ETcetera

THOMAS J. DOLAN, SEM (SESA'S) 1951-52 PRESIDENT, 1969 MURRAY LECTURER, FELLOW AND HONORARY MEMBER DIED ON JANUARY 10, 1996. Tom was very active in SEM (SESA) for most of his professional career. He, along with Bill Murray and Dan Drucker, wrote the chapter on Photoelasticity which was published in the first edition of the "Handbook on Experimental Mechanics" edited by M. Hetenyi. Prof. Dolan was a member of the Executive Committee of the Eastern Photoelastic Conference, which eventually organized itself into the Society for Experimental Stress Analysis in 1943.

His research interests were hydraulics, structures, concrete and fatigue of metals. In the early days, he began to take advantage of Polaroid sheets that were making photoelasticity an important stress analysis technique.

In addition to SEM, Prof. Dolan served on the National Science Foundation, National Materials Advisory Board, U.S. National Committee on Theoretical and Applied Mechanics and the Materials Research Center.

Memorial contributions may be made to the University of Illinois Foundation for furthering teaching and research programs of the Department of Theoretical and Applied Mechanics.

SEM, IN CONJUNCTION WITH MAJOR UNIVERSITIES, SPONSORS SYMPOSIA ON EXPERIMENTAL MECHANICS FOR UNDERGRADUATE AND GRADUATE STUDENTS. The following are scheduled in 1996. The Southeastern Symposium on Experimental Mechanics will be held March 29-30 at the Center for Excellence for Advance Materials and the Department of Mechanical Engineering at Tuskegee University, in Tuskegee, Alabama. For further information, contact Dr. Hassan Mahfuz, at 334-727-8985 or e-mail, ememah@acd.tusk.edu.

The first Northeastern Symposium on Experimental Mechanics will be held April 26 - 27, at Worcester Polytechnic Institute, Worcester, Massachusetts. The Director is Prof. Ryszard Pryputniewicz and approximately 20 universities throughout the northeast have been invited to participate. Registration is free and students need only provide for their own transportation and lodging. For further details contact Dr. Pryputniewicz at 508-831-5536 or e-mail, RJP@wri.edu.

The goal of these programs is to give students an opportunity to present their work to an audience of their contemporaries. They will also be able to form a professional network with other students doing similar work which can be an added career benefit in later years. More importantly, students will gain the confidence to present and defend material which they have developed.

STRAINOPTIC TECHNOLOGIES APPOINTS EXCLUSIVE REPRESENTATIVE TO KOREA. Mr. Y.C. Ma of Dae Jin International was recently appointed as Strainoptic's exclusive representative in Korea. He will be marketing Strainoptic's complete line of instrumentation for photomechanics, and has already succeeded in supplying Shadow Moiré instrumentation to the Korean Atomic Energy Research Institutre.

Technical Notes

New Generation of Pre- and Post-Processing Software Helps Meet Demands of Larger and More Complex FEA Models

by George Christ
Altair Computing, Inc.

The size and complexity of finite element meshes used to solve engineering problems are growing at a rapid pace. Ten years ago a typical full vehicle automotive body mesh used to predict dynamic characteristics had 8,000 elements. Today, the same systems model would typically have 30,000 to 40,000 elements. Models of this size greatly increase accuracy and representativeness of the simulation but also multiply the demands on pre- and post-processing software and hardware. They are so much more difficult and time-consuming to manipulate that some companies are running the risk that engineers will be forced to either cut model size or give up analysis altogether in some situations. Fortunately, new pre- and post-processing tools are being introduced to meet the needs of larger model size and complexity. These tools provide ease of use, faster speed and a range of features designed particularly to deal with today's larger model size.

A key factor affecting the trend toward more detailed analyses is the increasing importance placed on analysis in general, and finite analysis in particular, as a means of increasing product design iterations while minimizing prototype cycles. As this technology acquires a more strategic role in the development process, the need for accuracy continues to increase. Most often accuracy improvements are achieved by including greater levels of detail into the finite element models. This greater detail is achieved at the cost of large increases in model size.

Two additional factors which are steadily increasing the complexity of finite element analysis are nonlinear simulation and optimization. Because the world itself is nonlinear, nonlinear analysis provides significantly greater accuracy in the simulation of most real world problems. This technique, however, greatly increases the complexity of the analysis because it requires multiple analyses to iterate to a solution. Likewise, use of a new breed of software tools that optimize both the shape and dimensions of structural members in line with specified goals,