

# ENGINEERING ALUMNI Newsletter

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*From the desk of  
Kenneth G. Picha, Dean  
School of Engineering  
University of Massachusetts  
in Amherst*

*May, 1969*

*Dear Alumnus:*

*This letter is the first in what I hope will be a series of periodic reports of items of interest coming from our School of Engineering. It seems an especially appropriate activity at this time considering the formation of the Engineering Alumni organization which I shall comment on below. I would hope that each Newsletter might feature specific areas of our School operation — new programs, research activities, items of note from our undergraduate program, etc.—and news of special interest about Alumni activities. Any feedback which you, as a recipient of this Newsletter, can provide will certainly be most valuable to me and to the School.*

## ENGINEERING ALUMNI ASSOCIATION



Bill Boyle, ChE '64  
President, Engineering  
Alumni Association

The formation of the formal University of Massachusetts Engineering Alumni Association, which has been alluded to above and which you have already heard from in another mailing, is a source of considerable pride and pleasure to myself and the School of Engineering faculty. We are all delighted to know that this organization intends to continue the excellent work which has been accomplished thru the years by the Engineering Alumni Scholarship Fund in providing financial support for many Engineering students. Beyond this, however, we are proud that our Alumni feel a close enough attachment to their alma mater so that they are willing to devote their time and energies to making the organization a reality.

Certainly my congratulations and appreciation go to Bill Boyle, the first president of the new Engineering Alumni Association, who has really gotten things off to a roaring start. Bill is actively involved in Engineering at Monsanto Plastics Division in Springfield, Mass. where he was recently appointed to Production Manager, PVC Resin Manufacturing and Packaging Operations. He is active in AIChE and has a number of recent technical publications to his credit. We are proud of Bill and would like to feel that his work with us has contributed to his success.

We all wish the new Association the best of luck and success and pledge our utmost support to it.

We in the School of Engineering see our interaction with the Engineering Alumni Association as being a relationship which will be mutually beneficial. We certainly need broad Alumni support in areas beyond that of scholarship monies. We hope that an informed alumni may help us by defining for the citizens of the Commonwealth and beyond — students and their parents, the lay public, legislators, etc.—the fantastic resources available at our School in the form of faculty, phy-

sical plant, undergraduate and graduate, education and research. In addition to this, we would hope that our Engineering Alumni would sit as a critical audience whose comments and suggestions might help guide us as we strive to develop a center of excellence in Engineering Education.

This, however, should not and cannot be a one-way street. Our School is committed to helping our Engineering Alumni in whatever way possible. We have suggested to the Engineering Alumni Association Board that our faculty will be willing to:

- a) visit and speak to groups in their home towns on topics relating to their professional competence or on topics relating to campus life;
- b) provide short institutes on technical themes;
- c) have alumni visit the campus to ask questions or see what is going on, etc.

This should prove attractive since we now have a broad spread of faculty competence in such areas as *the ocean, the environment magnetohydrodynamics, computers, operations research, hospital engineering*, and others too numerous to list here.

## ELECTRICAL ENGINEERING

In this first newsletter I should like to feature the activities in our Electrical Engineering department. Under the able direction of Dr. G. Dale Sheckels, this department has grown and improved the quality of its program in all areas of instruction—undergraduate and graduate—and research to the point that we consider it to be one of the finest in the country. Space limitations keep me from spelling out *all* those things which and people who have contributed to the growth of the program, but I should like to cite a number of items for you which may give you some feel for my enthusiasm.

### Undergraduate

In line with national trends the department has been taking a hard look at its undergraduate curriculum and will be requiring under 130 credit hours for its B.S. in E.E. degree commencing with the freshman class which enters in September, 1969. This revision has required considerable effort and a good hard look at the philosophy of engineering education in an age of rapid social change which has resulted from technological advance.

The faculty have done their bit in seeking support for the material aspects of this new program. Thus Professor Fred Edwards has received a National Science Foundation Grant of \$8900 matched with \$8900 of State money for the purchase of equipment for an undergraduate Switching Circuits laboratory. The new equipment provides for six set-ups for Modular Logic equipment which makes possible the study of all types of sequential circuit operating characteristics. It also provides for specific studies in the area of Digital Data Processing Systems.

In addition, Professor Bob McIntosh also received a National Science Foundation Grant for \$17,000 matched with another \$17,000 of State money for the purchase of undergraduate equipment for a Microwaves laboratory. Equipment is now being used by students in a number of carefully planned experiments designed to supplement the theory presented in the classroom. It is also being used by individual students in special projects which provide additional laboratory experience not available in conventional courses.

