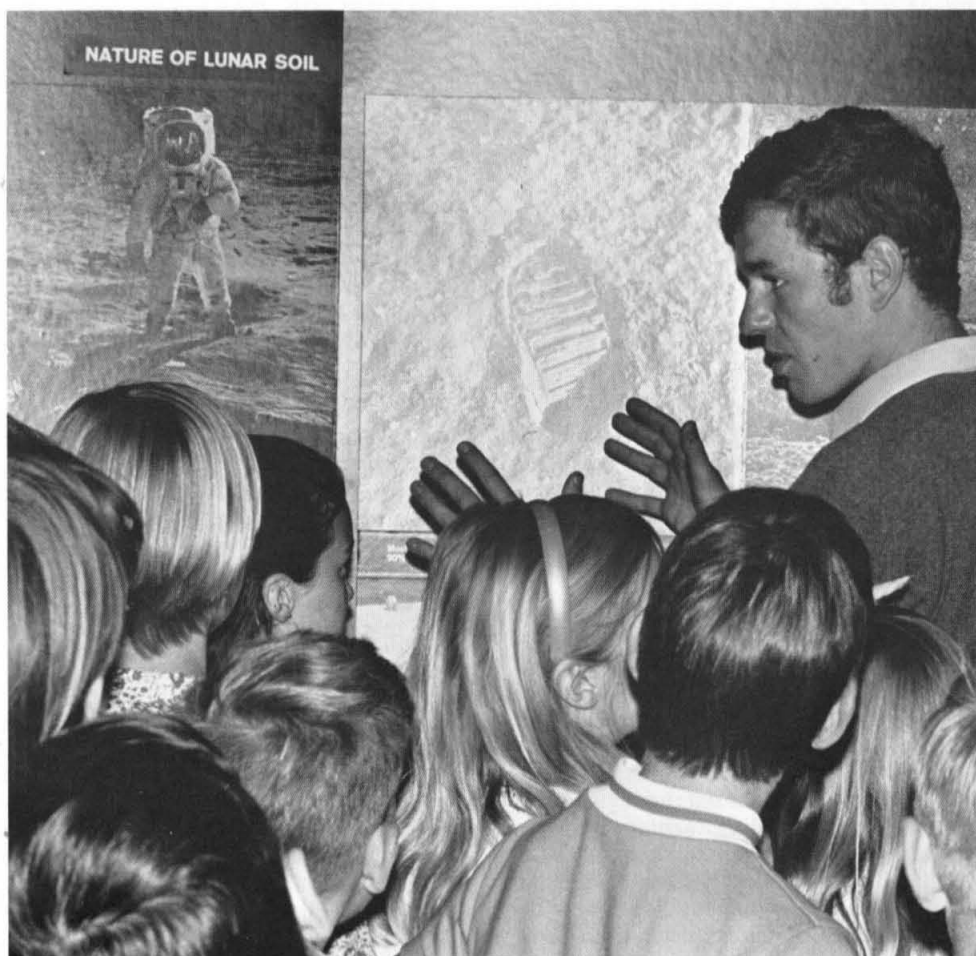


## It's Back-to-School Day for Alumni



**CALTECH'S MOON ROCK EXHIBIT** is now open in Culbertson Hall and will be a featured attraction for alumni on Seminar Day. On display are pictures, taken by the astronauts, and samples of lunar rocks used by Caltech geochemists who are playing a leading part in America's lunar research program. The exhibit is open to the general public 1:30-4:30 p.m. Monday through Friday, and noon to 4:30 p.m. on Saturday and Sunday, until June. Weekday mornings are reserved for groups of students from local elementary and secondary schools.



Caltech scientists and engineers, with an assist from science-fiction writer Ray Bradbury, will tell alumni and their guests about the latest developments in Caltech research and education at the 33rd Alumni Seminar Day on May 16. Morning sessions begin at 9:30 a.m.

### Academy Picks Tech Engineers

Six Caltech alumni were elected this month to the National Academy of Engineering. Election to the academy is the highest professional distinction that can be conferred upon an American engineer; it honors those who have made important contributions to engineering theory and practice or have demonstrated unusual accomplishments in the pioneering of new and developing fields of technology.

Caltech alumni elected to the academy include:

—Arthur E. Bryson Jr. (MS '49, PhD '51), professor of applied mechanics, aeronautics, and astronautics at Stanford University—for his contributions to engineering education and imaginative application of modern statistical methods to engineering optimization.

—Francis H. Clauser (BS '34, PhD '37), chairman of the division of engineering and applied science at Caltech—for his innovations in engineering research and education.

