

IEEE

NEWSLETTER



SONICS & ULTRASONICS GROUP

No. 34 JULY 1971

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Come to Miami for the 1971 Symposium!

When the cold winds blow and it doth snow in the northlands, come to Miami Beach, December 6-8, 1971, for this year's IEEE Ultrasonics Symposium! The meeting will be held at the Carrillon Hotel in Miami Beach. John E. May, Jr., is General Chairman, with Herb Matthews as Technical Program Chairman and Bill Horton as Chairman for Local Arrangements. Come and cavort with the porpoises! The first call for papers will be issued soon.

New: "Invited Proceedings"

This year for the first time the Group on Sonics and Ultrasonics will produce a Proceedings of its Symposium. The first volume will be an Invited Proceedings of the Symposium for 1970 containing most of the invited and tutorial papers from the 1970 IEEE Ultrasonics Symposium in San Francisco. The volume will be ready about July 1, 1971. The papers to be included are A1 (B. A. Auld), A2 (E. Stern), A3 (J. de Klerk), C1 (L. C. Lynnworth and E. P. Papadakis), C9 (R. A. Nickerson), E1 (K. D. Bowers), E2 (S. E. Jacke), F3 (G. R. Pulliam, J. H. Collins, and P. J. Hagon), H1 (A. Bers), K3 (R. L. Melcher), M1 (R. H. Tancrell), O1 (D. L. White). This outstanding set of papers should be a valuable addition to individual, corporate, and public libraries. We are urging all G-SU members to purchase it and show it to their friends. Be the first on your block!

1970 Ultrasonics Symposium Success Reported

Dr. Alfred J. Bahr, Conference Chairman for the 1970, IEEE Ultrasonics Symposium held in San Francisco last October 21 to 23, reports that the Symposium was a success technically, financially, and socially. A total of 130 papers were presented in 17 technical sessions to 312 attendees. The number of abstracts submitted, 150, was the largest ever. The additional papers represent a high interest currently in surface waves. A greater variety in industrial ultrasonics also came in. The sessions were well attended, especially the tutorial reviews. The evening panel discussion on process technology attracted a lot of attention and participation. The attendance of 312 is considered to be on the low side; it was hoped that more would attend because of the location of the Symposium in an ideal convention city and because of the presentation of many papers on the "hot topic" surface waves.

Al Bahr summarized the Symposium as follows:

"Overall the conference was very successful. There seemed to be several factors which contributed to its success:

- (1) A good technical program. Two aspects of this year's program worth emphasizing were (a) invited tutorial papers and (b) many contributed papers on surface waves.
- (2) An interesting and attractive location.

- (3) A good convention hotel with an efficient and experienced staff. The importance of this in producing a smooth-running conference cannot be overemphasized. Concerning liaison with the hotel, we were fortunate to have the services of a professional conference manager who is on the staff of SRI.
- (4) Increased fees helped assure a financial success.

The necessity of having three parallel sessions was the one bad aspect of the conference and should be avoided if possible. On the other hand, the large number of contributed papers helped assure a good attendance at the meeting.

In the future I believe it would be fruitful to expend some effort on publicizing the meeting more widely than has been done in the past. There seems to be a significant number of non-IEEE members who are interested in the meeting."

Know Your AdCom

The names and addresses of the members of the G-SU Administrative Committee for 1971 are given here.

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RESULTS OF THE AD COM ELECTION BALLOT

A ballot for the election of three Sonics and Ultrasonics Group AdCom members was issued on November 30, 1970. The ballots returned have been counted, and we are pleased to announce that the following three members have been elected for a three year term beginning on January 1, 1971:

A. J. Bahr
J. de Klerk
M. G. Holland

We wish to thank all nominees for their willingness to serve and for permitting their names to be included on this ballot.

Why Bother?

IS IT ALL WORTH IT?

All IEEE technical groups have to justify their existence and write 1-year and 5-year plans for IEEE headquarters. The Group on Sonics and Ultrasonics has prepared the following preamble of GOALS. What do you think? Let's have your comments! Tell us why the Group should exist!

Preliminary version of
"GOALS for GROUP on SONICS and ULTRASONICS"

The principal goals of the Group shall be scientific, literary and educational in character. The Group shall strive for the advancement of the theory and practice of electrical and electronic engineering and of the allied arts and sciences, and the maintenance of a high professional standing among its members, and with special attention to such aims within the field of interest of the Group which is sonics, including ultrasonics and phonon technology. Recognizing the responsibility of its members to society, the Group will strive to improve our environment with whatever means fall within our field of interest. Likewise, through its Administrative Committee, the Group will attempt to provide for the best interests of its membership by their particular problems to the attention of the IEEE and/or other organizations within the scientific and engineering community. The Group will coordinate its activities with other IEEE groups and societies to prevent redundant effort. To further sonics and ultrasonics, the Group will also participate with other scientific, literary and academic institutions on a national and international basis. In all activities the Group will act within the rules set by the constitution and bylaws of the IEEE.

To achieve these goals, the Ad Com will formulate both long-range and annual plans. Revised versions of these plans will be submitted annually on or about December 31 to the Technical Activities Board of the IEEE.

Chairman's Notes

TO BE OR NOT TO BE . . .

by William J. Spencer

The past twelve months have been a real time of "existence searching" for the Administrative Committee of the Group on Sonics and Ultrasonics. This deep Group introspection was brought about by financial problems within the IEEE. These are the same financial problems which each of us have felt in the places where we work or do business. In the case of the G-SU, this financial problem manifests itself as a reduction in support, particularly for publications, from the IEEE. The past five years have been a time of rapid growth and good financial health for the engineering community as a whole. The Ultrasonics Group had expanded publications in the Transactions beyond the income which we received from member and non-member sales. This additional expense was made up by support from the IEEE. To help offset some of this cost, the G-SU initiated page charges about two years ago. However, due to our small membership and a larger than usual publication record per member, the income of the G-SU still did not cover the publication expenses.

The question of our financial problems, our small and relatively stationary membership, and the general future of Ultrasonics has led the Administrative Committee to seriously consider the future of the G-SU during the past four to five months. Two committees, one on group viability, and the second concerning group alternatives, have attempted to decide the future of G-SU along several lines. These include the possibility of merger with other IEEE groups, stopping the publication of Transactions, various methods to raise additional funds by advertising, or industry solicitation, methods to cut expenses, or even completely disbanding the Ultrasonics Group.

As a result of these self examinations, a number of changes in the G-SU have come about. The Administrative Committee has been completely reorganized and put into a number of working committees, as shown in the matrix in this article. As Dr. Foster, Chairman of the Publications Committee points out in a separate article, the Transactions will change from our current letter-press publishing to photo-offset printing of author prepared mats starting in 1972. The awards Committee has been revitalized, and a separate committee on Fellowships has been set up. These two committees will attempt to see that G-SU members receive proper recognition for their work. The first G-SU Section was formed in the Boston area in 1970. Future G-SU symposia have been scheduled for three years in advance. This will aid in obtaining better sites for our meeting and help in coordinating the Ultrasonics Symposium with other technical meetings. A Proceedings, including the tutorial and invited papers from the 1970 Ultrasonics Symposium will be published in 1971. Consideration will be given to publishing Proceedings of future symposia at, or immediately following, the time of the Ultrasonics Symposium.