There are a number of undergraduate students within the department whose activities have reflected well on both themselves and the School, but I should like to cite one in particular who should receive special mention.



Bruce Benwood  
EE '69

Bruce Benwood, EE '69, has represented us well. He has been involved in University honors colloquia, has been secretary-treasurer of the Council of Academic Honor Societies, and has been elected for listing in Who's Who in American Colleges and Universities—a rare honor for engineering students.

In addition, Bruce is president of Tau Beta Pi, Vice-President of IEEE, and is active in Eta Kappa Nu, the Electrical Engineering honor society. Bruce was chairman of the student chapter of IAESTE, the student overseas industrial exchange program and, in fact, will be working in the Netherlands during the coming summer. Bruce has been elected to Phi Kappa Phi. He is doing a senior project on lasers with Prof. McIntosh.

Bruce has several offers for graduate school and industrial placement, but at this time has not made final plans for next year.

Our hats are off to Bruce Benwood!

## Research and Graduate Activity

The graduate student enrollment and the number of graduate course offerings continues to increase. At the present time there are 20 graduate students in the Master's degree program, and six in the Ph.D. program. The first Ph.D. will be granted in August of 1969.

The research activity in the Department is also increasing with ten of the faculty actively engaged in research projects. Those projects that are funded externally amount to \$146,000.

Professors Hutchinson and Monopoli are working under a Department of Defense Project Themis Grant. This particular project is in cooperation with two other faculty members from the Civil Engineering Department. The Electrical Department's share this year is \$5,000 to improve navigation and control systems in deep sea submersible vehicles. Three Electrical Engineering graduate students are currently involved in this project.

Professor Thomas is working in the area of Speech Production and Perception, and in the development and evaluation of prosthetic aids for the deaf. This work has not only the immediate results of enabling deaf to hear and to speak more readily, but provides important new insights into all aspects of the human speech production and reaction. It is being funded by a \$22,700 grant from the National Institutes of Health, and \$11,500 grant from NASA, and a \$15,000 NASA grant held over from last year. Four graduate students are involved in this work.

Professor McIntosh and Professor Tang are investigating the theoretical and experimental aspects of High Power Microwave Pulses Propagated Through An Ionized Medium. This work is being supported by a two-year \$35,000 grant from the Air Force Office of Scientific Research. Four graduate students are involved. Professor McIntosh also is investigating Signal Distortion When Propagated Through A Dispersive Media Such as the Ionosphere. This work is supported by an NSF grant for \$15,000, an NASA grant of \$11,500, and an NASA grant held over from last year for \$15,000.

Professor Scott is working in cooperation with the Psychology Department in the Investigation of the Properties of the Human Balance Control System. The goal of this research is to accurately identify the transfer function of this biological system. This might provide an answer to the question of the exact causes and cures of motion sickness experienced by astronauts. One graduate student is involved.

Professor Navon is in the process of setting up a Microelectronics laboratory facility. This facility will be used for the study of semi-conducting thin films such as gallium arsenide and cad-

mium arsenide which appear to have special properties suitable for advanced microelectronic devices and circuits. Five undergraduates and one graduate student are assisting in this laboratory.

Professor Jackson is investigating the mechanical and magnetic properties of a class of magnetic crystals related to the gem garnet. These experiments will provide information on the propagation and decay of very high frequency acoustic waves which are finding increasing use in Signal Processing Devices. This work is supported by a National Science Foundation Grant for \$15,000. One graduate student will be involved.

Professor Bobrow is applying Graph Theory to the Solution of Problems in Noisy Communication Channels. He is using variable length codes and error-correcting codes for transmission in noisy channels. One graduate student is involved.

Professors Hutchinson and Monopoli are studying Pulse Frequency Modulation in Control Systems. This type of modulator is common in satellite control systems since full-on full-off action of control jets lends itself to pulse frequency modulation. This project is funded by an NASA carry-over grant of \$27,500. Four graduate students have been involved with this project in the past, and one at the present time.

Professors Hutchinson and Monopoli are also conducting research directed towards finding improved techniques for Estimation and Control in Systems with Unknown Parameters. For example, the control parameters used for a missile or a high-speed aircraft under one set of flight conditions will not be suitable for a different set of flight conditions. Thus, automatic control of those systems presents a challenging problem. This study is presently being supported by an \$8000 NASA grant, and during the earlier part of this year by a \$15,000 hold-over grant. One graduate student is presently involved.

As you can very well see, the Department has come a long way and deserves any and all kudos directed their way.

*I hope to be back to you again in the near future. May I hear from you concerning this letter or any other input you care to make.*

Sincerely,



K. G. PICHA  
Dean