—James C. Fletcher (PhD '48), president of the University of Utah—for technical contributions to military science and leadership in their application, particularly in communications, guidance, command, and control for space and missile systems.

—Frank W. Lehan (BS '44), for his conception of basic techniques for FM/FM telemetry and secure communication systems, and for his leadership in the development of electronic systems for missile and space programs.

—Robert C. McMaster (MS '38, PhD '44), professor of welding engineering at Ohio State University—for his contributions to nondestructive testing theory and practice, and pioneering industrial applications of sonic energy.

—Louis T. Rader (MS '35, PhD '38), vice president and general manager of the industrial process control division for General Electric Company—for initiative in extending the application of computers and control systems.

### Cheers for Allen

Clarence R. Allen, professor of geology and geophysics, is the new chairman of the Caltech faculty. He succeeds Robert Christy, professor of theoretical physics, who has been named vice president and provost of the Institute.

A member of the Caltech faculty since 1955, Allen is a seismologist and an authority on earthquakes and the great geologic faults that ring the Pacific. He has also made extensive structural and geophysical studies of glaciers.

and end at 12:30 with lunch in Chandler Dining Hall. An exhibit of moon rocks and pictures of Apollo 12 astronauts, a demonstration of computers, and a showing of contemporary art will keep Seminar Day visitors occupied during the noon break.

*Why Man Creates*, an Academy Award-winning film that features Caltech professors James Bonner and Jesse Greenstein, will also be shown, and the Caltech band will give a noontime concert on the Winnett plaza.

Distinguished Alumni Awards will be presented at the beginning of the afternoon session in Beckman Auditorium. A no-host cocktail party will be held in the Athenaeum courtyard at 5:30 p.m., followed by dinner and the Caltech glee club's annual home concert.

*Continued on page 3*

### Take Your Family To Big Bear, May 2-3

All alumni and friends of Caltech are invited to a "family gathering" at Big Bear Lake to dedicate the Institute's new solar observatory on May 2-3.

Caltech has reserved the Marina Riviera motel for those who want to spend the weekend at Big Bear, and a cocktail party will be held there Saturday evening.

Walter O. Roberts of the University Corporation for Atmospheric Research will speak at the dedication Sunday morning along with Harold Zirin, professor of astronomy and director of the observatory.

The Big Bear Queen, a large lake boat, will take guests to the island observatory for the brief dedication ceremony and back to the lakefront for a barbecue luncheon.

Reservations will be handled on a first-come, first-served basis and should be sent to Rose Kemp, Caltech Public Relations Office by April 24. Cost of the weekend, including one-night hotel accommodations for two, the cocktail party, boat ride, and barbecue is \$36.

### Browns Waltz to Vienna

President Harold Brown and Mrs. Brown left this month for Vienna where he will take part in the strategic arms limitations talks (SALT). As a member of the U.S. delegation, Brown will attend the meetings that continue discussions with the Soviet Union begun in Helsinki last fall. The Browns expect to return to the Institute in May.

### And Now May I Present . . .

Philip Handler, chairman of the National Science Foundation, will be the commencement speaker at the graduation exercises for the class of 1970 to be held June 12 at 10:30 a.m. on the Beckman Mall.

Handler is the James B. Duke Professor of Biochemistry and the chairman of the biochemistry department at Duke University.



## What Does the Future Hold?

# Scientists To Discuss Population Explosion

Social scientists from around the world will take part in a conference on "Technological Change and Population Growth" May 6-8 in Beckman Auditorium. This will be the second of four conferences sponsored by Caltech as part of an effort to find ways to solve social problems through science and technology.

Harrison Brown, professor of geochemistry and of science and government, organized the conference with the assistance of James Bonner, professor of biology; Alan Sweezy, professor of economics; Edwin Munger, professor of geography; David Elliot, professor of history; and Kenneth Frederick, assistant professor of economics.

Admission to the conference is by invitation, and some of the top people in

the field of population planning are expected to take part in the discussions of the papers.

Professor Kingsley Davis of UC Berkeley will present the first paper on May 6, "Mortality and Fertility Trends in the Developing Countries." He will be followed by Professor Roger Revelle of Harvard talking on "Consequences of Rapid Population Growth: a General View" and Professor Bruce Johnston of Stanford who will speak on "Consequences of Rapid Population Growth: Unemployment and Underemployment."

Alan Sweezy will conclude the afternoon session with a talk on "Population, GNP, and the Environment." An evening lecture will be given on "Birth Control in 1984" by Carl Djerassi, professor of chemistry at Stanford.