With all of these changes then, what is the current status of the G-SU? Financially, as pointed out before, we were in the red in 1970. This was in spite of making money on our San Francisco symposium. The budget for 1971 shows that we will again operate at a deficit during this year. This deficit operation during 1970 and 1971 has been possible through financial reserves which the G-SU had built up over a number of previous years. By the end of 1971, these reserves will be nearly exhausted. This makes 1972 a year of real challenge. It now appears through changing our publication policy, and by requesting a change in the way funds are allotted to the Groups within IEEE, it will be possible to operate financially in the black in 1972. This will be possible principally by going to photo-offset printing. Once the financial problems are solved, it appears as though the Group on Sonics and Ultrasonics is sound. Our annual symposium is held in high regard; Transactions are continuing to grow; the membership, although it has remained stationary, has not declined in a time when other Group memberships have. With this feeling of general soundness, the G-SU Ad Com voted unanimously during their last meeting to shelve any further considerations

CHAIRMAN'S NOTES

of merger until some new input was obtained. Things which could bring the merger plans off the shelf would be a financial deficit in 1972, or new directives from IEEE concerning the status of small Groups.

The purpose of the Group on Sonics and Ultrasonics has been to provide services and technical information for its membership. This has been done through the Transactions, the annual symposia, the Newsletter, and through the Technical Committee structure under the Ad Com. For these various ventures to meet the membership needs it is necessary for us to obtain some feedback from the membership as a whole. The recent survey of the G-SU mem-

bership was a help in determining membership feelings; however, in areas where you feel the G-SU has not met its objectives, it would be a great help to your Ad Com if you would transmit your ideas, criticisms and suggestions to them. A list of the names and addresses of all the present Administrative Committee are included in the newsletter. In addition to your suggestions, your participation in the activities of the G-SU are necessary if we are to remain viable as a Group. As you can see from the results of the survey taken early in 1971, approximately 40% of our membership responded. This was a tremendous show of interest within the Group, far exceeding that which was expected. It was one of the factors which convinced the Administrative Committee to make every effort to keep the G-SU alive.

Reports

PUBLICATIONS REPORT

by Norman F. Foster, Publications Chairman

TRANSACTIONS

Examination of the G-SU financial statements reveals that by far the largest expense incurred by the group is associated with the publication of its Transactions. This amounted to \$28K in 1970 compared with a total expenditure of \$42K, the only other major items being our IEEE prorated support (\$7K) and the Symposium expenses (\$6K). It is also clear from the 1970 \$4K total group deficit that we cannot afford to maintain this high publication expense and must therefore either substantially reduce publication costs or the number of papers we publish. At a technical publication panel meeting held during the recent IEEE meeting in New York, the results of various cheaper printing methods were reviewed, showing that substantial savings (up to 60%) can be achieved by going to an author typed photo-offset process, but that other techniques such as photo-offset from computer typed originals, result in only small savings (10 to 15%) primarily because of the very high cost of professional composition and editing. The matter has been the subject of considerable discussion at recent ADCOM meetings, and it has been decided that the only way to adequately serve the publication needs of the group members, and of others in the field of sonics and ultrasonics, is to change to author typed mats and photo-offset printing. Due to the long lead time required, this changeover will not be fully implemented until January 1972, but some cost saving plans are being considered for the October 1971 issue in an attempt to reduce the projected group deficit of nearly \$7K, which would result in a negative reserve for the group at the end of the year.

The Transactions are clearly a most important part of our group activities. Of the 450 respondents to our recent group survey (a very pleasing return from our 1,200 members) 351 gave the Transactions as their principal interest in the group and we typically print a total of 3,500 copies with as many non-member subscriptions as members. It is therefore of great importance to the group to maintain and wherever possible to raise the quality and relevance of our Transactions. To help achieve this end a Publication Committee has been formed with the primary initial job of finding a replacement for an editor and several associate editors who have served us well for many years and have now asked to be replaced due to changes in their work environment. We are sorry to be losing the services of Don Berlincourt, Bob Thurston and Don White as associate editors, and it is with special regret that we have accepted the resignation of Oscar Mattiat who has done an outstanding job as Transactions editor since the 1st issue 18 years ago. We are fortunate however in having many able members who are willing to devote their time and energies to the group and the new editorial staff is rapidly being assembled. At the time of writing, the following have agreed to serve: Editor - Steve Wanuga, General

Electric Co., Electronics Park, Syracuse, N. Y. 13201; Assistant Editor - J. deKlerk, Westinghouse Research Lab., Pittsburgh, Pa. 15235; Associate Editors - A. R. Braun, BTL; Bill Cook, University of Houston; F. J. Fry, University of Illinois; Eric Lean, IBM; A. Metherell, Douglas Research Labs; Vince Salmon, SRI; M. B. Shultz, Raytheon; Fred Welsh, BTL; and R. S. Woollett, USN Underwater Sound Lab.

A survey of IEEE publications was carried out last year by Headquarters in which 100 subscribers of each of the 33 Journals and Transactions were polled on a number of questions regarding quality, usefulness, subject coverage, etc. of each publication. Our Transactions fared reasonable well being rated 25th in general usefulness and coverage, and 13th in paper quality. The bias was found to be on the theoretical rather than the practical application side, which may account for the fact that the ratings were significantly higher than the overall numbers quoted above in the returns from persons primarily concerned with teaching in the field. An increased coverage in more applications oriented areas seems indicated.

SYMPOSIUM RECORD

The tutorial and invited papers presented at the 1970 Ultrasonics Symposium are being prepared for publication as a special Symposium Record which should be available early fall 1971. Judging from the responses in the recent group survey, there is a strong sentiment in favor of publishing such a record on a regular basis and the Publication Committee is now considering ways to implement this.

NEWSLETTER

This Newsletter marks the beginning of a regular Newsletter publication schedule starting with two issues per year in the spring and fall. We believe that the Newsletter is an important communication link between the officers and members of the group which must be fully utilized especially during these times of major reorganization of the group structure, and within the IEEE itself. The Newsletter should also provide communication between members, and from members to the group officers so if you have any questions, comments or gripes -- write a letter to the Newsletter Editor and give your views an audience.○

TREASURER'S REPORT

by Lawrence W. Kessler

A membership profile questionnaire conducted several months ago by G-SU implied that the most popular reason for joining this IEEE "Group" was to receive the Transactions on Sonics and Ultrasonics.

As will be seen below, this journal is the principal source of income and expenditure for the Group, and as such, this also can be the principal source of financial difficulty for the Group. Here, is presented an overall look at the group financial situation for 1971:

Income

\$ 6,200	Membership Fees
\$ 17,400	Publication Income which is derived from the following:
	1) Sale of back issues of Transactions.
	2) Sale of Invited Proceedings of 1970 Ultrasonics Symposium.
	3) Non-member subscription income.
	4) Income from voluntary page charges.
\$ 5,400	Receipts from Ultrasonics Symposium (counterbalanced in expense column).
\$ 4,300	Support from IEEE Headquarters (this is supposed to be derived from IEEE dues).
<u>\$ 33,300</u>	<u>Total</u>

Expenses

\$ 24,930	Publication costs which include:
	1) Printing of 180 Transactions pages by conventional letterpress.
	2) Printing of 60 Transactions pages by photo-offset.
	3) Indexing.
	4) Newsletter publication.
	5) Conference Proceedings printing.
	6) Costs associated with collecting the voluntary page charges.
	7) Editorial Services for Transactions.
	8) Subscription Administration.
\$ 7,400	IEEE Headquarters Expenses
\$ 5,400	Ultrasonics Symposium Costs
\$ 200	Misc. Expenses
<u>\$ 37,930</u>	<u>Total</u>
	1971 Net Operating Loss \$ 4,630
	Cash Reserves 7,932
	Projected Reserve at end of 1971 3,302

Referring to these figures, a few comments are in order:

- 1) IEEE Support to G-SU is \$3,100 less than IEEE Headquarters Expenses. Therefore, if publications are handled separately, 50% of Group Membership Fees are returned to IEEE! This is not true for the larger IEEE Groups, and, in fact, the larger groups do actually receive net support from Headquarters whereas the smaller groups get penalized. This comes about simply on the basis of the size of the group membership.
- 2) The projected deficit of \$4,630 for 1971 can be covered by our cash reserves. However, in 1972 the reserves could have completely dwindled if it were not for the programs being instituted presently, the major one of which is changing to a less expensive method of publication. Also, we hope that IEEE will change their policy of group support to be more equitable to the small groups.

