

Maurice Ettinger (Dow Chemical Company, Midland, Michigan), *The Populist Scientific Crusade (A Recipe for Increased Job Security or Instant Fame)*.

Allan Neil (Texas Christian University), *Illusions, Allusions, Delusions and Elusions*.

Lawrence La Fave (University of Windsor, Ontario), *New Explorations in Insensitivity Training: The Nudeless D (Discounter) Group*.

James Turner and Robert Boice (University of Missouri, Columbia), *Religiosity in Herpets*.

Selby Evans (Institute for the Study of Cognitive Systems, Texas Christian University Research Foundation, Fort Worth), *Neurons and Other Quantum Phenomena*.

H. E. Marks (University of Georgia), *Computer Model of Hypothalamic Hyperphagia and Normal Feeding Behavior*.

27 December

Lightning

Lightning kills more people and causes more damage than tornadoes in the United States. Thus it seems appropriate for this symposium to have the general purpose of presenting the broad aspects of the lightning flash and the effects of lightning upon planes, space vehicles, man, animals, and for-

ests. Recent measurements of lightning have utilized the techniques of photography, electric and magnetic field measurements, current measurements, spectroscopy, and acoustical measurements to determine the physical characteristics of lightning. Our modern concept of lightning has led to an increasing in-

terest in the hazards of triggered lightning. This is exemplified by the investigation of the Apollo 12 lightning incident and studies of subsequent Apollo launches. As longer planes, such as the Boeing 747, enter the sky the hazard of triggered lightning is of greater concern. Our modern concept of lightning is leading to better protection for homes and other structures. Lightning strikes to humans, both direct and indirect, kill more than 100 persons each year



Lightning flash triggered by a tall tower on Mount San Salvatore, near Lugano, Switzerland. These types of lightning strikes also occur to tall buildings (Empire State Building) and to spacecraft being launched toward the moon (Apollo 12 space vehicle, 14 November 1969). [State University of New York at Albany]

in the United States. However, recent medical evidence reveals that some humans "killed" by lightning can be revived with little or no permanent injury. On the other hand, strikes to trees cause damage ranging from apparently no destruction to complete destruction and extensive forest fires. Our attempts to understand lightning are producing results in our efforts to understand the problems, and to progress in lightning modification.

RICHARD E. ORVILLE
State University of New York
at Albany

Speakers and Topics

27 December (morning)

Arranged by Richard E. Orville (State University of New York at Albany).

Bernard Vonnegut (State University of New York at Albany), chairman.

Richard E. Orville, *Introduction to the Lightning Flash*.

Martin A. Uman (Westinghouse Research Laboratories, Pittsburgh), *The Physical Parameters of Lightning and the Techniques by Which They Are Measured*.

Marx Brook (New Mexico Institute of Mining and Technology, Socorro), *The Apollo 12 Lightning Incident*.

E. P. Pierce (Stanford Research Insti-

tute, Menlo Park, Calif.), *Triggered Lightning and Some Unsuspected Lightning Hazards*.

27 December (afternoon)

R. H. Golde (Electrical Research Association, Leatherhead, Surrey, England), *Lightning Protection*.

Theodore Bernstein (University of Wisconsin, Madison), *The Effects of Lightning and Electrical Shocks on the Human Body and Animals*.

Alan R. Taylor (Northern Forest Fire Laboratory, Missoula, Montana), *Lightning Effects in Forests*.

Donald M. Fuquay (Northern Forest Fire Laboratory), *Problems and Progress in Lightning Modification*.

27-30 December

General Systems of the World Environment

Increasing concern with environmental problems in the past decade has led inevitably to recognition of the absolute necessity of dealing ultimately with the entire ecosystemic loop. It has become apparent that in large measure our environmental dilemmas have resulted from the convenience of looking at only one or at most a few facets of what are in fact intricately interrelated, vastly multifaceted problems. We have tended arbitrarily to bound the system in which we are at the moment especially interested, and in our optimization efforts have forgotten that we are often really suboptimizing, in the worst systemic meaning of that term. For example, in part at least, such a limited frame of reference accounts for the historic preoccupation with economic and technical values at an accumulated implicit cost only recently becoming all too explicit.

Thus we are compelled, by circumstance if not by a priori wisdom, to deal with larger and larger systems, and to curtail our ceteris paribus mode of reasoning. Now general systems concepts are increasingly imperative for ecosystemic research. As a pioneer organization in this area, the Society for General Systems Research has for almost two decades fostered the generation, evaluation, and communication of such holistic ideas.

The program theme of the Society's Philadelphia meeting was developed almost 2 years ago, in response to what even then seemed an obvious need. The subsequent evolution of the United Nations Conference on the Human Environment has created a new focus for the work of the Society for General Systems Research during 1972, which will in turn contribute to the development of its program a year from now,

when the theme will be "The World System."

The Society's interdisciplinary and transcontextual orientation is manifest in its program this year. The program commences with an address by its vice president, anthropologist Margaret Mead (Monday evening, 27 December, "General Systems Theory as a Framework for Transnational Cooperation") and concludes with an address by its president, British cybernetician, Stafford Beer (Wednesday evening, 29 December, "The Surrogate World We Manage"). A wide range of subject matter is scheduled for discussion on 28 December; the morning session dealing with the physical and biological aspects and the afternoon session addressing the social and philosophical dimensions of problems in the human environment. On Wednesday morning, 29 December, a panel comprised of representatives of the Society and of Simulation Councils will assess the general and technical problems in simulating the world environment.

Registration and Information Centers

Registration Desks: Sheraton (Third Floor), Benjamin Franklin (Lafayette Room), Bellevue-Stratford (First Floor, Elevator Foyer)

Information Desks: Sheraton (Third Floor), Benjamin Franklin (Lafayette Room); **Ticket Desk:** Sheraton (Third Floor)

Hours: 26 December, 9:00 a.m. to 8:00 p.m., and 27-30 December, 8:00 a.m. to 6:00 p.m.

The registration fee is \$15. A registrant and spouse may register for \$20, which entitles them to one program and two badges. The fee for young people and students is \$5.

Any person who purchased an advance copy of the program but did not register in advance may complete registration by paying an additional \$10, should he decide to attend the meeting.

Young people under 16 are not registered but will be admitted to the Exposition and Film Program if accompanied by a registered adult.

Science

27 December Lightning

Richard E. Orville

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