On the second day of the conference, Donald Heisel of The Population Council will lead off the morning session with a talk on "Some Social Consequences of Rapid Population Growth," and Bernard Berelson, president of The Population Council, will speak about "The Present State of Family Planning Programs."

In the afternoon John Lewis, dean of the Woodrow Wilson School of Public and International Affairs at Princeton, will address the conference on "The Problem of Changing Public Attitudes toward Population Growth: the Experience of India." Minoru Muramatsu of the Institute of Public Health in Tokyo will follow with a talk on "The Problem of Changing Attitudes toward Population Growth: the Experience of Japan."

Charles Gallagher, member of the American Universities Field Staff, will begin the final day of the conference with a talk on "International Efforts to Develop Programs of Population Control." Another member of the American Universities Field Staff, Thomas Sanders, will then speak on "Relationships between Population Planning and Belief Systems: the Catholic Church in Latin America."

Professor Laila Shukry El-Hamamsy of the American University in Cairo, U.A.R., is scheduled to address the afternoon session on "Relationships Between Planning and Belief Systems: Peasants." Harrison Brown will conclude the conference with "What Does the Future Hold?"



Fred Friendly tells students how he and Ed Murrow socked it to Sen. Joe McCarthy.

## Fred Becomes Household Word In Caltech Rap Sessions on TV

Fred Friendly, who marked his last visit to Caltech with a widely publicized reply to Vice President Agnew's attack on TV newscasters, returned to the Institute this month at the invitation of the humanities division and the YMCA.

The outspoken ex-president of CBS News spent four days at Caltech taking part in three lengthy seminars and giving an evening lecture in Beckman Auditorium.

Introducing Friendly at his first seminar in Winnett Lounge, a nervous student said: "And now I present to you—Edward R. Murrow."

After a moment of silence, the student corrected himself: "I mean Fred Friendly, the Edward R. Murrow Professor of Journalism at Columbia University."

Perhaps there was more truth in the slip than the student realized. Surrounded by a generation of Caltech students who had never heard the Murrow broadcasts that stirred the nation in the fifties, Friendly spoke as much for his late colleague as he did for himself.

Describing the experiences in television that finally led to his resignation as CBS News president in 1966, Friendly told the students, "We in American television make so much money doing our worst that we can't afford to do our best."

Friendly spoke from firsthand experience of all the things that are wrong with American television—from the executive who puts on Saturday morning programs he won't let his own children watch, to the FCC ("that great tower of jello") that

refuses to stand up for the rights of the public.

Yet, knowing all the wrongs, Friendly still regards television as a great medium, and speaks of it like a father with a wayward son—with affection and hope.

Urging the students to push for better television programs, Friendly said the worst thing people can do is to say they can't do anything about TV. "Right now we are getting what we deserve."

As television adviser to the Ford Foundation, Friendly has strongly supported the idea of an independent, tax-supported network of public television similar to the BBC in England.

As an example of television at its best, Friendly showed Caltech students a film of the 1954 program he and Murrow produced for their "See It Now" series on CBS. This was the first program that dared to expose Senator Joseph McCarthy's methods.

The McCarthy era may have seemed like a hundred years ago to the students in Winnett Lounge, but Murrow's words still rang true: "We cannot defend freedom abroad by deserting it at home . . . The actions of the junior senator from Wisconsin have caused alarm and despair among our allies abroad and given considerable comfort to our enemies. And whose fault is that? Not really his. He didn't create this situation of fear. He merely exploited it—and rather successfully. Cassius was right. 'The fault, dear Brutus, is not in our stars, but in ourselves.'"

## Sturtevant Leaves Legacy to Genetics

Alfred H. Sturtevant, dean of American geneticists and Thomas Hunt Morgan Professor of Biology at Caltech, died of cancer on April 5 in Pasadena. Though he became professor emeritus in 1962 at the age of 70, he continued to work in his Caltech laboratory until very recently.

Sturtevant received his AB in 1912 and his PhD in 1914 from Columbia University. He worked for nearly 60 years in genetics—starting at Columbia with Thomas Hunt Morgan, whom he followed to Caltech in 1928. Using the fruit fly *Drosophila* for his research, he was the first scientist to map the locations on chromosomes of the genes associated with particular inherited characteristics, and to demonstrate the simple linear ordering of genes on chromosomes.

His other contributions to genetics include the discovery that the effect of genes depends on their condition in the chromosome, and that arrangements of blocks of genes may vary in different species of *Drosophila*.