How did G-SU survive up to now and how did we accumulate a cash reserve? The answer is almost standard today: A few years ago were the Good Times. Specifically, 1) IEEE did not lose money on the International Meeting and therefore had more funds to distribute to all IEEE Groups; 2) Headquarters expenses were \$5,000 less in 1968 than in 1969. The increase was due to re-organization of the IEEE Business Office which now is extremely expensive to operate; 3) Publication costs for the Transactions were considerably less than the present value of \$100.00 per page.

In conclusion, it is felt that although 1971 and 1972 will be a period of readjustment, the corrective actions will begin to work and G-SU will be able to demonstrate overall financial stability. ○

Report of the "Ad Hoc Committee to delineate the problems and recommend solutions affecting the professional and economic well-being of the electrical engineer."

by R. Mitra

1. A message from the Ad Hoc Committee comprising of V. Galindo, A. Ksienski, B. Steinberg, G. Thiele and R. Mitra, was published in the IEEE Group Newsletters. Problems related to the economic well-being of the electrical engineers were delineated and a number of solutions were catalogued. The membership was asked to rank the list of problems according to priority and to indicate preferences for the suggested solutions.

2. The response to the polls has been encouraging and more than a thousand returns have been received and collated. In addition to the polls many hundreds of letters expressing the views of the membership have been received. The views of the membership have been communicated to the IEEE Board of Directors.

3. Almost all of the respondents feel that there are a number of critical problems facing the engineering profession. A great majority of them think that "lack of portable benefits including pensions" is a serious problem for IEEE members. Lack of accurate forecasting of demand for engineers and the current problem of oversupply is also considered to be another important problem by many members. The respondents are also concerned about the other problems listed in the Ad Hoc Committee message.

4. Among the suggested solutions, "extending the scope of the IEEE," is favored by the majority of respondents (43%). The second choice is to work through a National Engineering Association such as the NSPE (31%). The extremes of "doing nothing" or "unionizing" are favored by only a few (about 10% each). It should be mentioned that these results are in good agreement with several other polls that have been reported.

Several members have written to say that they take this undertaking by the Ad Hoc Committee as an indication that for the first time the IEEE Management is showing an interest in soliciting the opinion of the membership. However, though many members feel that an opinion poll of all the IEEE members is long overdue, the IEEE Headquarters has thus far been reluctant to carry out such a poll. At the 1971 IEEE Convention, the following reasons were given by the IEEE Management for this hesitance on their part - cost of mailing and difficulty in preparing a suitable questionnaire that would correctly evaluate the opinion of the membership. However, at the same time the possibility of future undertaking of such a poll was not ruled out by the management. If the membership feels that this is an important project for the IEEE they would be well advised to write to the IEEE Headquarters as soon as possible, strongly urging them to solicit the views of the membership on key issues confronting the IEEE, and then taking the necessary steps to implement the desires of the majority. Incidentally, it has been suggested by some correspondents that the IEEE should poll their members on a periodic basis so that the management can keep themselves well-informed of the wishes of the membership.

Many members have shown their concern that the cooperative arrangement which the IEEE recently entered into with the NSPE is not a satisfactory answer to the needs of the IEEE Members. One reason is that typical IEEE members do not fall into the category of self employed engineers that make up the majority of the membership of the NSPE. It is felt that the IEEE Management owes it to the membership to discuss the pros and cons of the various alternatives, present the underlying reasons for the course of action that they have taken, and provide for rebuttal by the members who disagree with the present direction of the IEEE.

As for the future, it is suggested that the members who feel that the IEEE should expand its vista to include concern for the economic well being of the engineers should make corrected efforts toward guiding the IEEE in this direction. The last and most important step is for each person to write directly to the President, the General Manager, the Directors and let them know that the IEEE is the organization to which the electrical engineer looks for help in these matters. In addition, members can work through the present committee, the Professional Action Committee of G-MTT chaired by Bob Rivers of AIRCOM, or through a Professional Action Committee being set up by Leo Young, the IEEE Director of Division 4, or attempt to change the IEEE constitution through lawful amendment.

REPORT OF THE ACTIVITIES OF THE BOSTON SECTION OF THE
IEEE GROUP ON SONICS AND ULTRASONICS

by Mel Holland

The Group has had monthly meetings since the fall. The meetings have been as follows:

1. On September 23 there was a joint meeting with ASNT, ASTM, ASM, ASME, and AWS for a program on Acoustic Emission. Speakers included Dr. Bradford Schofield, Mr. Howard Dunegan, Mr. K. A. Fowler, and Mr. Jeff Thompson.
2. On November 12 there was a joint meeting with MTT and AP. Ernest Stern talked on Acoustic Microminiature Microwave Components.
3. On December 16 R. W. Damon talked on Microwave Acoustics in the USSR.
4. On January 21 there was a joint meeting with ED and Comm. Tech. M. G. Holland talked on Ultrasonic Devices in Signal Processing.
5. A. J. Slobodnik, Jr., "Acousto-Optic Light Diffraction and Devices" on March 17.
6. D. L. White on "Body-Powered Piezoelectric Pacemakers" on April 21. This was a joint meeting with Engineering in Medicine and Biology.
7. W. J. Spencer on "Monolithic Crystal Filters" on May 19.

The overall impression after about one year of operation is that the Section is alive but not very dynamic. A small core of people come to most of the meetings. The lectures have been of various content and have been quite rewarding to those who have attended. The joint meetings have been well attended, and we are doing a good job in educating the other interested groups. Joint meetings with other groups will probably be the best method of keeping good interest and attendance.

New IEEE Fellows

Several members of the Group on Sonics and Ultrasonics have recently been elected Fellows of the IEEE. Their names and addresses are given here, along with the numbers of the Groups to which they belong. Congratulations, all!

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4 Lonely Awards in Search for Recipients

The Awards Committee of the Administrative Committee of the G-SU is actively soliciting nominations for IEEE Awards. The nature of these awards is summarized in the November issue of SPECTRUM, pages 104 and 105. If you have a nomination, please notify one of the Cochairmen; we will contact you later for more details. To begin the nomination procedure, the Committee will need a brief paragraph explaining the qualifications of the nominee.

The following schedule for submission of candidate qualifications to IEEE is given for your convenience:

Field Awards	- April 1, 1971
Medal of Honor	- June 1, 1971
Major Annual Awards	- June 1, 1971
Prize Paper Awards	- September 15, 1971

Please make a special attempt to nominate for the Prize Paper in the areas of interest to G-SU.

Other awards, such as Intersociety Awards, are also available. We will supply more information on these by request.

For more information please contact:

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SURVEY RESULTS

THE RESULTS OF A SURVEY OF THE MEMBERSHIP OF G-SU

Early in 1971, the Administrative Committee of the Group on Sonics and Ultrasonics sent out a survey to the membership to help determine what the future of the Ultrasonics Group should be. This survey was mailed by IEEE in New York around the 1st of February and most of the surveys were returned to IEEE before the 1st of March. A surprisingly large number of the forms were returned, more than 450 out of about 1200 members, or a 37% return. The information from the survey was put on punch cards, and Dr. K. Haruta of Bell Laboratories wrote a program to collate and correlate the results. The printout of the results in this computer program are given below. Some of the points apparent from this survey are:

- 1) A large number of the returns were from new members.
- 2) Most of the returns were from individuals employed in areas other than ultrasonics.
- 3) Most people were interested in device aspects of ultrasonics, with medical ultrasonics running second.
- 4) Members of G-SU belong to a large number of other Groups.
- 5) A majority of the respondents would like to see a Proceedings published immediately following the annual symposium.

