

# The Month at Caltech



## It isn't raining rain, you know

Whatever poets and weathermen say about the month of April, what rains on the faculty at Caltech at this time of year is awards. April 1973 was no exception.

### National Academy of Sciences

Four Caltech faculty men were elected to membership in the National Academy of Sciences at its 110th annual meeting in April. Election to the academy is in recognition of outstanding scientific achievement, and Caltech now has 48 members. Total membership is about 1,000.

The new quartet—all of whom are also Caltech alumni—are Gerry Neugebauer, professor of physics and a staff member of the Hale Observatories; Simon Ramo, research associate in electrical engineering and a member of the board of trustees; Robert P. Sharp, professor of geology; and Kip Thorne, professor of theoretical physics.

Gerry Neugebauer received his PhD in high-energy physics in 1960, spent two years in the U.S. Army working at the Jet Propulsion Laboratory, then came back to Caltech in 1962 as a member of the faculty. A recognized leader in the field of infrared astronomy, Neugebauer has been principal investigator in infrared radiometer experiments on several of the Mariner missions, has made an infrared survey of three-fourths of the sky, and recently made observations (with Eric Becklin, senior research fellow in physics, and Gareth Wynn-Williams, research fellow in physics and astrophysics) of a group of objects that seem to be embryo stars (*E&S*, March-April).

Simon Ramo, who is vice chairman of the board and chairman of the executive committee of TRW, Inc., has been a research associate at the Institute since 1946. His BS from the University of Utah in 1933 was in electrical engineering and physics, and his Caltech PhD in 1936 was also in electrical engineering. This led naturally to his fields of specialization—electronics, microwaves, and guided missiles. Ramo's systems approach to missile problems has resulted in important ad-

## Hour of Glory

When is a president not a president? One answer is—when he's ASCIT President Mark Johnson occupying Caltech President Harold Brown's chair. Johnson began the most cordial student sit-in in history last month when he discovered that Brown and most of the rest of Caltech's top brass were at MIT for the annual administrative note-comparing. Not being a man to ignore the knocking of opportunity, Johnson immediately wired Brown:

WITH YOU, DR. CHRISTY, DR. MARTEL, AND DR. HUTTENBACK IN BOSTON, I HAVE SEIZED CONTROL. DETAILS FOLLOW.

But Brown, too, seemed to hear opportunity at the door. He immediately wired back:

DELIGHTED TO HEAR GREAT NEWS. WILL HENCEFORTH PASS ALL DIFFICULT PROBLEMS OF CONFLICTING WISHES TO YOU. UNFORTUNATELY, RESOURCES AND PEOPLE TO RESOLVE WILL CONTINUE TO BE UNAVAILABLE AS THEY HAVE BEEN TO ME. EXPECT ALL TO BE SOLVED BY TIME OF RETURN WEDNESDAY. GLAD CHILIASTIC MOVEMENTS NOT ALL PAST. GOOD LUCK.

Brown returned to find the "Office of the President" signs replaced by "Provisional Student Government"; he also found an invitation from Johnson for him to preside at the next ASCIT board of directors meeting, which he graciously accepted.

vances in the technology of that field, and he has been instrumental in applying the same study methods to research on urban and social problems. He was a founding member of the National Academy of Engineers.

Robert Sharp has been a member of the Caltech faculty since 1947 and was chairman of the division of geology from 1952 to 1967. He got his BS (1934) and MS (1935) degrees from Caltech. After receiving his PhD from Harvard in 1938, he taught at the University of Illinois and the University of Minnesota before he came to the Institute. He has had a greater influence on two areas of geological science than any other American—the direct observation and theory of glacier flow processes, and the analysis of desert processes—especially sand dunes. He made the first successful deep coring in ice to the bottom of an active glacier, with two major results: the use of oxygen isotope study of ice of different ages and depth, and the observation of glacier movement by successive measurements of core-hole deformation. His studies of the desert have dealt with both macro and



Gerry Neugebauer



Robert Sharp

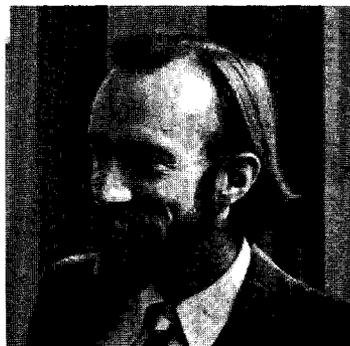
micro forms, and he has recently applied his geomorphic knowledge to interpreting the data from Mars.

Kip Thorne graduated from Caltech in 1962, and then went to Princeton University where he received his PhD in 1965. He returned to Caltech for two years as a postdoctoral fellow, was appointed associate professor of theoretical physics in 1967, and became full professor in 1970. Thorne is recognized as the leading relativistic astrophysicist in the country. His field involves applications of relativity to the behavior of astronomical bodies, and he has also made major contributions to the physics of black holes. His comprehensive treatise on *Gravitation* is to appear this spring. In preprint form it has already been the basis of courses in relativistic astrophysics at Caltech and four other universities.

Another Caltech alumnus, Horace W. Babcock, '34, director of the Hale Observatories, was also honored by the NAS last month. A member since 1954, he was elected to the Council of the Academy for a three-year term beginning July 1.



Simon Ramo



Kip Thorne

#### National Academy of Engineering

Two faculty members were elected to the National Academy of Engineering last month, bringing Caltech's membership to 14 in the academy's total roster of 429. The NAE was established in 1964 to share responsibility with the National Academy of Sciences in advising the federal government in matters of science and engineering, to sponsor programs aimed at meeting national needs, and to recognize distinguished engineers.