Sturtevant was a member of the National Academy of Sciences and a past president of the American Society of Zoologists and the Genetics Society of America. He received the President's National Medal of Science for 1967. He leaves his wife, Phoebe; three children—William C. of Washington, D.C., Henry of Altadena, and Mrs. H. E. Shapiro of Washington, D.C.; and eight grandchildren.

## Merchants Honor Gray

Robert D. Gray, director of Caltech's Industrial Relations Center since 1940, received an award last month from the Merchants and Manufacturers Association for "outstanding achievement in management education and service to the business community." Gray was appointed professor of economics and industrial relations at the Institute in 1942.

## Coming Events

Monday, Apr. 27, 8:30 p.m. Beckman *ENVIRONMENT AND THE FUTURE OF TECHNOLOGICAL CIVILIZATION*. Lecture by Carver A. Mead, professor of electrical engineering. Caltech Lecture Series. Free.

Friday, May 1, 8:30 p.m. Beckman *THE RITUAL*. A film by Ingmar Bergman. \$2.50.

Saturday, May 2, 8:30 p.m. Beckman *TURNAU OPERA PLAYERS* perform Mozart's *Così fan Tutte*. \$5-4-3-2.

Saturday-Sunday, May 2-3 *BIG BEAR SOLAR OBSERVATORY DEDICATION*. See separate notice.

Monday, May 4, 8:30 p.m. Beckman *FARMING UNDER THE SEA*. Lecture by Wheeler J. North, professor of environmental health engineering. Caltech Lecture Series. Free.

Tuesday, May 5, 8:30 p.m. Beckman *TAKE ONE—Student Film Festival*. Series of 3 films—\$5.25, single—\$2.

May 6, 7, 8 Beckman *TECHNOLOGICAL CHANGE AND POPULATION GROWTH*. See separate notice on conference.

Friday, May 8, 9-5 Dabney Lounge Private art collection of the Thomas Terbells opens to public for 3 weeks. Exhibit includes works of Warhol, Lichtenstein, Ruscha, and Johns.

Saturday, May 9, 8:30 p.m. Beckman *CALTECH BAND CONCERT*. \$1.50.

Saturday, May 9, 7 p.m. Kona Kai Club *SAN DIEGO ALUMNI CHAPTER MEETING*. Caltech's Eugene Shoemaker will speak on "Man on the Moon—the First Scientific Results." \$4.50 per reservation.

Monday, May 11, 8:30 p.m. Beckman *TWAS BRILLIG AND THE SLITHY TOVES: THE WONDERLAND OF LINGUISTICS*. Lecture by Bozena Dostert, senior research fellow in linguistics. Caltech Lecture Series. Free.

Tuesday, May 12, 8:30 p.m. Beckman *TAKE ONE—Student Film Festival*. Single—\$2.

Friday, May 15, 8:30 p.m. Beckman *CALTECH GLEE CLUB CONCERT*. First concert of three-day home series. May 16 and 17, also in Beckman, at 8:30 p.m. General admission: \$2.50.

Saturday, May 16, 8:00 p.m. Beckman *ANNUAL ALUMNI SEMINAR DAY*. See program announcement.

Monday, May 18, 8:30 p.m. Beckman *NUCLEI OF GALAXIES—THE DOMAIN OF VIOLENT ACTIVITY*. Lecture by J. B. Oke, professor of astronomy and director of the Hale Observatories. Caltech Lecture Series. Free.

Tuesday, May 19, 8:30 p.m. Beckman *TAKE ONE—Student Film Festival*. Single—\$2.

Monday, May 25, 8:30 p.m. Beckman *A RENAISSANCE PHYSICIAN*. Lecture by Max Delbruck, professor of biology. Caltech Lecture Series. Free.

June 10 Athenaeum *ANNUAL ALUMNI ASSOCIATION DINNER*.

June 12, 10:30 a.m. Beckman Mall *COMMENCEMENT*.

## Pickering Receives Cooperation Award

William H. Pickering, director of Caltech's JPL, received the Society of Manufacturing Engineers Interprofessional Cooperation Award at a dinner in Detroit on April 12.

Pickering, who joined the Institute staff in 1936, was honored for work in jet propulsion, missilery, and telemetry that has "given America a viable defense system while contributing substantially to her preeminence in the investigation of outer space."





Pretty Hawaiian wahine demonstrates the hula to appreciative Caltech glee clubbers.

## Glee Clubbers Dig Wahines On Groovy Hawaiian Jaunt

The state of Hawaii was without rain for three months—until the Caltech glee club arrived for its spring vacation concert tour. Then it started to pour—furiously.