The results from the survey were extremely helpful to the Administrative Committee in their future plans for the G-SU. Of particular importance were a list of 50 who indicated a willingness to work in G-SU activities. From the response obtained, the survey looks like a good idea and consideration will be given to repeating it on an annual basis.

**** IEEE SURVEY **** MARCH, 1971 TOTAL = 450

1. PRESENT AGE

A) 20 - 30	64
B) 30 - 40	130
C) 40 - 50	151
D) > 50	95

2. HIGHEST DEGREE

A) ASSOCIATE	4
B) BS OR EQUIVALENT	113
C) MS	135
D) PH D	172
E) NO DEGREE	12

3. FIELD	
A) EE	279
B) PHYSICS	143
C) CHEMISTRY	7
D) MECHANICAL ENG.	16
E) MATHEMATICS	8
F) OTHER	46
4. TYPE OF POSITION	
A) RESEARCH & DEVELOPMENT	243
B) MANUFACTURING	45
C) UNIVERSITY	91
D) GOVERNMENT LAB.	22
E) SELF EMPLOYED	30
F) OTHER	38
5. IS MOST OF YOUR TIME CURRENTLY SPENT IN	
A) ADMINISTRATION	86
B) RESEARCH & DEVELOPMENT	296
C) TEACHING	48
D) MANUFACTURING PROBLEMS	24
E) OTHER	30
6. ARE YOU CURRENTLY	
A) EMPLOYED (ULTRASONICS)	173
B) EMPLOYED (OTHER)	247
C) UNEMPLOYED	10
D) RETIRED	10
7. INTEREST IN ULTRASONICS	
A) MANUFACTURING & PROCESS CONTROL	60
B) MEDICAL	98
C) PHONON PHYSICS	37
D) DEVICES	243
E) MATERIALS STUDIES	78
F) NONDESTRUCTIVE TESTING	72
G) OTHER	57
8. MEMBER OF G-SU FOR	
A) 1 YEAR	101
B) 2 YEARS	63
C) 3 YEARS	61
D) 4 - 10 YEARS	156
E) MORE THAN 10 YEARS	44
9. MEMBER OF OTHER IEEE GROUPS	
A) G-MTT	103
B) G-ED	105
C) G-AE	99
D) OTHER	189
10. PRINCIPAL INTEREST IN G-SU	
A) ULTRASONICS SYMPOSIUM	123
B) TRANSACTIONS	351
C) NEWSLETTER	30
D) COMMITTEE WORK	13
E) OTHER	1
11. PREFERENCE FOR MERGER	
A) G-AE	121
B) G-ED	88
C) G-MTT	97
D) OTHER	39
12. A DUES INCREASE RATHER THAN MERGING?	
A) YES	171
B) NO	240
15. PUBLICATION OF PROCEEDINGS OF THE ANNUAL SYMPOSIUM	
A) NO	57
B) YES; AT TIME OF MEETING	101
C) YES; AS SOON AFTER MEETING AS POSSIBLE	240

1975 Interest Profile

What will ultrasonickers be doing in 1975? Here's a list, but we don't claim to have a crystal ball. If anyone would like to make a prognosis about new fields or the relative importance of these fields, we would like to hear.

16. DID YOU ATTEND THE SYMPOSIUM IN	
A) 1968	115
B) 1969	96
C) 1970	101
17. OPINION ON SYMPOSIUM	
A) NUMBER OF PARALLEL	
LESS	60
SAME	106
MORE	11
B) INVITED TALKS	
LESS	9
SAME	95
MORE	58
C) PANEL DISCUSSIONS	
LESS	38
SAME	76
MORE	40
18. WOULD YOU PREFER HAVING THE SYMPOSIUM	
A) IN A MAJOR CITY	181
B) AWAY FROM A MAJOR CITY	119
19. WOULD YOU CONSIDER EVENING DISCUSSIONS	
USEFUL?	
A) NO	85
B) YES	180
20. IF THE TRANSACTIONS IS CHANGED FROM LETTERPRESS	
TO PHOTO-OFFSET WOULD YOU	
A) DROP YOUR MEMBERSHIP IN G-SU?	
YES	11
NO	397
B) BE LESS INCLINED TO PUBLISH YOUR PAPERS	
IN THE TRANSACTIONS?	
YES	86
NO	287

1. Sonic wave propagation in solids, liquids and gases.
 - 1.1 Physics of sonic wave propagation.
 - 1.2 Materials properties.
 - 1.3 Interaction effects (acousto-optic, acousto-electric, etc.).
2. Piezoelectricity.
 - 2.1 Piezoelectric materials.
 - 2.2 Transducers, devices and technology.
3. Magnetostriction.
 - 3.1 Magnetostrictive materials.
 - 3.2 Transducers, devices, and technology.
4. Analog signal processing in the RF and microwave range.
 - 4.1 Filters.
 - 4.2 Delay lines.
 - 4.3 Correlators, pulse compression devices, etc.
 - 4.4 Resonators.
5. Digital processing and storage.
 - 5.1 Digital delay lines.
 - 5.2 Memory devices and techniques.
6. Acousto-optical devices and techniques.
 - 6.1 Light modulators and deflectors.
 - 6.2 Display devices and techniques.
7. Ultrasonic imaging and visualization.
 - 7.1 Nondestructive testing and measuring.
 - 7.2 Visualization of biological and nonbiological structures.
 - 7.3 Ultrasonic holography.
8. Ultrasonic processing and therapy.
 - 8.1 Biological and medical applications.
 - 8.2 Industrial applications.

IEEE News

PORTABLE PENSIONS

At its May 20, 1970 meeting at IEEE headquarters, the Operation Committee of the Technical Activities Board concluded that a study of the possibility of a portable pension plan was an urgent need of electrical engineers; that a feasibility study was desirable on all aspects of establishing such a plan; and that the degree of involvement of IEEE could be treated as a separate issue. On a motion, OpCom voted unanimously that its position should be known to the IEEE Executive Committee that the pension plan study should be given urgent priority.

An Ad Hoc Committee on Portable Pensions has been appointed. The TAB member of this Committee is: Mr. Robert D. Briskman, COMSAT, 950 L'Enfant Plaza South, S. W., Washington, D. C. 20024.

You may address all communications about portable pensions to Mr. Briskman.

IEEE AND NSPE ENTER AGREEMENT

ON MEMBERSHIP AND SERVICES

In an action that leaders of the two organizations hailed as a most significant step toward cooperations within the engineering profession in decades, members of the 160,000-member Institute of Electrical and Electronics Engineers now will be able to avail themselves of certain services and publications offered by the National Society of Professional Engineers.

The new services will be available at varying fees, and will include eligibility to participate in such activities as the NSPE Employment Referral service and retirement program, NSPE legislative programs, receipt of many NSPE publications, as well as some participation in state and local services.

"In our broad discussions with leaders of IEEE during the past weeks, we learned that many of their members have expressed a desire for greater participation in the nontechnical problems facing our profession," said NSPE President Harry C. Simrall, P. E. "These activities parallel very closely the areas in which the NSPE has been involved for many years. The items in which these men

IN MEMORIAM



Robert W. Moss, member of G-SU Ad Com since 1968 died in Seattle, Washington, last November. Born February 1, 1930, he received his BS in Physics from Washington State University in 1957 and did graduate work at Stanford University and San Jose State College. He was a Staff Scientist at Boeing Scientific Research Laboratories from 1959 until the time of his death and spent a year of that time ('66-'67) as a visiting staff member in physics at Imperial College of London. Prior to joining Boeing, he worked for United Air Lines and Lockheed Research Laboratory and spent two years in the U. S. Marine Corps during the Korean War.