The Institute's two new members are Norman H. Brooks, professor of environmental science and civil engineering, and Donald E. Hudson, professor of mechanical engineering and applied mechanics. Both are Caltech alumni.



Norman Brooks



Donald Hudson

Brooks, PhD'54, who is also Caltech's academic officer for environmental engineering science, is active in research on hydraulics problems related to water quality management, fluid turbulence and diffusion, and density stratified flows. He has acted as a special consultant for more than 30 governmental agencies and consulting firms—mostly on design problems of outfalls for sewage and cooling water discharges.

Hudson, BS'38, MS'39, PhD'42, is a pioneer in the field of earthquake engineering with a long record of service to

## The Month at Caltech . . . *continued*

federal and state agencies. The instruments he has developed to record ground motions during earth shocks—now widely used—are vital in designing earthquake-resistant structures.

### Kemp Medal

Gerald J. Wasserburg, professor of geology and geophysics, has received Columbia University's Kemp Medal "for distinguished public service by a geologist," for "making significant interpretations of the nature of the moon," and for his "major role in the direction of the lunar projects of the National Aeronautics and Space Administration which have given the scientific world a better understanding of that distant body."

### Guggenheim Fellowship

Gordon Garmire, professor of physics, has both a Guggenheim fellowship and a Fulbright scholarship for the coming year. Garmire's research field is space physics and high-energy astrophysics. He will leave Pasadena in October to spend a month in Australia where he will be launching two rockets. After a brief stop in India, he will be at Cambridge University in England until June 1974, in France for the month of July, and then will return to Pasadena. Garmire has been at Caltech since 1966.

### Sloan Fellowships

Four faculty members were awarded Sloan Foundation fellowships for 1973—Michael Aschbacher, assistant professor of mathematics; Jeffrey E. Mandula, assistant professor of theoretical physics; Robert W. Vaughan, assistant professor of chemical engineering; and Michael W. Werner, assistant professor of physics.

Sloan fellowships are designed to give young scientists the opportunity to do fundamental research at an early stage in their careers. The Sloan fellows are nominated by senior colleagues who are familiar with their capacity to perform outstanding and creative basic research, and the grant is for two years at an average of about \$8,750 per year.

### Passano Award

One of the country's important prizes for achievement in medicine, the \$10,000 Passano Foundation Award, has been presented to Roger W. Sperry. Sperry, who is Hixon Professor of Psychobiology, has been at Caltech since 1954. He was honored for his studies of surgically separated brain hemispheres in humans and animals, research in which he has found that each hemisphere exhibits consciousness and differential skills—and that separate thoughts, perceptions, and emotions can occur simultaneously in both.

"These demonstrations," the citation reads, "make fundamental contributions to our understanding of the mind/brain relation and the neurological bases of human behavior."

### Tolman Medal

James Bonner, professor of biology, received the Richard C. Tolman Medal at the April meeting of the American Chemical Society's southern California section. The medal has been awarded annually for the last 12 years, and Bonner is the third Caltech recipient, joining A. J. Haagen-Smit and Ernest Swift.

The citation noted Bonner's "many contributions to fundamental chemistry, biochemistry, and plant physiology, his work in regulation and control of growth and development, his outstanding texts in plant biochemistry, and his efforts as a stimulating teacher and example to his students."

### Smith Medal

At a special dinner on April 23 in Washington, D.C., the National Academy of Sciences awarded gold medals and cash prizes to ten scientists. Clair Patterson, research associate in geochemistry, was one of them, receiving the J. Lawrence Smith Medal and \$2,000. The awards were made to men "to whom honor has come not because of a dramatic breakthrough but because of career-long achievements laid one upon another that contribute significantly to man's understanding of himself, his world, and the universe."

Patterson, who has been at Caltech since 1952, was honored for his analysis

of isotopes of lead in meteorites that established the age of the solar system at 4.6 billion years. (Recently he has applied isotopic methods to learning the history of ancient and medieval metallurgy and coinage—*E&S*, November 1971). He has developed methods of using lead isotopes to study the dating of rocks, determining the age of the earth and meteorites, and tracing the evolution of continents. He is also recognized for his discovery that the oceans, atmosphere, and lands of the earth are polluted with lead as a result of man's technological activities.

## Putnam Competition Winners—Again

The William Lowell Putnam mathematics competition annually wrings six hours worth of anguished work out of the nation's best undergraduate mathematics students. The exam consists of 12 problems that test ingenuity and analytical power, and this year 1,681 students from 322 colleges competed. Caltech's team—consisting of juniors Arthur Rubin and Michael Yoder, and Bruce Reznick, a senior—won the competition for the second straight year.

These three, along with sophomore David Dummit and freshman James Shearer, were among 12 contestants who achieved scores of over 38 percent on the test. In fact, the scores of the three team members averaged 61 percent, compared with 32 percent for second-place Oberlin and 30 percent for third-place Harvard.

With only Reznick to replace—and a group of talented undergraduate mathematics students on hand—Gary Lorden, the Putnam team coach, predicts that Caltech will do well again next year too. Lorden should know; he is an associate professor of mathematics, an alumnus (class of 1962), and was a Putnam team member as an undergraduate. In the 33 years since the national competition began, Caltech has almost always been high in the standings and has taken first place five times. ■