Perhaps this is why the people of Hawaii opened their hearts and houses to the glee club during its week-long stay in the Islands. The Caltech group included 44 singers, directors Olaf Frodsham and Priscilla Remeta, and accompanists Mrs. Richard Mooney and Dr. William Lemmonds.

Kenneth Kreisel (of Valley State College) and I went along to make a film of the tour; it will be shown during the annual spring concert of the glee club on May 15-16 in Beckman Auditorium.

The glee club added some Hawaiian music to its repertoire for this tour and began each concert with "Hawaii Ponoi," the Hawaiian state anthem. Senior Dick New also stopped every show when he led six dancers in a comic hula, "The Boy from Laupahoehoe."

The Caltech singers stayed with fam-

ilies in each of the areas where they performed. Some of the students were introduced to such native dishes as Lomi-Lomi salmon (uncooked but cured in brine); boiled octopus ("tastes just like chicken," said juniors Wes Muncil and Terry O'Neill); and that peculiar Hawaiian delicacy, poi ("when the meal is over, you can use it for mortar," observed sophomore Paul Levin).

We spent the second night at a boys' camp in Kamuela, located in the middle of the huge Parker Cattle Ranch on the island of Hawaii. Although I'm not a singer, I'll never forget the elderly Hawaiian ladies standing and crying with joy while the glee club closed its program in the Kamuela town hall with "Aloha Oe."

The next morning, when we got up to leave for Kona, four of the Hawaiian women—one with her grandchild in her arms—were waiting for us at the bus. They began singing "Aloha Oe," and the glee club joined them. It was such a touching farewell that I forgot to turn on my camera.

On Kauai, the northernmost island, the glee club stayed at the Kauai Resort Hotel, where it did two evening shows in the restaurant to pay for its keep. Earlier in the evening the Caltech singers performed a charity concert in the Lihue Convention Center. Ken and I had to double as a stage crew, rewiring the overhead lights and setting up in less than 20 minutes.

The tour wound up in Honolulu—a big city by anyone's standards. Again the glee clubbers stayed in private homes, and a familiar name appeared on the list of hosting families: Curtiss Crellin, whose father donated the money for Caltech's Crellin chemical laboratories.

The glee club gave performances at three private high schools and joined three other singing groups for a concert in Honolulu's International Convention Center.

Several of the glee club members stayed on after the concert tour to sight-see and to camp. Two of the Techers got stranded in a tree on a mountain overlooking Honolulu and had to be rescued by the police with a helicopter. When asked how they felt, they replied, "How would you like to sleep all night with a tree in your crotch?"

Somehow all the glee club members managed to return home, despite the temptations of the beautiful Hawaiian wahines and the clear, warm Hawaiian air. Now, through the smog, the glee clubbers can still be seen strolling down the Olive Walk starry-eyed, singing "Aloha Oe" to themselves.

—Ira Moskate '72

## Alumni Seminar Day

Continued from page 1

The following seminars will be held:

### ENZYMES: MACHINERY WITH A HISTORY

Richard E. Dickerson  
Professor of Physical Chemistry

Chemical and x-ray studies of enzymes have shown us not only how they may operate but where they come from. Although many new species may have the same enzyme, each particular enzyme differs in details that are characteristic of that species. We can now make quantitative statements about different species and how they are related using "molecular anatomy" more precisely than is possible with traditional methods.

### TWO PLANETS FOR THE PRICE OF ONE

Walker E. Giberson  
Manager of JPL's Mariner  
Venus-Mercury '73 Project

The first multiplanet mission will be undertaken by the U.S. in late 1973 to explore Venus and Mercury. The unmanned spacecraft will be gravity-assisted by a close fly-by of Venus, to pass within about 1,000 KM of Mercury. The primary emphasis will be to conduct exploratory investigations of the planet Mercury's environment, atmosphere, surface, and body characteristics, and to obtain atmospheric and environmental data during the Venus fly-by. The mission, its technical challenges, and the key scientific questions to be answered will be described.

### FUSION REACTORS— ENERGY SOURCE OF THE FUTURE?

Roy W. Gould  
Professor of Electrical Engineering  
and Physics

Efforts to achieve a controlled thermonuclear reaction—to tame the hydrogen bomb—can provide a new, virtually unlimited source of energy with environmental and safety advantages. Recent scientific advances toward the solution of the difficult problems of heating and confinement of the very hot ionized gases that are required in a fusion reactor have created a new spirit of optimism in this endeavor.