Bob Moss contributed generously of his time and energy to the Group on Sonics and Ultrasonics, serving for several years on the Symposium Committee and as General Chairman of that committee in 1967. Many of his colleagues and friends will remember the excellent arrangements he provided at the Vancouver meeting in that year. Since his election to the Administrative Committee, he had served the group well and faithfully right up to the time of his terminal illness. His many friends feel a great sense of loss with his passing and extend their deepest sympathy to his widow, Marion, and his daughters, Colleen and Janet.

IEEE & NSPE ENTER AGREEMENT

are interested include government liaison, both in the legislative process and the administrative decisions, and at the Federal, state and local levels. They are concerned with broad employment problems, ranging from the current problems they have as individuals; and collectively in such things as portable pensions, patent right and registration.

"They are anxious for unified action in improving the image and status of the profession through public relations and such professional matters as guidance, ethics and cooperation and liaison with other professional groups. They desire to participate individually in the decision-making process and to be a part of an organizational pattern that is effective at Federal, state and local levels. They do not see the need for another organization."

Commenting on this agreement, Dr. James H. Mulligan, Jr., President of the IEEE, stated: "The leadership is well aware of the increasing interest of many of its members in matters of economic, social and political involvement. IEEE has traditionally limited its activities to the dissemination of technical information concerning electrical and electronic technology. In contrast, the NSPE has limited its activities to the nontechnical area and has developed programs and accumulated expertise in many areas in which IEEE members are presently expressing concern. In addition, NSPE appears to have the particular form of organization needed to be effective in these areas.

"Until 1970, the NSPE confined membership to registered engineers and this prevented many IEEE members from being a part of their activities. With the revised criteria permitting non-registered membership in NSPE a large number of IEEE members can now become NSPE members. It seemed apparent, however, that if some mechanism could be worked out whereby more IEEE members might take advantage of NSPE's activities, this would provide an immediate opportunity to fulfill their express desire for greater involvement in the nontechnical areas of the profession. The Board of Directors of both organizations now have approved a course of action which should provide greater strength for effective programs in these areas."

The alternatives now open to IEEE members are:

Subscription to NSPE Services - Available at a fee of \$15 a year, these services available include: eligibility for the Professional Engineer Employment Referral Service (PEERS); eligibility for the NSPE retirement program; receipt of LEGISLATIVE BULLETIN, Legislative Action Report, Legislative Opinion Request and one practice section newsletter (except PEPP newsletter); Participation in the NSPE Salary Survey; subscription to the Professional Engineer magazine; and member rate on all NSPE publications. (See accompanying Fact Sheet for additional details on these services.)

Services from State Society Organization - Available at a fee of \$30. -- \$15. to be service charge to National, \$15. to be service charge at state level. In addition to the above services, IEEE members would receive the state publication and such other state services and participation as might be available, but would have no vote in state society or National activities. Several states have programs of discussions with employers on desirable employment practices for engineers.

In addition, membership in NSPE is available to IEEE members, subject to eligibility provisions of NSPE which relate the grade of membership available to the specific professional qualifications of the individual engineer. Such membership may be had at fees ranging from \$35 to \$75, depending on state and chapter in which member functions. As a member, he would receive all services of the National, state and local societies and have voting privileges. Membership would enable participation in all activities of the local, state and National societies in such matters as improving the status of engineers, public relations, community involvements, ethics, career guidance, committee participation, holding office, voting on policy matters, and related activities.

Presidents Mulligan and Simrall noted further that the cooperative action by the two societies might lead to similar arrangements with other technical organizations.

FACT SHEET ON NSPE

PUBLICATIONS AND SERVICES

Legislative Bulletin - This publication is issued monthly, summarizing Federal legislation introduced into Congress and as it progresses through the legislative process. It is a four-page bulletin.

Legislative Opinion Request - This publication requests the opinion of those receiving it as to their position on various legislative proposals which may be introduced from time to time. It attempts to summarize with sufficient details to be understood the elements of proposed legislation. It may be limited to a particular bill, or if several bills have been introduced on the same subject will attempt to summarize the thrust of the legislation and the variations in the proposals.

Legislative Action Report - This is issued as legislation progresses through the various stages of consideration. It suggests to those receiving it the desirability of contacting their legislators with the position of the Society and is the mechanism by which the profession can be most effective.

Practice Section Newsletters - NSPE has four newsletters, one each for engineers employed in government, industry, private practice and education. The newsletters primarily report significant developments in the area of employment for each group of engineers. Items reported range from significant statistical information, reporting on studies of value to that type of employment, employment practices, salary and economic considerations and similar concerns.

Professional Engineers Employment Referral Service (PEERS) - This service to which only members of NSPE are eligible permits an unemployed, or soon to be terminated, engineer to place his name and a short resume on his experience on file with NSPE. These are summarized and sent without individual identification to over one thousand employers. If the employer is interested in the anonymous summary, a contact to NSPE will provide him with the name and address of the individual so that he may contact him to get a full resume together with any details concerning employment.

NSPE Retirement Program - This program is a combined annuity and mutual fund program to which NSPE members are eligible, providing for an investment program with guaranteed annuity through an insurance aspect and a variable annuity return via the mutual fund.

Salary Survey - The NSPE conducts a biennial survey of the income of its members and reports the results in a variety of breakdowns by age, field of employment, type of work assigned, and degree of responsibility.

THE IEEE STANDARDS COMMITTEE

by Bruce B. Barrow, Chairman

SIGNIFICANCE AND RESPONSIBILITY

The IEEE Standards Committee has the responsibility of encouraging and coordinating IEEE standards activity. It carries out its work principally through the production of IEEE standards publications and it also supports standards work carried on in other organizations by appointing IEEE representatives and by providing technical inputs. It is one of the very few committees that represent the IEEE; in matters concerned with standardization it develops the IEEE technical position. This responsibility of developing a position through achieving a consensus within the large and complex IEEE organization accounts in significant measure for the sometimes slow and cumbersome process of developing an IEEE Standard.

As a result of the membership attitude survey carried out in 1968, in which 39% of the members polled indicated that they believed that issuing standards was a principal way in which the IEEE served its members, the Technical Activities Board appointed a special committee under I. G. Easton. This committee was charged with recommending how the Standards Committee should act to carry out the total responsibility of the IEEE in standards.

In 1969 the Easton committee made several key recommendations that are now being implemented:

1. Increase the Standards staff.
2. Publish IEEE Standards in the Transactions.
3. Review IEEE Standards periodically, on a 5-year basis.
4. Submit IEEE Standards to the American National Standards Institute.
5. Most important of all, stimulate Group activity in the Standards field, so that activities are carried out in all areas of IEEE technical competence.

We are beginning to show progress in all of these recommended areas. A new Manager of IEEE Standards Operations, Mr. S.I. Sherr, has been added to the IEEE staff. The first of the recent IEEE Standards will be published in the Transactions before these words appear in print. In addition, we have begun a systematic review of the nearly 150 Standards that are more than five years old and we are submitting most of our younger documents to the American National Standards Institute.

IEEE ORGANIZATION

With the appointment of five standing subcommittees to handle its many administrative tasks; the IEEE Standards Committee has cleared decks for action. An Administrative Subcommittee has been established to coordinate activities and develop policy proposals, as well as to handle many routine matters. The Procedures Subcommittee is responsible for maintaining the Standards Manual, a guide both for the members of the Standards Committee itself and for the literally hundreds of IEEE members who are engaged in one way or another in IEEE standardization activity. A new committee, the Resources Subcommittee, will advise on the allocation of IEEE resources to tasks that have to be performed. It will, for example, recommend which of the dozens of IEEE committees should be involved in individual standards projects. It will also advise on the dozens of appointments to American National Standards committees and other outside organizations.

