibly due to the reduction in government research funding and the location. Eighty-three (83) contributed papers were received with only one (1) rejection compared to the 1968 figures of 98 and 5 respectively. The papers were of a generally high quality and were well received by the attendees. Discussion in the sessions seemed more animated than on some previous occasions. The drop in the number of contributed papers enabled the number of sessions to be reduced to 12 thereby removing the need for formal evening programs, while maintaining 2 parallel daytime sessions. This was more widely appreciated and it is recommended that this arrangement be retained at future symposia if at all possible. The trend towards microwave acoustic devices maintains its momentum with 4 out of the total 12 sessions in this area with particular emphasis on surface waves. A specially arranged session on macrosonics was well received, attracting wide attention, particularly from abroad."

The symposium finished in the black, but just barely, showing a surplus only 20% that of the 1968 symposium. 1970 should be a critical year.

Besides Prof. Bolef, the General Chairman, those who worked on arrangements for the symposium were Prof. Fred Rosenbaum and Prof. R. K. Sundfors of Washington University. Heading the Technical Program Committee was Dr. C. K. Jones. On his committee were R. W. Damon, D. A. Berlincourt, J. de Klerk, R. W. Moss, W. J. Spencer, E. K. Sittig, D. L. White, T. R. Meeker, J. H. Rowen, M. J. Golis, L. W. Kessler, J. T. McElroy, B. A. Auld, J. R. Neighbors, and W. L. Nyborg.

Dr. John V. N. Granger is

New President of

The IEEE

Dr. John V. N. Granger, Chairman of the Board of Granger Associates at Palo Alto, California, has been elected by the voting members to be President of the Institute of Electrical and Electronics Engineers for 1970. His election was announced in November by IEEE's Board of Directors.

Dr. Granger succeeds Dr. F. Karl Willenbrock, Provost of the Faculty of Engineering and Applied Sciences at the State University of New York, Buffalo. He will preside over the activities of the world's largest engineering society, having some 160,000 members located throughout the world.

"H" Chief Spy for TAB

E. W. Herold Chairs Committee to Bug New Technologies

During 1969, the Technical Activities Board appointed a Technical Planning Committee, which was given responsibility for new technologies, i. e. those which properly belong within IEEE, but might be overlooked by our present 31 specific technical groups. The new Committee, under TAB's Vice Chairman, Edward W. Herold, includes John R. Whinnery, Hubert Heffner, David M. Hodgkin, Ralph E. Armington, and William O. Fleckenstein. Two meetings have now been held, with objectives a) to identify the most important new technologies, b) to act on those in which delay is inadvisable, and c) to propose a permanent and effective mechanism by which IEEE will exercise continuous leadership in new subject matter. The word "new" in this context is intended to include both the scientifically new, and that which is new to IEEE, but might have a substantial past history.

Among the topics considered were the following:

- Computer Aided Design
- Cable TV
- Electric Printing
- Holography and Electro-Optical Systems
- Plasmas and MHD
- Oceanography
- Acoustic Waves and Filtering
- Manufacturing Technology
- Cryogenics
- Applied Mathematics
- History of Electrical Engineering
- Social Systems (transportation, education, pollution, crime detection, data networks, urban planning, hospital systems)

In several of these, activity was already under way before the Committee was formed. For Cable TV and for Electric Printing, two Ad Hoc Committees were formed to undertake specific

publication and conference actions and to recommend a permanent home for the technology in the IEEE structure.

The most important action of the Technical Planning Committee was to cooperate with TAB to see that the future technical organization of the IEEE would be flexible enough, alert enough, and resourceful enough to absorb new technologies. Language has been put in the general principles of organization of the Group structure, and detailed responsibility is to be developed, whereby it becomes possible for IEEE to remain the leading professional society in electrical and electronic fields. Whether it actually does will depend on the enthusiasm and participation of present members in adapting to change.

In many cases, responsibility for action ultimately lies within the Group. IEEE Groups are expected to energetically and actively alter and/or enlarge their technical sphere of influence as conditions change. However, it is quite common in talking to Group administrators about a new field to get a reaction such as "we're watching this new field with interest", or "we're already saturated with more material than we can handle--let's not expand even more", or "this belongs in IEEE but not with us", or "we're actively pursuing the subject" (when, in fact, little or no activity exists). These reactions are hardly conducive to attracting new members who work in a new field, and show far too much love of the status quo. In summary, the Technical Planning Committee urges Group members to take a broad view of their technology and, when appropriate, to stretch or change their definitions of scope so that IEEE can best serve the engineer and his future welfare.

IEEE Fellows in G-SU

Recently the IEEE issued an official list of Fellows with their group affiliations. Fellows with membership in G-SU (G-20) are listed here. Our Fellow-members have broad interests as evinced by the extensive list of other groups besides G-20 following their names.