### RUSTY LIVERS AND TIRED BLOOD

Harry G. Gray  
Professor of Chemistry

Nature stores iron in a red-brown protein. The first step in the storage of iron probably involves the binding together of two iron atoms in a structure similar to ordinary iron rust. The two-iron structure is also crucial to the function of a purple protein that carries oxygen in worms. The relationship between the colors of these proteins and their molecular structures will be described.

### AN INSIDE VIEW OF GLACIERS

Barclay Kamb  
Professor of Geology and Geophysics

To get to the bottom of a glacier is to get to where the action is—rapid motion, tremendous deformation in the ice, and startling features produced when the ice slides over bedrock. We will take the audience to the bottom of a glacier by means of a movie showing the drilling of an ice tunnel and the features that were uncovered, particularly the motions made visible by time-lapse photography.

### THE MYTH OF UNCLE TOM: BLACK ACTIVISM IN THE AMERICAN PAST

J. Morgan Kousser  
Instructor in History

The Civil Rights struggle and increasing self-awareness among black people have focused attention on the Negro's active role in American history. Earlier historians tended to treat black people as passive objects of the dominant white group. Actually, U.S. history is replete with examples of black militancy, resistance to white oppression, and efforts at self-development within the black community. By examining these themes, we will attempt to de-whitewash American history.

### FARMING UNDER THE SEA

Wheeler J. North  
Professor of Environmental Health  
Engineering

Marine waste disposal and other human activities appear to be adversely affecting a very rich ecological system in southern California waters—the submarine forests of giant kelp. Attempts to counter the trends of deterioration have produced novel aquaculture methods. Underwater crops are now routinely being protected from marine pests, and current experimental work is studying the feasibility of transplantation, culture, and sowing techniques. The efforts have restored several square miles of forest habitat near submarine sewer outfalls.

### SECRETS FROM THE MOON

Leon T. Silver  
Professor of Geology

The Apollo 11 and 12 samples returned from the lunar surface have yielded rich scientific rewards. Analytical studies at Caltech indicate that they represent some of the oldest materials known in the solar system, and that they have a different geologic character from any rocks known on earth. The samples pose many new and important questions about the origin of the earth-moon relationship. It would appear that the moon is an ancient record book of the early solar system whose information we should be able to decipher. The rocks are beautiful, too!

### BIOLOGY AND THE FUTURE OF MEDICINE

Robert L. Sinsheimer  
Professor of Biophysics and Chairman  
of the Division of Biology

Major advances in our understanding of basic biological processes will probably yield significant medical breakthroughs. It is possible to foresee several likely directions that this progress will take. The physician will face increasing burdens of social responsibility in meeting the major ethical questions which will accompany such rapid progress.

### POPULATION EXPLOSION IN THE U.S.—MYTH OR REALITY?

Alan R. Sweezy  
Professor of Economics

Concern about what is happening to the environment is forcing people to realize that population growth may be a serious problem for the United States as well as for low-income countries like India. What are the actual prospects: continued slowdown or renewal of explosive growth? What can we learn from past experience about the economic, psychological, and cultural determinants of the key factor—the birth rate?

### THE 70'S: A TIME FOR TESTING GENERAL RELATIVITY

Kip S. Thorne  
Associate Professor of Theoretical  
Physics

Recent advances in space technology make possible new high-precision experiments to test Einstein's general theory of relativity. We will describe a variety of possible experiments, which will make use of laser ranging to the moon; spacecraft in orbit about Mercury, Venus, and Mars; radio telescopes; interplanetary radar; and quasars.

### SOLAR FLARES

Harold Zirin

Professor of Astrophysics and Staff  
Member of the Hale Observatories

Solar flares are bursts of energy on the sun that produce a plasma at a temperature of 50 million degrees or more. They produce intense bursts of X rays and radio emission and sometimes large numbers of cosmic rays. The flares will occur in peculiar magnetic field configurations which we are learning to identify. Pictures and films of these solar flares will be shown.

### GENERAL LECTURE

Ray Bradbury

## CALTECH NEWS

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## Placement Assistance To Caltech Alumni

The Caltech Placement Service may be of assistance to you in one of the following ways:

- (1) Help you when you become unemployed or need to change employment.
- (2) Inform you of possible opportunities from time to time.

This service is provided to alumni by the Institute. A fee or charge is not involved. If you wish to avail yourself of this service, fill in and mail the following form:

To: Caltech Placement Service  
California Institute of Technology  
Pasadena, California 91109

Please send me: (Check one)

- ☐ An application for placement assistance
- ☐ A form indicating a desire to keep watch of opportunities although I am not contemplating a change.

Name .....

Degree(s) ..... Year(s) .....

Address .....