A special committee has been formed to handle the presentation of proprietary IEEE Standards to the American National Standards Institute. Each such submission is a special case and must be handled individually. Finally, an International Liaison Subcommittee handles questions of coordination with the recommendations of

international bodies, particularly the International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO). This committee also prepares material for submission to these international organizations through the appropriate national standardization organizations.

The Standards Committee has given a good deal of attention to defining its proper role of support to the American National Standards Institute, a special relationship because the IEEE is the only technical society representing electrical engineers in the United States, while at the same time maintaining a proper balance with its responsibilities as a senior committee of a non-national organization. In carrying out its work, the Standards Committee recognizes first all its responsibility to the total IEEE membership. To that end its principal function is the generation of standards that are representative and useful to the entire membership. These IEEE Standards are then submitted to the American National Standards Institute for consideration as American National Standards. In addition, many IEEE delegates are appointed to American National Standards committees. Within the limits of IEEE resources, similar support is available to the standardizing bodies of other nations if they wish to request it.

GROUP ACTION (G-SU TAKE NOTE)

The technical work of generating IEEE Standards is for the most part carried on within the Groups. Most of the Groups that carry on extensive standardization work have a number of technical committees that work in their particular areas of specialization. Normally a draft standard is proposed by a fairly small working committee. If things are being carried on in an entirely proper manner, the project is approved by the Standards Committee at a very early stage. The principal reason for this procedural step is to ensure that the proper resources of the IEEE are brought to bear on the problem. If this necessary function of coordinating IEEE resources is performed at the very beginning, it is usually possible to avoid the painful delay that often results when a new Group interest is brought to bear on a draft standard at a late stage in its development.

After the drafting committee and the responsible Group Technical Committee approve the submission of a draft, it is sent to the IEEE Standards Committee. In the case of a new document, the draft may be approved as a "Proposed Standard," and issued for trial use. Under the new operating procedures, the trial-use standard will be published in the Transactions just as a full-status standard. However, after it has had a year of exposure to the public, the originating committee will be asked to take into account the comments received and the experience gained, and to prepare a new draft to be balloted for publication as a full-status standard.

Exceptions to the above procedure are few, and principally involve such general areas as definitions, letter symbols, and units, where the IEEE Standards Committee maintains its own technical committees to prepare key basic documents and to coordinate the work submitted by other committees.

The major remaining organizational task is to stimulate the proper degree of activity within those Groups that are not carrying on adequate standards programs. A number of the Groups are carrying on standards activity that is satisfactory both in quality and quantity. However, several of the key Groups of the Institute are carrying on little or no standards activity. In each such case we hope to see formal projects defined and activity begun before the end of 1970. We are glad that so many of the IEEE members have expressed a general interest in standards and would welcome specific suggestions regarding projects that ought to be initiated.

Dr. Leo Young



Director for Division 4

DR. LEO YOUNG ELECTED

DIRECTOR FOR DIVISION #4 - 1971-1972

The newly elected Director for Division #4 is Dr. Leo Young, Program Manager, Microwave Techniques, Stanford Research Institute, Menlo Park, California, (415)326-6200, X2594. For your information, some biographical data is listed below.

Dr. Young holds degrees in physics, mathematics, and electrical engineering. Before joining Stanford Research Institute in 1960, he had been head of the antenna laboratory at Decca Radar and advisory engineer at Westinghouse Electric Corporation. He has published extensively in the area of microwave filters and couplers; he has also directed research in antennas, phased arrays, ferrimagnetic devices, solid-state circuits, and more recently, microwave integrated circuits and acoustic surface waves. He has a strong interest in the dissemination of technical information and has edited several books on microwave topics; he has taught at Stanford University and was visiting professor at Leeds University in 1966, where he was one of two American lecturers at the first IEEE summer school. He has been consultant to the Stanford Linear Accelerator Center and various industrial, educational and government organizations.

IEEE Activities - (M'54-SM'56-F'68) Committees: Standards Coordinating Committee 14 (Quantities and Units), 1970; Antennas and Waveguides Standards Committee Number 2, 1965-66; New Technical and Scientific Activities Committee, 1966-67; Computer Aided Design Analysis and Realizability Committee, 1966-67. SECTIONS: Baltimore, Antennas and Propagation - Microwave Theory and Techniques Group Chapter, Secretary, 1959-60; San Francisco, Microwave Theory and Techniques Group Chapter, Chairman, 1963-64. GROUPS: Microwave Theory and Techniques, Administrative Committee, 1965-70, Chairman, 1969, Vice Chairman, 1968; Transactions Editorial Board, 1959-70; Operations Committee, Chairman, 1970; Microwave Magnetics Standards Committee Chairman, 1969-70; Microwave Measurements Standards Committee, Chairman, 1968-69; Technical Committees Coordinator, 1968-69, National Lecturer, 1968. CONFERENCES: International Microwave Symposium, 1966, Technical Program Chairman. CURRENT GROUP MEMBERSHIP: G-3 Antennas and Propagation, G-4 Circuit Theory, G-10 Aerospace and Electronic Systems, G-15 Electron Devices, G-17 Microwave Theory and Techniques, G-20 Sonics and Ultrasonics, G-27 Electromagnetic Compatibility.

IEEE & Its Members

Report by Director Leo Young, Div. 4

Last year the 30 Groups of IEEE were grouped into six Divisions, each headed by a director. The first directors were appointed--but eventually each director will be elected by members of Groups in a Division. Thus, the Electrosciences Division, Division 4, elected its first director for 1971. One other Division, Division 3, also elected a director for 1971. The four remaining Divisions continue to be headed by appointed directors for the time being.

The Electrosciences Division--the only Division to have adopted a name so far--consists of six Groups and one Council: G-AP, G-ED, G-MTT, G-Mag, G-PMP, G-SU, and QEC. Last year it was ably directed by Dr. William Lang. As your new director for 1971, I want to report to you after my first month "in office."

The task of the Division director has been defined as the opening of channels of communication. Such channels must be kept open between the Groups and the Board of Directors, among the Groups themselves, and especially from within the organization to wherever a need arises. IEEE must be able to recognize and investigate such needs and to do something about them.

IEEE is a successful organization that is passing through a period of rapid change. The Institute has been preoccupied with organization, and it has done a great job of tidying up the many facets of electrical engineering on a technical level. It has collected, documented and disseminated technical information. It has produced standards, fostered meetings and made technical knowledge widely and easily available. However, only our members can turn these services into action. President Jim Mulligan is rightly concerned about what the Institute is NOT doing for its individual members.

I feel that it is essential for us to maintain IEEE's fine organization, but we must expand our horizons. This will require informed and thoughtful actions, to preserve what is good in the old and to introduce the new. For example, we are faced with a new situation, and new member needs as a result of current unemployment and under employment of engineers in the U.S., where some 90 percent of our members reside. How can we (meaning IEEE) do more for our members who are unemployed? How can we improve the engineer's "image" in the eyes of the public? How can we bring matters of concern to engineers to the attention of the public? What positions should IEEE take on issues that affect engineers and engineering?

Engineers are concerned with things, and our organization has reflected this attitude. IEEE has adapted its services to meet new technical needs, but there has been much uncertainty and soul-searching on what non-technical services the Institute should innovate for its members.* I have no doubt that a consensus is emerging, and that IEEE will play its part, serving the individual as well as professional needs of its members.