H. W. Cooper
7211 Windsor Lane
Hyattsville, Md. 20782
G-3, 4, 10, 14, 17, 20, 25

Virgilio Floriani
Pres. Telettra S P A
Via Trento 30
27036 Mortara, Italy
G-3, 4, 6, 7, 9, 10, 12, 13, 14, 15, 16, 17, 19,
20, 21, 25, 26, 28

F. H. Ingerslev
The Acoustics Lab
The Technical University of Denmark
2800 Lyngby, Denmark
G-1, 9, 12, 20

A. S. Robinson
Radio Corp. of America
Bldg. 127 333
Moorestown, N. J. 08057
G-9, 10, 12, 15, 16, 17, 18, 20, 23, 29, 35

ASTM

Hot on

Acoustical Thermometry

The American Society for Testing and Materials has set up a subcommittee on Acoustical Thermometers under Committee E-20 on Temperature Measurement. The subcommittee is almost a year old. Its next meeting is a workshop session in Toronto, Canada, on June 25.

At its organizational meeting last April in Philadelphia, the group elected L. C. Lynnworth as chairman. Ultrasonic, but nevertheless audible, lectures on pulse and resonance methods, as applied to thermometry in gases, liquids and solids from 2 deg K up to 20,000 deg K, were presented. Speakers included H. H. Plumb from the National Bureau of Standards, J. M. Iseman from Harry Diamond Laboratory, A. E. Arave from Idaho Nuclear, F. Rowland from Hewlett-Packard, Prof. J. F. W. Bell, formerly Royal Naval College, Greenwich, England, and L. C. Lynnworth and E. H. Carnevale from Panametrics. R. L. Shepard of the Oak Ridge National Laboratory agreed to act as interim secretary, and his summary of the meeting appears in *Ultrasonics* 7 (4) 260 - 261 (Oct. 1969). Details on the ASTM Toronto meeting may be obtained from the subcommittee's chairman.

Ultrasonics

Courses

Among the courses offered last semester by Northeastern University in its Extension School in Weston, Mass. (Rte. 128 area) was one on ultrasonics. These courses are billed as "State-of-the-Arts" courses, and are slanted toward engineers, scientists, administrators, and knowledgeable technicians outside the academic community. As presently conceived, the courses are supposed to provide a broad overview with some penetration in depth. An experiment in group teaching was undertaken, led by Dr. E. H. Carnevale, President of Panametrics of Waltham, Mass., and Adjunct Professor at Boston College. Also lecturing were C. A. Carey, L. C. Lynnworth, and E. P. Papadakis of Panametrics. In the spring term a course on Underwater Acoustics is being offered by John Butler of Parke Mathematical Laboratories. Information on the State-of-the-Arts programs can be obtained from

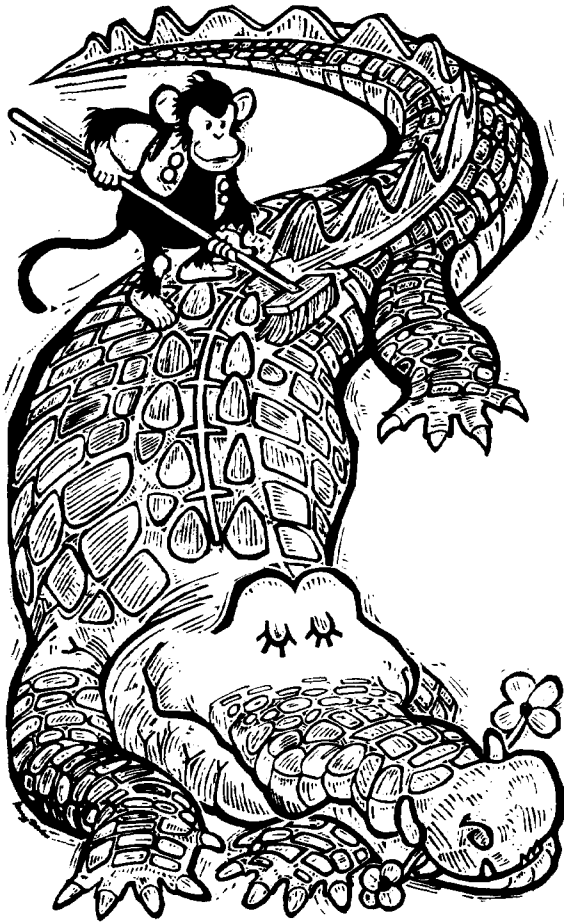
Mr. Donald French
Northeastern University
Center for Continuing Education
360 Huntington Avenue
Boston, Mass. 02115



Publications

of

Interest



STANDARD TIME AND FREQUENCY: ITS GENERATION, CONTROL
AND DISSEMINATION FROM THE NATIONAL BUREAU OF STANDARDS
TIME AND FREQUENCY DIVISION.