.....

# PERSONALS

## 1933

ROBERT D. FLETCHER, MS '34, MS '35, director of scientific services and aerospace sciences with the Air Weather Service in Illinois, received the American Meteorological Society's Charles Franklin Brooks Award for services to meteorology.

## 1940

VICTOR WOUK, MS, PhD '42, is continuing his work in the field of low emission vehicles—particularly electric and hybrid electric automobiles—and plans to participate in the 1970 cross-country Clean Air Car Race. Wouk is the director of electronics research for Gulton Industries in New Jersey.

## 1942

JOHN T. BOWEN, MS '46, PhD '49, formerly vice president and director of research at Ingersoll Rand Research Inc., is now vice president of engineering and research for the American Machine & Foundry Company in New York.

## 1944

LESTER O. LEENERTS, MS, has been appointed manager of technical copy control in corporate research and development for the Purcell Corporation. Leenerts, previously with Cinecolor Corp. and Swift and Company, is married to the former Norma Montgomery and lives in Alhambra, Calif.

## 1945

PAYSON S. TSEU, MS, listed as "address unknown" in the November issue of *Caltech News*, writes that for the last 16 years he has worked for Lockheed Missiles & Space Company and is living in the San Francisco Bay area.

## 1947

MALVIN A. RUDERMAN, MS, PhD '51, professor of physics at Columbia University, was chosen by Carnegie-Mellon University to deliver the Buhl Lectures in Theoretical Physics for 1970.

## Proposed Amendments

The Board of Directors of the Caltech Alumni Association is submitting the following proposed changes in the bylaws. The adoption of these changes is subject to Article IX of Section 11.01 of the Articles of Incorporation and Bylaws.

I. Change of the number of Directors to provide better representation.

### Article III, Section 3.01 Composition of Board

The affairs of the Association shall be managed by a Board of Directors consisting of eighteen (18) members of the Association. This membership shall consist of five members elected each year for a three-year term and the President and the Immediate Past President; furthermore, one additional member from one of the Association's chapter organizations may be elected to serve for a one-year term. The President of the Association shall serve as Chairman of the Board.

II. Rewritten to clarify the nomination procedure and term of offices.

### Article V, Section 5.01 Nomination

The Nomination Proposal Committee for Directors shall consist of the Immediate Past President as Chairman, the President, the Vice President, and the Secretary and four (4) members of the Association who are not members of the Board. This Committee shall propose the name of a member of the Association for each of the five (5) Directors to be elected for three-year terms and at least one (1) alternate for each of the five Directors. Furthermore, the Committee may propose one Association member and alternate from a chapter organization to be elected for a one-year term on the Board of Directors. This Committee shall be guided by the principle that membership on the Board should be allocated in reasonably proportionate fashion among the various degree-holding groups in the Association.

Secretary—shall have served at least one (1) year on the Board and shall currently be a member of the Board.

Treasurer—shall have served at least one (1) year on the Board and shall currently be a member of the Board.

Five (5) Directors for a three-year term and, at its discretion, one (1) Director from a chapter organization for a one-year term.

### Article V, Section 5.04 Term of Offices

The term of each officer and Director shall begin at the close of the annual meeting following the election. The President, Vice President, Secretary, and Treasurer shall serve until the close of the first succeeding annual meeting and until their successors are chosen and qualified. The newly elected Directors for three years shall serve until the close of the third succeeding annual meeting; the newly elected Director for one year, if any such Director shall have been elected, shall serve until the close of the first succeeding annual meeting; and said Directors as so elected shall serve until their successors are chosen and qualified.

## 1949

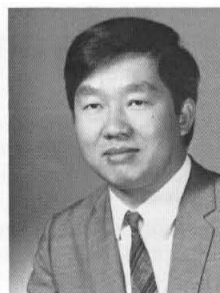
GEORGE H. BOWEN, PhD '52, professor of physics at Iowa State University, received one of four Outstanding Teacher Awards presented for his work in teaching and counselling students in physics.

GEORGE M. PETZAR, former western regional manager for the Portland Cement Association, is the new vice president of marketing for American Cement Corporation's Sierra division in San Francisco.

ARTHUR O. SPAULDING, MS '58, Los Angeles city petroleum administrator, received a 1970 Engineering Merit Award presented by the Institute for the Advancement of Engineering. He earned the award for his role in formulating legislation and regulations on mineral exploitation that provide for the protection of the environment. Spaulding was also recently elected vice president of the Pacific section of the American Association of Petroleum Geologists.