The Groups collectively are the technical backbone of IEEE. In addition to their basic function of providing technical services, most Groups have developed their own identity and a group spirit which in itself is a strong asset. Being associated in a Division should make it easier for Groups to share experiences, exchange ideas, work together, and act together on matters of common concern. My main task will be to facilitate this process. I intend to keep in close touch with the Groups through their AdCom chairman. I hope that these meetings and discussions and other contacts will indeed help to open up new channels of communication, and will result in an organization that is more responsive to our members' interests. In particular, I would like to keep in touch with all of you, and would be glad to hear your views, complaints, and especially your encouragement. If you have any pertinent information or suggestions, and especially if you can help in any way, please write to me at Stanford Research Institute, Menlo Park, California 94025.

In summary, we must continue to adapt our organization to meet new needs. We have been successful in the past on a purely technical plane, and technical problems will continue to be our primary concern in the future. But let us see the whole picture, and also care for the individual member on whom the practice of engineering depends.

*For example, see the correspondence in IEEE Spectrum for January 1971.

Technical Committee on Transducers & Resonators

by John E. May, Jr., Chairman

The Technical Committee on Transducers and Resonators (TC-T&R), organized under the G-SU sponsorship in 1968, includes many of the members of the former IRE Piezoelectric and Ferroelectric Crystals Committee and continues much of the program of that Committee. The purpose of the TC-T&R is to foster the technical interests of the members of the Group on Sonics and Ultrasonics. This is accomplished through such activities as the organization of special symposia, or specially directed sessions at symposia of more general interest, the stimulation and generation of tutorial or review papers on topics of special interest, the modernization of existing standards and the generation of new standards. The former IRE Piezoelectric and Ferroelectric Crystals Committee generated a number of standards documents which have become primary references in the field of piezoelectricity and ferroelectricity. In the current IEEE nomenclature these documents are:

- IEEE #176 Piezoelectric Crystals: Definitions of Axes, Crystal Plate Orientation and Piezoelectric Relations, Symbols and Units (ASA C83.3-1951, R 196), (49 IRE 14 S1)
- IEEE #177 Piezoelectric Vibrator: Definitions and Methods of Measurement (May 1966 revision of 57 IRE 14 S1)
- IEEE #178 Piezoelectric Crystals: Determination of the Elastic, Piezoelectric and Dielectric Constants - The Electro-mechanical Coupling Factor (ASA C83.23-1960), (58 IRE 14 S1)
- IEEE #179 Piezoelectric Ceramics, Measurements of (ASA C83.24-1962), (61 IRE 14 S1)
- IEEE #180 Ferroelectric Crystal Terms, Definitions of (62 IRE 14 S1)

The IEEE Standards Committee has assigned responsibility to TC-T&R for periodic review of IEEE Standards 176, 178, 179 and 180.

Organization of TC-T&R

Technical activities of TC-T&R are concentrated in subcommittees which are arranged as group interests develop. For example, during the last year the Subcommittee on Ferroelectric Crystals, at its own request, transferred to TC-T&R from the Committee on Frequency and Time, sponsored by G-IM. Currently there are six subcommittees as follows: Piezoelectric Crystals, A. H. Meitzler, Chairman; Piezoelectric Ceramics, P. L. Smith, Chairman; Ferroelectric Crystals, C. F. Pulvari, Chairman; Piezomagnetism, R. S. Woollett, Chairman; Delay Lines, J. H. Eveleth, Chairman; Medical Ultrasonics, G. Myers, Chairman.

A major overlap of interest with that of the Committee on Frequency & Time, sponsored by G-IM, occurs in the field of piezoelectric crystals and here the responsibilities are shared through a joint Subcommittee on Piezoelectric Crystals.

Interests in the field of medical ultrasonics are shared with C-EMB through joint membership of the Subcommittee on Medical Ultrasonics.

Interests in the field of surface wave delay lines are shared with G-MTT through joint members of the Subcommittee on Delay Lines.

Membership of TC-T&R and the various subcommittees is attached.

The Technical Committee on Transducers and Resonators through its chairman maintains liaison with the IEEE Standards Committee and through liaison members with the following ANSI committees:

- C83 Components for Electronic Equipment
- S1 Acoustics
- S2 Mechanical Shock and Vibration
- S3 Bioacoustics

Our liaison representative with IEC is John D. Holmbeck, U. S. representative on TC-49, Technical Committee on Piezoelectric Crystals and associated devices.

Current Program

At the 1970 Ultrasonics Symposium a workshop session on fabrication techniques for bulk and surface wave delay lines was sponsored by the Subcommittee on Delay Lines. A Symposium on Applications of Ferroelectrics will be held June 7-8, 1971 organized by the Subcommittee on Ferroelectrics and sponsored jointly with IBM and Army Research Office, Durham, N. C. Sponsorship of a workshop session on nonlinear effects in piezoelectric ceramics at the 1971 Ultrasonics Symposium is planned by the Subcommittee on Piezoelectric Ceramics.

In the field of standards, the subcommittees have at various states of preparation the following standards documents:

- I Standard on Piezomagnetic Nomenclature, Subcommittee on Piezomagnetism. Approved by IEEE Standards Committee December 3, 1970, awaiting final publication.
- II Standard on Measurements of Piezomagnetic Materials, Subcommittee on Piezomagnetism, incomplete draft available, complete draft expected in 1972.
- III Standard on Piezoelectricity, Subcommittee on Piezoelectric Crystals. A proposal for this Standard which will replace IEEE 176 and 178 was favorably reviewed by IEEE Standards Committee in April 1970, projected completion date is in 1972.
- IV Standard on Piezoelectric Ceramics (revision of IEEE-179), Subcommittee on Piezoelectric Ceramics, preliminary outline available.
- V Definitions on Ferroelectric Crystals, Subcommittee on Ferroelectric Crystals, revision of IEEE #180 is being planned.
- VI Definitions on Delay Lines, Subcommittee on Delay Lines, preliminary drafts have been prepared on non-dispersive and dispersive analogue delay lines and acousto-optic devices, complete draft planned for 1972.
- VII Standard on Pulsed Ultrasonic Diagnostic Equipment, Subcommittee on Medical Ultrasonics, draft available, preliminary publication as a tutorial paper is planned.
- VIII Standard on CW Diagnostic Devices, Subcommittee on Medical Ultrasonics, outline in formative stage.

Members of Technical Committee on Transducers and Resonators

(TC-TR)

J. E. May, Chairman

J. H. Armstrong	J. D. Holmbeck
H. G. Baerwald	W. H. Horton
R. Bechmann	H. Jaffe
D. Berlincourt	W. P. Mason
J. L. Bleustein	A. H. Meitzler
W. G. Cady	G. Myers
A. R. Chi	C. F. Pulvari
W. A. Edson	P. L. Smith
S. L. Ehrlich	W. J. Spencer
J. H. Eveleth	R. A. Sykes
E. A. Gerber	H. F. Tiersten
E. Hafner	R. S. Woollett
D. L. Hammond	

List of TC & TR Members

Subcommittee on Piezoelectric Crystals

A. H. Meitzler, Chairman

R. Bechmann	R. T. Smith
D. Berlincourt	H. F. Tiersten
J. L. Bleustein	A. W. Warner
G. A. Coquin	F. S. Welsh, III
E. M. Frymoyer	

Subcommittee on Piezoelectric Ceramics

P. L. Smith, Chairman

D. Berlincourt	P. D. Wilcox
I. D. Groves	C. LeBlanc
G. E. Martin	

Subcommittee on Piezomagnetism

R. S. Woollett, Chairman

H. G. Baerwald	P. L. Smith
S. L. Ehrlich	C. M. van der Burgt
R. L. Harvey	R. H. Whymark

Subcommittee on Delay Lines

J. H. Eveleth, Chairman

D. L. Arenberg	A. F. Greenlaw
D. B. Armstrong	J. Hammer
H. Aronson	M. G. Holland
A. J. Bahr	J. Margolin
P. A. Bauer	F. A. Olson
M. G. Cohen	S. Rittenburg
J. H. Collins	E. Stern
R. Conly	W. S. Tehon
T. J. Geoghagen	A. Warner