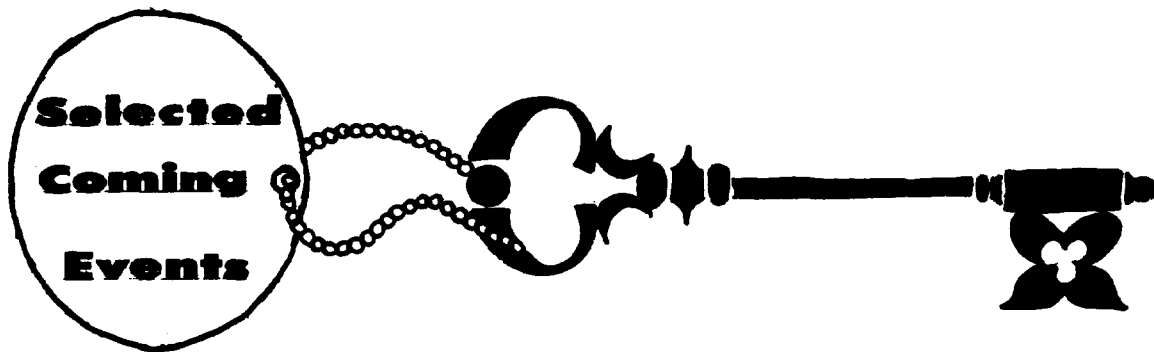
by John B. Milton, National Bureau of Standards Technical Note 379; issued August 1969; 27 pages; 35 cents. (Order from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402; the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151; or local U.S. Department of Commerce Field Offices.)

Since its inception in 1901, the National Bureau of Standards has been involved in the design, construction, maintenance, and improvement of standards of frequency and time interval.

This Technical Note describes some of the current efforts of the NBS Time and Frequency Division. Topics include the generation of the computed NBS time scales, their translation into real working clocks, and the use of these clocks in coordination efforts with other standards laboratories. The coordination of clocks and frequency standards (at the site of NBS radio stations WWV, WWVB, and WWVL in Fort Collins, Colo.), the measurement and control of LF and VLF radiated phase, and the method of coordinating the Fort Collins master clock with that of NBS/Boulder are also described.

This publication also discusses the relation of frequency and time interval. Over the years, the NBS operational time-interval standard has progressed from a pendulum clock with electrical pulse output through crystal clocks to the present-day "atomic clock." During the same period, the operational standard of frequency has evolved from a tuning fork to a quartz crystal oscillator to an atomic beam device. While there is only a superficial connection between a pendulum clock and a tuning fork, the present-day standards of time interval and frequency are, by their very nature, inseparable.

NOTE: Foreign remittance must be in U.S. exchange and should include an additional one-fourth of the publication price to cover mailing costs.



March 23-26, 1970

IEEE International Convention and Exhibition, Coliseum and New York Hilton, New York, N. Y. For Program Information, IEEE Headquarters, 345 E. 47th Street, New York, N. Y. 10017.

April 21-24, 1970

Acoustical Society of America, 79th Meeting, Atlantic City, New Jersey. Chairman, Dr. John V. Bouyoucos.

April 21-24, 1970

Intermag Conference, Statler Hilton Hotel, Washington, D. C. Program Chairman, Dr. Daniel S. Shull, Jr., Bell Telephone Laboratories, Inc., 3300 Lexington Road, S. E., Winston Salem, N. C. 27102. Deadline for abstracts, March 7, 1970.

April 27-29, 1970

24th Annual Frequency Control Symposium, Shelburne Hotel, Atlantic City, N. J. For information, write:

Director, Electronic Components Laboratory
U. S. Army Electronics Command
ATTN: AMSEL-KL-SP (Mr. J. M. Stanley)
Fort Monmouth, New Jersey 07703

or call (201) 535-1275 or -1805.

May 4-5, 1970

IECI-IEEE Transducer Conference, National Bureau of Standards, Gaithersburg, Maryland. Program Chairman, Dr. Robert B. Spooner, IMPAC Instrument Service, 201 East Carson Street, Pittsburgh, Penna. 15219

May 11-14, 1970

IEEE International Microwave Symposium, Newporter Inn, Newport Beach, Calif. Program Chairman, Dr. Ray Duhamel, Granger Associates.

May 19-21, 1970

1969 Conference on Signal Processing Methods for Radio Telephony, London, England.

Information: IEE Conference Department, The Institution of Electrical Engineers, Savoy Place, London WC2, England.

June 15-16, 1970

1970 Conference on Solid State in Industry -- "The New Generation of Industrial Control". Statler-Hilton Hotel, Cleveland, Ohio. Program Co-Chairmen: A. J. Humphrey and Boris Mokryteki, The Reliance Electric and Engineering Co., 24701 Euclid Ave., Cleveland, Ohio 44117.

September 21-24, 1970

International Conference on Engineering in the Ocean Environment, Panama City, Florida. Program Chairman, C. B. Koesy, Code P750, Naval Ship Research and Development Laboratory, Panama City, Florida 32401. Deadline for abstracts, March 3, 1970.

October 21-23, 1970

1970 IEEE Ultrasonics Symposium, Jack Tar Hotel, San Francisco, Calif. General Chairman: Dr. A. J. Bahr, Stanford Research Institute, Palo Alto, Calif. Program Chairman: Dr. W. J. Spencer, Bell Telephone Labs., Allentown, Pa.

November 3-6, 1970

Acoustical Society of America, 80th Meeting, Houston, Texas. Chairman: Dr. Douglas Muster.



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