Freeman Scholar Program

Professor Jack E. Cermak has been selected as the Freeman Scholar of ASME for 1974. This new scholarship program which supports a major technical review of a coherent topic in some specialized area of fluids engineering is in its second edition. Professor Cermak, of Colorado State University, will make a critical review of the subject, "Application of Fluid Mechanics to Wind Engineering."

In granting the Freeman Scholarship emphasis is placed on subjects that are significant and timely contributions to current, real problems in fluids-engineering practice. Scholars prepare a comprehensive statement of the state of their particular field and suggest key research needs for the future. An honorarium of $3,000 is provided for preparing the review and producing a manuscript for publication.

Engineers are required to account for the action of wind in many applications of engineering. Wind engineering has recently become identified as the field of engineering in which knowledge and research techniques from mechanics, atmospheric science and other disciplines are combined to investigate non-aeronautical problems and applications related directly to the wind. Some of these problems are diffusion from industrial stacks; transport of automobile exhaust; heat transfer from buildings; wind forces and wind-induced oscillations of structures such as tall buildings, stacks, towers and antennae; tornado-induced forces on nuclear reactor containment structures; and power generation by wind.

Numerous investigators have discussed various flow phenomena related to wind engineering in fluid dynamical terms but a unified framework for describing natural wind characteristics and relating them to engineering applications has not emerged. Professor Cermak will attempt to develop a coherent foundation through the use of established concepts and principles of fluid mechanics. Experimental and analytical results from fluid dynamical investigations on turbulent boundary layers, turbulence, turbulent diffusion, flow separation and similitude will be integrated with available micrometeorological data to describe and organize the subject matter in a systematic manner. Applications to specific wind-engineering problems will be outlined, and the significance of measurements on small-scale models subjected to wind-tunnel simulated winds will be emphasized.

Professor Cermak will present his review at the Winter Annual Meeting in New York City on Wednesday, November 20 at a special technical session sponsored by the Fluids Engineering Division. It will subsequently be published in the JOURNAL OF FLUIDS ENGINEERING. In addition, Professor Cermak will be available, as far as personal commitments permit, for presentation of his lecture at sites of fluids engineering activity in industry, government or education that so request. Inviting institutions will be expected to bear all expenses and, if necessary, to provide a reasonable honorarium.