NEWSLETTER

IRE Professional Group on ULTRASONICS ENGINEERING

THE PROFESSIONAL GROUP ON ULTRASONICS ENGINEERING (PGUE) IS AN ASSOCIATION OF IRE MEMBERS WITH PROFESSIONAL INTEREST IN THE FIELD OF ULTRASONICS ENGINEERING. ALL IRE MEMBERS ARE ELIGIBLE FOR MEMBERSHIP AND WILL RECEIVE ALL PGUE PUBLICATIONS UPON PAYMENT OF THE PRESCRIBED ASSESSMENT.

No. 6 September 19, 1956

Dear Fellow Member of the IRE Professional Group on Ultrasonics Engineering:

Has ultrasonics been overpromoted? We know that medical ultrasonics has been overpublicized at times. In fact, there has been misuse of this relatively new therapeutic agency. Such a circumstance is most unfortunate because it may mean that whatever beneficial results might have been brought to a patient have thereby been either postponed or abandoned. During our 9 years of investigating the possible therapeutic uses of ultrasonic energy we have found it difficult, in some instances, to cope with enthusiastic promoters of ultrasonotherapy. Promoters make statements which are based either on personal opinions or on limited observations which lack proper controls. Many of us entertain the hope to better man's lot by the application of new knowledge for beneficent purposes.

The following quotation from a recent report of an international conference on food physics emphasizes a similar state of affairs in another application in the field of ultrasonics.

> "One hundred men from this country and abroad who were called by Associated Press 'the smartest scientists in food industry' gathered in San Antonio for the first conference on Food Physics . . . . . .
> . . . . . .
> . . . . . Great possibilities were suggested for ultrasonics but it was said to be 'overpromoted and undeveloped' as a means of food processing."

The IRE Professional Group on Ultrasonics Engineering should assume a more serious and more general responsibility toward the quantitative understanding of this very interesting field of science.

The chief purpose of this Newsletter is to express a sincere appreciation of the fine response to the recent questionnaire. A fundamental purpose in organizing the Professional Groups was to promote close co-operation and exchange of technical information among the members. It is my personal opinion

that a questionnaire gives me much closer contact with each member than any other equally general method for attaining the desired goal. The interests, the complaints (which I considered an excellent aspect of the questionnaire), and the fine suggestions of each member who sent in a carefully filled-in questionnaire are now on record. All "soundings-off" and suggestions will be considered seriously and objectively (without names being mentioned in the case of complaints).

An important suggestion by more than one member was to promote closer cooperation with the Acoustical Society of America. It is interesting to note that such a step already has been taken. The Acoustical Society of America has established a Committee on Sonic and Ultrasonic Engineering. The members of this committee are:

Albert G. Bodine
Gilbert Brown
Neil Clark
M. D. Fagen
Frank Massa
Oskar Mattiat
W. Roth
T. F. Hueter, Chairman

At a meeting of this committee, the Chairman appointed Mr. M. D. Fagen (the retiring chairman of IRE-PGUE) as Vice-Chairman of the committee and also as liaison officer between PGUE and CSUE. This is a most happy circumstance, and we shall look forward to a fine relationship with the Acoustical Society of America. We are equally pleased to note that the editor-in-chief of the IRE TRANSACTIONS on Ultrasonics Engineering, Oskar Mattiat, is also a member of the Committee on Sonic and Ultrasonic Engineering. The combined efforts of these two excellent organizations, namely, the Acoustical Society of America and the Institute of Radio Engineers, should stimulate outstanding achievements in the field of ultrasonics.

Dr. T. F. Hueter, Chairman of the Committee on Sonic and Ultrasonic Engineering, kindly sent me a copy of the minutes of the committee meeting held on June 19, 1956. Two items in these minutes which will be of general interest will be quoted:

> "There has recently been formed an Ultrasonics Manufacturers' Association which is made up of 15 manufacturers of ultrasonic devices. In addition, the RETMA has established a committee on wave filters and delay lines of which one subcommittee, SQ-18.1, will be concerned with ultrasonic delay lines."