Taylor, '60



Kurosaka, '68

## 1960

RICHARD E. ROBERTSON gave a paper on polymer yield during an international conference on polymer yield, deformation, and fracture held at Cambridge University. Robertson is a member of the staff of the polymer chemistry branch of General Electric's research and development center in Schenectady, N.Y.

RAYMOND L. TAYLOR, PhD, has been appointed chairman of the atomic physics research committee at Avco Everett Research Laboratory. Taylor, who was principal research scientist before his promotion, has worked for Avco since 1959.

## 1965

VERNON L. BLISS, captain in the U.S. Air Force studying tropical meteorology at the University of Hawaii under the Air Force Institute of Technology education program, has received a regular commission in the Air Force at Hickman Air Base in Hawaii.

## 1968

MITSURU KUROSAKA, PhD, formerly an engineer with the Garrett Corporation, has joined the General Electric research and development center in Schenectady, N.Y., as a mechanics engineer.

# Alumni Activities

## Barn Dance

Dancing, crew races, and "flamers with courageous alumni" are some of the activities scheduled for the second annual Barn Dance to be held in the Athenaeum on Saturday, April 25. The Alumni Association suggests that those not signed up by mail should phone the Alumni Office for reservations.

## San Joaquin-Mojave Field Trip

The San Joaquin-Mojave chapter of the Alumni Association is following up last October's meeting with a family desert trip on May 3. Ken Robinson, '28, director of the Maturango Museum and a member of the technical staff of the Navy Weapons Center at China Lake, invites alumni and their families to join in a desert "boondocking tour." The highlight of the trip will be a tour of Renegade Canyon to see the world-famous petroglyphs carved by prehistoric

LUTHER B. PERRY, Army private first class, attending the U.S. Army Ordnance Center and School at Aberdeen Proving Ground, Md., was selected in January as student of the month.

## Obituaries

## 1922

OLCOTT R. BULKLEY, November 28, 1969. He joined the Southern California Edison Company at Big Creek shortly after graduation, then transferred to Long Beach with Stone and Webster during construction of the steam plant at that location. His construction experience dated back to his time at Caltech during his senior year when he was in charge of wiring the Norman Bridge Physics Laboratory. While at Long Beach he patented the frequency control system now in use by Edison for maintenance of accurate time on its system.

Transferring later to the main office of Edison in Los Angeles, he rose to the position of chief of the division of electrical engineering. Previous to his retirement in May of 1964, he spent several years researching methods of underground distribution, establishing principles now being followed by Edison.

Besides his wife, Isabel, of Alhambra, he leaves a daughter, Kay Phillips of Palo Alto; a son, Edward (BS '49) of San Marino; and four grandchildren.

KENNETH A. LEARNED, in Pasadena, March 23. A member of the Telephone Pioneers, Learned was a retired engineer, formerly with the Pacific Telephone and Telegraph Company. He is survived by his wife, Dorothy, and two daughters and a sister.

## 1924

JOHN CARR, of a heart attack, January 1969. He was a former manager, international division, for the York Corporation of New York.

## 1940

WILLIS G. WORCESTER, MS, on February 10, following a plane crash in the Long Island, N.Y., area. Worcester, dean of engineering at Virginia Polytechnic Institute since 1963, was the dean emeritus of the University of Colorado and a professor of electrical engineering and professor emeritus of geology. He was also an adviser to the government of Afghanistan on the establishment of a research institute at Kabul University in 1960. At the time of his death he was visiting New London, Conn., as a member of a team evaluating courses at the U.S. Coast Guard Academy in that city. Worcester is survived by his wife, Isobel, and two sons, a sister, a brother, and his parents.

## 1953

CARL A. RAMBOW, MS '58, March 21, in Sierra Madre, Calif. He was president of Montgomery Research, Inc., of Pasadena. He is survived by his wife, Shirley.

man. This canyon and several others adjacent to it contain the greatest concentration of petroglyphs in North America. Alumni are requested to submit reservations for the trip by April 26.

## San Diego Chapter Meeting

Eugene Shoemaker, head of Caltech's geology division, will be the guest speaker at the San Diego chapter's May 9 alumni dinner. Following a no-host cocktail hour and dinner beginning at 7 p.m. in the Kona Kai Club, the lunar geologist will give a talk on "Man on the Moon—the First Scientific Results" which he will illustrate with moon rock pictures and photographs of the moon taken by the Apollo 11 astronauts. Because of the general interest of the evening's lecture, alumni are welcome to bring guests and children. Reservations, at \$4.50 per person, should be sent to David Groce, 8234 Prestwick Drive, La Jolla, Calif. 92037