

Twenty-fourth Annual Alumni Seminar

Saturday, May 6, 1961

Dinner and Evening Program

Huntington-Sheraton Hotel, Pasadena

“THE ORDERLY SCIENTIST IN THE DISORDERLY WORLD” — PHILIP S. FOGG

Philip Fogg is president and board chairman of Consolidated Electrodynamics Corporation, a subsidiary of the Bell and Howell Company. In the course of his career he has had many opportunities to observe scientific people, both in scientific and non-scientific environments. As a graduate of Stanford and the Harvard Graduate School of Business Administration, he has a strong background in economic theory and social science. As a professor of business economics at Caltech, he had 11 years to observe scientists in the raw — namely, Caltech undergraduates — and their reaction to the less rigorous discipline of economics. As head of a highly technical organization, he is in a unique position to analyze the impact of scientific people on the world of business and commerce and vice versa.

Special Exhibits

Caltech Development Program Exhibit — Public Affairs Room — Tandem Accelerator Demonstration — Frictionless Motion Demonstration — Keck Engineering Laboratories Open House (Water Resources, Environmental Health and Materials.)

Outstanding Lecture Program

Three morning and three afternoon periods, each with four simultaneous lectures. Each lecture will be given twice during the day.

Alumni outside of southern California who wish to attend the Seminar should write the Alumni Office for reservations.

Seminar Lectures

PROOFS OF RELATIVITY

9:30 A.M. and 11:45 A.M.

H. P. Robertson, Professor of Mathematical Physics

Relativity has proceeded deductively, from theory to experiment. To what extent is the reverse inductive process now applicable? Can we derive the structure of space-time? If not, what further tests should be undertaken in these days of cosmotrons, satellites, and space-science Olympiads? Dr. Robertson reviews these exciting questions with sidelights on such issues as the Clock Paradox, the Nebular Redshift and the Big Bang vs. Eternal Boredom theories of the expansion of the Universe.

IS THERE WATER ON THE MOON?

9:30 A.M. and 11:45 A.M.

Bruce C. Murray, Research Fellow, Division of Geological Sciences.

Since water is considered essential for life, its possible occurrence on the moon is intriguing. Dr.

Murray believes that the permanently shaded areas, which are extremely cold, will collect water as ice despite the nearly perfect vacuum on the lunar surface. Ice may also occur on the moon in dust accumulations, which would provide a possible environment for the survival of microscopic life.

WHAT SHOULD SPACE COST?

9:30 A.M. and 11:45 A.M.

Eberhardt Rechtin, Director, Deep Space Instrumentation Program, JPL.

Space exploration is expensive, and the efficient use of men and money is critical. We may achieve either great progress or great waste, and affect the livelihood of thousands in the process. Mr. Rechtin will discuss the optimization of space results, using such current cost yardsticks as dollars per orbited pound, “bits per buck,” and probable flight-value per dollar.

AMERICA, THE MENACE OF THE FUTURE

9:30 A.M. and 11:45 A.M.

Cushing Strout, Associate Professor of History

What are the sources of "Anti-Americanism," especially among the intellectual classes of Western Europe? How is it related to European and American policy and culture? What myths does it lean upon and promote? Can anything be done about it? Dr. Strout will discuss these provocative questions which are related to studies for his forthcoming book.

THE MONTE CARLO METHOD

10:45 A.M. and 3:15 P.M.

John Todd, Professor of Mathematics

Automatic computing equipment has made possible the widespread application of the Monte Carlo method, which uses pseudo-random numbers for solving extremely difficult problems in mathematics, biology and physics. It is an experimental procedure which has long been known but was not very effective in manual use. Professor Todd stresses the great progress that has been made in the various fields of atomic energy through the potent combination of high speed computers and the Monte Carlo method.

OXYGEN ISOTOPES, THE FOOTPRINTS OF TIME

10:45 A.M. and 3:15 P.M.

Irene Goddard, Chemist, Division of Geological Sciences

How old is the ice 1400 feet deep in the Greenland ice cap, and what was the weather like when it was formed? Is the rain the same in all plains? Can snow from Mt. Baldy or the South Pole be identified? These are some of the questions which Dr. Goddard has helped to answer by studies of the oxygen isotopes.

LIVING ON CRACKED ICE

10:45 A.M. and 3:15 P.M.

C. J. Pings, Associate Professor of Chemical Engineering

Science and national defense provide increasing incentives for geological and engineering research in the polar regions. In furthering such work Dr. Pings has spent part of several summers in the crevasses of a Greenland glacier, making measurements of movement, strain, and temperature. He will discuss his research and his experiences in camping on the Greenland ice cap.

IS WORLD DISARMAMENT POSSIBLE?

10:45 A.M. and 3:15 P.M.

David C. Elliot, Professor of History

The perplexing problems of arms control, arms limitation and disarmament are subjects of Institute-wide studies in the Carnegie Science and Government Program. Dr. Elliot who administers these studies will discuss the possibilities, implications, and consequences developed in this important search for a new security system.

HOW DOES A FISH SWIM?

2:15 P.M. and 4:15 P.M.

T. Y. Wu, Associate Professor of Applied Mechanics

The motion of a swimming fish is a scientific mystery that has only recently yielded to analysis. Two flexible models capable of wave-like motion have been used in the experiments, one a thin plate and the other a model fish. These have permitted the evaluation of swimming efficiency and the qualitative effects of skin softness on skin friction.

THE BALLET OF BIG MOLECULES

2:15 P.M. and 4:15 P.M.

James Bonner, Professor of Biology

To a biologist DNA is the choreography of life, written in a self-reproducing script. This script directs the RNA, which governs the enzyme molecules which in turn regulate the growth of the cells from which all living matter is constructed. Since DNA, RNA, and enzymes are all large molecules, and since their intricately-ordered movements constitute living matter, Dr. Bonner views life as the ballet of the big molecules.

NEW VIEWS OF THE SUN

2:15 P.M. and 4:15 P.M.

Robert B. Leighton, Professor of Physics

New techniques for measuring the magnetic and velocity field of the sun's atmosphere have revealed that the atmosphere oscillates locally with a five-minute period. Dr. Leighton will discuss this and other interesting features of the sun.

BERLIN — HOSTAGE AND LIVE BAIT

2:15 P.M. and 4:15 P.M.

Heinz E. Ellerstick, Associate Professor of History

Berlin is a symbol of both East and West, and plays a key role in several cold wars. As the spoils of World War II, it is torn between the victors in that war. And yet, it is not simply booty — it also commands its conquerors. Dr. Ellerstick, a recent visitor to Eastern Europe, will discuss this paradox and how Berlin's very vulnerability is its protection.