We are very happy and proud to announce that the chairman of the RETMA subcommittee (SQ-18.1, Wave Filters and Delay Lines) is one of our members: Mr. E. J. Cole, 7659 Hesperia Avenue, Reseda, California.

Since the information requested by some of our members can be obtained from the replies to the questionnaires,* we shall proceed immediately to

*All information is limited to that contained in the returned questionnaires. The chairman did not consider it wise at this time to extend the information gleaned from other sources.

supply the desired information, namely:

1. Applications of ultrasonics.

2. A survey of colleges and universities in which one may learn about ultrasonics.

3. A list of organizations in the field of ultrasonics.

1. Applications of Ultrasonics

We have attempted to list these applications in order of the frequency with which they were stated (this pertains only to the first 10 on the list).

1. Transducers (development, design, performance)
2. Cleaning
3. Propagation
4. Delay lines
5. Drilling
6. Medical ultrasonics
7. Sonar systems and underwater acoustics
8. Measurements and instrumentation
9. General
10. Nondestructive testing
11. Machining and tooling
12. Processing
13. Mixing, agglomeration polymerization, etc. (Treatment of chemicals; also chemical effects. One item stated: "basic - exploratory in nuclear areas of low number elements.")
14. Filters
15. Ultrasonic light modulator system for display and recording of high-dynamic range wide-band video information
16. Ultrasonic images
17. Whistles
18. Ultrasonic power
19. Radar simulators
20. Ultrasonic antifouling for ships
21. Piezoelectricity
22. Flaw detection
23. High-pressure phenomena in lubricant layers and plastic flow of metals
24. Metals joining by ultrasonics
25. Research
26. Teaching
27. Learning

Information on items 2 and 3 is combined in the following list compiled from answers to item No. 3 of the questionnaire. The educational institutions are indicated by an asterisk placed prominently in the left-hand margin.

Institutions

Acoustica Associates, Inc., Glenwood Landing, L.I., New York
Aeroprojects, Incorporated, Westchester, Pa.
Airborne Instruments Laboratory, Mineola, New York

Aircraft-Marine Prod., Inc., Harrisburg, Pa.
Alcar Instruments, Inc., New York, N. Y.
American Machine & Foundry Co., Greenwich, Conn.
Anaconda Wire and Cable Co., Muskegon, Michigan
Arenberg Ultrasonic Laboratory, Jamaica Plain, Mass.
A R M A, Garden City, New York
* - Armour Research Foundation of the Illinois Institute of Technology, Chicago, Ill.
Batelle Memorial Institute, Columbus, Ohio
Bell Telephone Laboratories, Murray Hill, N. J.
Whippany, N. J.
* - Bioacoustics Laboratory, University of Illinois, Urbana, Illinois
Boston Dispensary, Boston, Mass. (Educational institution ?)
Branson Instruments, Inc., Stamford, Conn.
Canadian Westinghouse Company, Hamilton, Ontario, Canada
Carbide and Carbon Chemicals Company, South Charleston, W. Va.
Centralab, Milwaukee, Wisconsin
Cincinnati Milling Machine Co., Cincinnati, Ohio
Clearing Machine Corp., Division of U. S. Industries, Chicago, Ill.
Clevite Research Center, Cleveland, Ohio
Compagnie Générale de TSF, Rosny-sous-Bois, Seine, France
Computing Devices of Canada, Ottawa, Canada
Convair, San Diego, Calif.
Corning Glass Works, Elmira, N. Y.
Demieville & Cie, Bellefontaine, Lausanne, Switzerland
Diamond Power Spec. Corp., Lancaster, Ohio
Dyna Empire, Inc., Garden City, N. Y.
E. I. du Pont de Nemours, Aiken, S. C.
Elcalor, Ltd., Aarau, Switzerland
Electronics, Inc., Boston, Mass.
Electro-Sonic Laboratories, Long Island City, N. Y.
Fairchild Controls Corporation, New York, N. Y.
Firestone Guided Missile, Fullerton, Calif.
Fischer and Porter Co., Hatboro, Pa.
Fisher Engineering, Inc., Huntington, Indiana
General Electric Company, Utica, N. Y.
General Equipment & Manuf. Co., Louisville, Ky.
General Mills, Minneapolis, Minn.
Gibbs Mfg. & Research Corp., Janesville, Wisconsin
G. L. Martin Co., Baltimore, Maryland
Goodyear Aircraft Corp., Akron, Ohio
Gulton Manufacturing Corporation, Metuchen, N. J.
Hughes Aircraft Co., Reseda, Calif.
Iconix, Incorporated, Los Altos, Calif.
Instituto Tecnologico de Aeronautica, San Paulo, Brasil
* - Massachusetts Institute of Technology, Cambridge, Mass.
Minneapolis Honeywell Regulator Co., Minneapolis, Minn.
* - Missouri School of Mines and Metallurgy, Rolla, Missouri
Murdoch Laboratories, Jamestown, N. Y.
National Bureau of Standards, Boulder, Colorado
Washington, D. C.
Naval Research Lab., Washington, D. C.
Operating and Exploitation Company, Amsterdam, Z., Netherlands
Paul Rosenberg Associates, Mount Vernon, N. Y.
Pecar Electronics, Detroit, Michigan
Raytheon Manufacturing Co., Wayland, Mass.

