

Twenty-first Annual Alumni Seminar

Saturday, April 12, 1958

8:30-9:15 A.M.—REGISTRATION

Dabney Lounge

9:30-10:30 A.M.—One of the Following:

A. MISSILES AND SATELLITES

William H. Pickering, Director, Jet Propulsion Laboratory.

The recent placing in orbit of the four satellites is having a profound effect on the people of the world, both scientifically and philosophically. The events leading up to the successful launching of the "Explorer Satellite" and the part which JPL played in the program will be discussed by Dr. Pickering. A summary of the scientific information which is being gained from the satellite experiment will be presented.

B. HOW GENES DUPLICATE THEMSELVES

Mathew Meselson, Research Fellow in Chemistry.

You don't have to be a biologist to enjoy and appreciate this fascinating insight into one of the most fundamental of life processes. Dr. Meselson will discuss very recent discoveries in which he has participated. These are helping unravel the mystery of how a unit of living matter can build accurate duplicates of itself.

C. YOU CAN'T ENGINEER A PIPE ORGAN

Hunter Mead, Professor of Philosophy and Psychology.

The modern pipe organ is a remarkable fusion of esthetics and technology. Engineers' efforts at improvement have been largely unfortunate, because they have tended to view it as a machine rather than a musical instrument. Professor Mead, a lifelong organ enthusiast, has built in his home one of the largest pipe organs in Pasadena. He will present a brief history of the organ, and will explain and demonstrate the means by which the rich tonal variety of the organ is produced. (Illustrated by slides.)

10:20-10:50 A.M.—COFFEE TIME

10:50-11:40—One of the Following:

A. NON-CONSERVATION OF PARITY

R. P. Feynman, Professor of Physics.

Many of our important scientific advances are the result of new laws of physics which result from the dis-

proving of previously accepted laws. The law of the conservation of parity has long been accepted in quantum mechanics. Recent findings tend to disprove this accepted law. How these findings can influence our lives will be discussed by Dr. Feynman.

B. INFORMATION THEORY FOR THE LAYMAN

Hardy Martel, Assistant Professor of Electrical Engineering.

Subconsciously we apply this theory every time we make a decision. We consider how many data we have, the certainty with which we know them, and the various possibilities which accrue from them. The subject deals with the problem of knowing what kind of information one might obtain from a given amount of data. Dr. Martel will show the basis for this general problem and apply it to several examples.

C. THE NEW LOOK IN GEOLOGIC TIME

Leon T. Silver, Assistant Professor of Geology.

Great improvements in the application of radioactive timeclocks to geological problems have given us a new perspective on the earth's history. When correlated with the classical geological time scale, the precise dates obtained by the new techniques have provided information about the evolution of organisms, the rise and decline of mountains, and major invasions of the continents by the oceans. Timing these episodes long after they occur is done by a combination of mule-back exploration and sensitive isotope analysis. Professor Silver will show colored slides, and will describe the techniques, some of his field work, and recent results.

11:55-12:45 P.M.—One of the Following:

A. ELECTRICAL PLASMA DISCOVERIES

Lester Field, Professor of Electrical Engineering.

Electrical plasma is an ionized region of gas which characteristically glows. New explorations in this phenomenon are of great importance in connection with obtaining power from fusion, producing high temperature, electrical control devices, and perhaps ion propulsion. Dr. Field will describe a variety of new methods for determining plasma properties, including some based on newly discovered plasma waves which may permit more extensive probing of the regions with micro-waves.

B. WHAT'S HAPPENING TO ENGINEERING EDUCATION

Frederick C. Lindvall, Chairman, Division of Civil, Electrical, and Mechanical Engineering, and Aeronautics.

Facets of this broad topic will include the post-Sputnik "hysteria," the growing role of research outside the university, the trend toward teams of scientists and engineers, and the shortages of competent engineers and qualified teachers. Dr. Lindvall is active in education at the national level. He will discuss the general emphasis on quality rather than quantity, and Caltech's role in particular.

C. THE HEADACHES OF THE HISTORICAL NOVELIST

J. Kent Clark, Associate Professor of English.

How does a historical novelist decide what he is going to write about? How far can he stretch the truth—what liberties can he take with historical characters and historical events? How much sex do his readers demand? How can he make the past come alive to a modern audience? These and other problems that give novelists ulcers will be discussed by Professor Clark, who has just completed a historical novel for Scribner's.

1:00-2:00 P.M.—LUNCH—Student Houses

AFTERNOON PROGRAM

The following exhibits and demonstrations will be open from 2:00-5:00 P.M. Faculty members will be present in most instances. Coffee will be served at a central location from 3:00-4:00 P.M.

Documentary Film (22 minutes) — Culbertson. "X Minus 80 Days" — Story of the "Explorer" satellite launching. Showings at 2:00, 2:30, 3:00, and 3:30 P.M.

Thin Section Laboratory — Basement (062), Arms. Sections of rocks 30 microns thick are prepared here for analysis.

Spectrographic Laboratory — First Floor (106), Mudd. Emission spectroscopy, flame photometry, X-ray diffraction and X-ray spectroscopy.

Mass Spectrometer Laboratory — Basement (03), Mudd. Equipment for isotopic analysis of both heavy and light elements.

Public Affairs Room — First floor, Dabney Humanities. Exhibits concerning world events of current interest.

High Voltage Laboratory — Classic high voltage demonstrations to be given for the last time. Scheduled for 2:00, 2:30, 3:00 and 3:30 P.M.

Electronics Laboratories — Spalding. Tour of computer lab, vacuum tube facilities, solid state lab and microwave demonstration.

Chemical Engineering Laboratory — Spalding. Laboratory tours.

Earthquake Studies — Room 310, Engineering. Instrumentation for recording and analyzing strong motion earthquakes and response of structures to ground motion.

Shock Tubes — Room 214, Engineering. High temperature gases and shock tube behavior.

Hypersonic Research Facilities — Guggenheim. Wind tunnel and Schleiern photographs with flows up to Mach 9.

Nuclear Magnetic Resonance — Room 301, Church. Spectroscopy demonstrations (20 minutes).

Organic Molecular Structure — Third floor, Church. Model display and discussion.

Shock Tube Chemistry — Room 102, Gates. Equipment exhibit and demonstration.

Solar Furnace — Roof, Astrophysics. Tours of the facility, 2:00 to 3:00 P.M.

Cosmic Rays — Room 202, Bridge. Cloud chamber demonstrations.

Synchrotron Laboratory — (formerly Optical Bldg.) Tours of the facility.

Van de Graaff Generator — 2nd floor, Kellogg. Demonstrations, scheduled for 2:00, 2:30, 3:00 and 3:30 P.M.

EVENING PROGRAM

Elks Club, 400 W. Colorado Street, Pasadena.

Dress—Informal.

Dinner hour: 6:30 P.M. (Bar opens 5:30)

After dinner:

Introductions by Ralph W. Jones, '38, General Chairman, Alumni Seminar Day.

Remarks by Dr. Lee A. DuBridge, President, California Institute of Technology.

Guest Speaker—

MR. H. ROWAN GAITHER

His Subject—

"SCIENCE AND THE NATIONAL WELFARE"

Mr. Gaither is Chairman of the Board for the Ford Foundation and Chairman of the Board for the Rand Corporation. In addition to various other interests in the fields of law and banking, he has been much in the public eye recently as Chairman of the Security Resources panel of President Eisenhower's Science Advisory Committee, which prepared the celebrated Gaither report.