missouri alumnus

MARCH-APRIL 1971

engineering section

January Graduating Class Hears Charles J. Miller

One hundred and three members of the January 1971 graduating class of the College of Engineering were honored at a special recognition convocation.

Dean of the College William R. Kimel presided over the January program. Dr. C. Brice Ratchford, interim president of the University and Dr. Herbert W. Schooling, Columbia campus interim chancellor, welcomed the audience of parents, friends and faculty.

Featured speaker was Charles J. Miller, a 1930 engineering alumnus of the Columbia campus. Now retired as a General Electric regional vice president, he is currently serving as chairman of the College's new advisory board. (See Engineering Newsletter November-December).

CHARLES J. MILLER

Certificates for the outstanding teacher awards to Engineering faculty members chosen by the graduating seniors were presented to Dr. Neil F. Meador, Dr. Truman S. Storvick, Dr. Jay B. McGarraugh, Dr. Earl J. Charlson, Dr. David E. Wollersheim and Dr. Larry G. David.

Offer New Course in Man and Technology

"We're here to lead, not to follow. We can't educate these men for today since they will be working in tomorrow's world. Therefore, we try to teach them how to think, give them background on techniques, then step them out into the broader responsibilities of the profession," says Frank Swenson, one of the advisors to a new student-initiated experimental course at Ol' Mizzou.

The course, "Man and Technology," carries a pass/fail grade and is concerned with the engineer and his responsibilities as a professional. It is purposely being offered to both engineering and Honors College students in the hope that the two groups will learn from each other.

"The idea for the course was prompted by James Holleran, associate professor of English, when he spoke at a banquet for Tau Beta Pi, the engineering honorary fraternity, last year. He raised many questions concerning technology and the engineer. "This course is, in part, an answer to his challenge to us," says Warren Seering, the student, dually enrolled in engineering and graduate school, who initiated the course.

The first eight weeks of the course are technically oriented and, hopefully, will prompt the non-engineers to understand the engineer's problems and why there are no instant solutions. The second eight weeks approaches technology from the non-technical viewpoint--and is meant to show the engineers that more than technical implications should be considered in the projects they work on.

"We've left the initiative with Warren, so the course will be the way he wants it. We've made suggestions and helped him uncover what he had in mind; but he's guiding it and putting it together," says Donald Creighton, associate professor of mechanical and aerospace engineering who is advising Seering in presenting the course.

Faculty members from several departments around the campus--including industrial engineering, civil engineering, electrical engineering, philosophy, English, economics, history, sociology, rural sociology, anthropology, geology, law and horticulture--are teaching and leading discussions, making the course truly interdisciplinary.

Says Creighton: "Perhaps students see needs sooner and clearer than we do...I'll support any effort if the students really will. You know, the hardest part of teaching is the motivation factor. If there is no motivation, there is little learning. But if the student really wants to do something, then the motivation is already there, and we should take advantage of it."

Seering readily admits he has been more than pleased with the faculty response.

"It's good to see that the faculty is willing to respond so strongly and positively to the wishes of a student," he says.

Work on Analyzing X-ray by Computer

An interdisciplinary effort by scientists and engineers at the University to develop a computer system for the automatic analysis of X-rays and other radiant images has been implemented by a $385,639 grant from the National Institute of General Medical Sciences, which has committed more

than $1 million to the entire program.

Dr. Samuel Dwyer, professor of electrical engineering, and Dr. Gwilym S. Lodwick, professor and chairman of the department of radiology, are principal investigators of the research program.

Several advances in computer applications in radiology have been developed at the University during the past several years. The research in automatic radiant image analysis will build on these efforts through four major but closely interrelated projects. Because of the interdisciplinary nature of the work, each project has a director and co-director, one representing engineering, and the other, radiology. The successful completion of the four projects will develop the foundation for an entirely automated system capable of making medical diagnoses from radiant images such as X-rays and also demonstrate that these diagnoses are at least as valid as those made by practicing radiologists.

Such a system would reduce the work load in radiology, with automation processing simple diagnostic decisions and reserving more difficult cases for personal attention. It will also help overcome perceptual problems in which an abnormality, though visible, is overlooked by the human observer because it is obscured by visual "Noise" (image elements of no diagnostic significance). The system also would assist physicians with insufficient experience with uncommon diseases by storing and making available the detailed experience and diagnostic logic of the highly specialized physician.

The technology being developed in this research effort is also essential for the long-range transmission and interpretation of radiant images. The care of patients in an outlying community which lacks full-time diagnostic radiology services would be improved if radiant images could be transmitted to diagnostic centers for analysis and expert consultation.

Engineering Awards Five

Highlight of the annual Engineers Week celebration of the College of Engineering here March 13-20 was the presentation of Missouri Honor Awards for Distinguished Service in Engineering. The five 1971 awardees are: James H. Brown, BS CE '48, vice president-operation, St. Louis-San Francisco Railway Company, Springfield, Mo.; Robert N. Hunter, BS CE '50, chief engineer, Missouri Highway Department, Jefferson City, Mo.; Robert L. Ketter, BS CE '50, president, State University of New York at Buffalo; Fumio Robert Naka, BS EE '45, deputy under secretary of the Air Force (Space Systems), Department of the Air Force, Washington, D.C. and Thomas B. Robinson, assistant managing partner, Black and Veatch Consulting Engineers, Kansas City, Mo., and president, Black and Veatch International.

Established in 1951 by the College of Engineering and the Missouri Engineering Foundation, the Missouri Honor Awards give public recognition to individuals or companies for their contributions to society through engineering education or professional engineering practices.

Summer Session Set on Sanitation

The College of Engineering is offering a summer field training course in environmental sanitation June 14 to August 6. Designed specifically for sanitary engineers and sanitarians, it will feature intensive instruction and supervised field practice in health department problems.

Classroom instruction, laboratory sessions, field practice, and group evaluation of sanitation problems and solutions will be provided by Columbia campus faculty; specialists from the U.S. Public Health Service, and a number of experts from state and local departments of health. Course director is Lindon J. Murphy, professor emeritus, department of civil engineering.

Two Methods Measure Earthquakes

How do you measure an earthquake?

Two ways, according to Dr. Robert P. McBean, assistant professor of civil engineering.

"The recent destructive earthquake in California reportedly measured 6 to 6.5 on the Richter scale," he said, "the one most commonly reported in the news media. However, the Richter only compares the magnitude of earthquakes. It gives no indication of losses in life and property at any given location."

The Richter scale, based on a logarithmic formula, assigns a number value to the energy released by an earthquake at its focus, and each number represents a 32-fold increase in the total energy. Although an earthquake of magnitude 7 releases 32 times as much energy as a 6, one rated 8 on the Richter scale will release about 1000 times (32 x 32) more energy than one rated at 6.

"The Richter scale doesn't provide a measure of what concerns us most," said McBean, "that is, the local effects of an earthquake."

According to McBean, the Modified Mercalli scale is of far more practical value than the familiar Richter, because it is one of which the man on the street can more easily relate.

"The Mercalli provides a measure of an earthquake's local intensity in terms of its immediate effect on buildings and other structures. The number values of the Mercalli scale are primarily a function of the distance from the damage site to the focus of the earthquake, the area's geological features, and the manner in which structures respond to the ground motion."

These magnitude (Richter) and intensity (Mercalli) scales provide two entirely different means of measuring an earthquake. Although considerable data has been collected on the magnitude of earthquakes by seismograph stations around the world, relatively little has been recorded on the actual reaction of structures to the ground motions caused by a strong quake.

"This latter data," said McBean, "is what's needed if we're to improve the design requirements in our building codes."