Subcommittee on Medical Ultrasonics

G. Myers, Chairman

J. F. Belford	W. F. O'Brien
C. A. Hoer	J. M. Reid
F. Lizzi	M. Ziskin

Subcommittee on Ferroelectric Crystals

C. F. Pulvari, Chairman

G. Burns	A. H. Meitzler
E. Cross	R. E. Nettleton
S. E. Cummins	D. B. Silverman
H. Jaffe	A. W. Smith
S. K. Kurtz	H. L. Stadler
C. E. Land	G. W. Taylor
W. N. Lawless	H. H. Wieder
I. Lefkowitz	

METRIC REPORT

FIRST INTERIM METRIC REPORT CITES SHORTCOMINGS

IN U. S.'S INTERNATIONAL STANDARDS WORK

Secretary of Commerce Maurice H. Stans has transmitted to the Congress the first interim report from the U. S. Metric Study, with his concurrence in its "substantial concern about the need to strengthen the effectiveness of the United States in international standards negotiations."

The report of the Metric Study, which is being conducted by the National Bureau of Standards of the U. S. Department of Commerce, points out serious shortcomings in the U. S. effort in international standardization. It also recommends steps to reevaluate the U. S. performance in the interest of this Nation's future status in international trade.

"The matters discussed in this report are of the greatest importance to our international trading ability," the Secretary said today. "Our reaction to it will determine our position in the world market for many years. We have for too long pursued an unofficial policy of indifference to international standardization. It is time either to alter this stance, or, if we are to maintain it, to do so by choice rather than inadvertence."

Two years ago the Congress enacted the Metric Study Act because of concern over the increasing worldwide use of the metric system, the Secretary explained. In the past two years, he added, virtually all the trading nations of the world which had not already adopted the metric system did so, leaving the United States the only major industrial nation which has not decided to go metric.

The Metric Study was designed to provide information on a wide variety of effects that the increasing international use of the metric system of measurement is having on this nation. The Secretary of Commerce will transmit to the Congress, next August, a final report apprising these effects and recommending a choice among alternative courses of action that the United States may take.

According to Dr. Lewis M. Branscomb, NBS Director, the first interim report concludes that if the U. S. increases its effectiveness in international engineering standards-making, any eventual conversion to metric practice would be easier. American industrial practices, whether described in inches or millimeters, would then find broader acceptance in metric countries, he said.

The Metric Study Group has identified 455 classes of manufacturing as "measurement-standards sensitive."

"Examination of trade statistics shows that these 455 classes accounted for \$11 billion of exports and \$4 billion of imports in 1969," the interim report reveals. "Thus, in terms of exports and imports that are measurement-standards sensitive, there was a favorable balance of \$7 billion for the U. S. in 1969. There is clearly much at stake in the export and import of these kinds of products, although the extent to which the measurement-standards factor affects the trade balance is unknown."

Further surveys are being made by the U. S. Metric Study, to determine how affected firms assess the impact of measurements and standards in their foreign trade.

Dr. Branscomb said that the Metric Study, headed by Dr. Daniel De Simone at the National Bureau of Standards, has received information from organizations representing consumers, manufacturers, labor, education, and almost every other sector of American life.

The 145-page report is available from the Superintendent of Documents, U. S. Government Printing Office, at \$1.25. Order catalog number C-13. 10:345-1.

SYMPOSIUM

INTERNATIONAL FILTER SYMPOSIUM

There will be an International Filter Symposium held at UCLA on April 15-18, 1972. The meeting is designed to bring together experts in the field of electric wave filters from all over the world for a short concentrated meeting. Current plans call for technical sessions on the afternoon of April 15, with Sunday, April 16, held open for informal discussions and an evening social. The symposium will conclude with three technical sessions on Monday, April 17, and a single session on Tuesday, April 18.

The technical session will include:

- Digital Filtering
- Microwave Filters
- Crystal, Ceramic & Mechanical Filters
- Distributed RC Filters
- Active RC Filters
- Time-Domain & Matched Filtering
- LC Filters
- Phase-Lock Filtering
- Unconventional Filters (including integrated filters, filters for biological systems and Walsh function Filtering)

On Monday evening there will be a special session with experts from Western Europe, Japan, U. S. A. and the Soviet Union discussing international activity in filters.

Additional information may be obtained from the symposium Co-chairman:

R. W. Newcomb
Electrical Engineering Department
University of Maryland
College Park, Maryland 20742

P. R. Geffe
Westinghouse Electric Company
P. O. Box 1897
Baltimore, Maryland 21203

or from the Program Chairman, 215-439-6761

W. J. Spencer
Bell Laboratories
555 Union Boulevard
Allentown, Pennsylvania 18103

The deadline for abstract submission is January 15, 1972. Abstracts should be sent to the Program Chairman. Authors will be notified of acceptance of their papers before 10 February 1972.

Educational Programs in Sound & Vibration

The occupational noise exposure provisions of the Walsh-Healey Public Contracts Act, the awakening interest by the public in the quality of the environment, FAA noise limits for certification of new aircraft, and other noise regulations, laws and ordinances have all helped to generate a substantial offering of educational programs in the field of sound and vibration. For perhaps the first time an individual can avail himself of educational opportunities from the undergraduate, formal course to the specialized, professional seminar.

A comprehensive listing of programs was prepared by Sound and Vibration Magazine in June 1970, to act as a reference guide for laying out your own individual study plans. Many of these programs are annual or more frequent.

The listing is divided into three sections: (1) seminars and short courses presented by manufacturers and engineering firms, (2) seminars and short courses presented by universities and professional societies, and (3) formal acoustics programs in universities.

Seminars and Short Courses - Manufacturers and Engineering Firms

A number of manufacturers and engineering firms in the sound and vibration field offer specialized training in areas related to their market or interests. Such programs may be comprehensive and applicable to most product lines when presented by consulting or professional training firms. Programs offered by manufacturers obviously deal with their own specific applications of interest and feature their own products.

Seminars and Short Courses - Universities and Professional Societies

Universities regularly present short courses, seminars, and symposiums in the sound and vibration field, usually during the summer months. They are generally from a few days to two weeks in duration and are presented by faculty members and outside lecturers. Many of the courses are presented on a periodic basis.

Tutorial sessions in sound and vibration subjects are also presented and sponsored by a number of professional societies, including the Institute of Environmental Sciences, American Society of Mechanical Engineers, Society of Automotive Engineers, and the American Industrial Hygiene Association. Announcements are published by both the societies and Sound and Vibration Magazine.

Formal Acoustics Programs

The interest in the sound and vibration field is also reflected by the number of variety of formal acoustics programs offered by universities at the undergraduate and graduate level. A study of such programs done by Dr. John C. Johnson for the Acoustical Society of America shows that 124 educational institutions have one or more programs in acoustics. More than 25% of the total have a very comprehensive series of programs available. Individual courses can be lumped into 15 categories:

1. Architectural Acoustics
2. Audiology
3. Basic Acoustics
4. Dynamic Measurements
5. Electroacoustics
6. Musical Acoustics
7. Noise and Vibration Control
8. Physical Acoustics
9. Physiological Acoustics
10. Psychological Acoustics
11. Seismology
12. Shock and Vibration
13. Ultrasonics
14. Underwater Acoustics
15. Waves and Vibrations

Consult the June 1970 issue of Sound and Vibration for the actual listings.



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