R.C.A. Laboratories, Princeton, N. J.
Richard D. Brew and Company, Concord, N. H.
Roth Laboratory for Physical Research, Hartford, Conn.
Sanborn Company, Brooklyn, N. Y.
Waltham, Mass.
Skiel Corporation, Chicago, Ill.
Sorensen & Co., Inc., Stamford, Conn.
Soundrive Engine Co., North Hollywood, Calif.
Sperry Products, Inc., Danbury, Conn.
Stanford Research Inst., Menlo Park, Calif.
Stromberg-Carlson Co., Rochester, N. Y. and San Diego, Calif.
Sylvania Electric Prod., Emporium, Kansas
Tuboscope Co., Houston, Texas
Underwater Sound Reference Laboratory, U. S. N., Orlando, Florida
* - University of British Columbia, Vancouver, B. C., Canada
* - University of Pennsylvania, Philadelphia, Pa.
U.S.A.F.
U. S. Army Signal Corps, San Francisco, Calif.
U. S. Government
U. S. Navy, Cape Hatteras, N. C.
U. S. Navy Electronics Laboratory, San Diego 52, Calif.
Waldorf Instrument Corp., Huntington, L.I., N.Y.
* - Wesleyan University, Middletown, Conn.
Westinghouse Electric Corporation, East Pittsburgh, Pa. and Bloomfield, N.J.
Whirlpool - Seeger Corporation, St. Joseph, Michigan

In addition to a listing of the educational institutions, the following information about these institutions was desired:

1. Courses offered in ultrasonics and related fields.
2. Degrees offered in ultrasonic engineering.
3. Research programs related to ultrasonics.
4. Availability of reports on (or resulting from) the research programs.

At some future time we hope to supply the above information. Such information may be obtained, at least in part, from catalogs and reports which are available from the respective educational institutions.

Several suggestions were made relative to the type of papers published in the IRE TRANSACTIONS on Ultrasonics Engineering. These suggestions include requests for the more practical aspects, for tutorial papers, for a series of lectures, for detailed information which would permit reproduction of equipments particularly for use in measurements, for better standards, for more fundamental theoretical aspects and so on.

We are justly proud of each and every member of the PGUE. May I urge each member to assume a real sense of responsibility in the sharing of his knowledge. Let us be real teachers at heart as well as "receivers" of knowledge in ultrasonics. Please submit a paper for one of our programs or for publication in our TRANSACTIONS, so that your fellow member may benefit thereby.

What I am attempting to say in a general way has already been said so beautifully in a particular instance, i.e., in the following quotation:

A Tribute to Enrico Fermi

by H. L. Anderson

Physics Today, 8:12-13 (January) 1955

> The eternal scholar, Fermi was always eager to learn. He was always grateful when he found out something new. What he learned he felt he should enrich. Having enriched what he learned he felt he should teach it to others. Thus, he prepared the fertile ground out of which arose the new solutions and new ideas which kept his subject bright, fresh and exciting.

Thank you kindly.

J. F. Herrick
Chairman