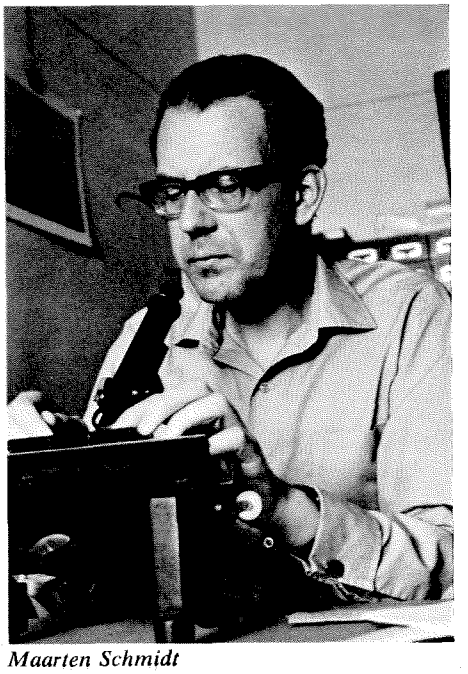
The Summer at Caltech



Maarten Schmidt

Turnabout in Astronomy

Maarten Schmidt, professor of astronomy and staff member of the Hale Observatories and the Owens Valley Radio Observatory, has been named executive officer for astronomy. He replaces Jesse Greenstein, Lee A. DuBridge Professor of Astrophysics and also a staff member of the Hale and Owens Valley observatories.

Schmidt, 42, is a native of Groningen, Holland. He received a BS from the University of Groningen in 1949 and a PhD in astronomy from the University of Leiden in 1956. For two years after that he was a Carnegie Fellow at the Mount Wilson and Palomar Observatories, and in 1959 became associate professor of astronomy at Caltech.

Almost from the beginning of his career at the Institute, Schmidt has been involved in trying to understand the curious objects that turned out to be quasars, the brightest and probably the most distant known objects in the universe. (Probably—but not positively.) Although Schmidt and Greenstein's interpretation that quasars are extragalactic and that their red shifts arise from the continuing expansion of the universe is hotly debated by some astronomers, it has also led to a search of the heavens for other similar explosive phenomena. What has resulted is a new picture of the universe—one of general cosmic violence, with not only quasars but also exploding galaxies, almost omnipresent high-energy particles and magnetic fields, and events suggesting relativistic collapse (black holes).

"Whatever the true nature of quasars—whether they are far or near—their discovery has put new life into astronomy," says Schmidt. "The string of discoveries over the last ten years has probably added much more rapidly to our problems than to our knowledge. There are still more questions than answers. But that is very healthy—and very exciting."

With the question of quasars still up in the air, Schmidt today devotes much of his research time to basic theory—"trying to figure out what it all means." He is currently studying the effects of star formation and the evolution of galaxies—considerations that may lead to an estimate of how our own and other galaxies evolved.

Taking over as executive officer for astronomy will cut into his research time, but Schmidt is dedicated to retaining the momentum of Caltech's astronomy program. That momentum is a tribute to Jesse Greenstein, who is stepping down after 24 years (nine of them unofficial) as executive officer.

"It's important to get out while you're ahead," says Greenstein. "Astronomy, at Caltech and in general, has moved with the speed of light in recent years. It's quite startling to realize that I have ridden so long without getting thrown. Besides, it's time for new directions. It's time for somebody with more optimism and new ideas."

But Greenstein's most important reason for stepping down is also the most personal. He simply wants more time to devote to research. He doesn't want to be faced with continuing to make choices between administrative duties and scientific work. "One is sacred, the other profane," he says. "The observing is sacred. The way it's been, if I got four nights of observing on the 200-inch telescope, I went to Palomar and used them. But I went knowing very well that if I got anything usable I would have to give it to someone else to work on.

"There's a point at which you begin to envy your colleagues their time. I don't like being the third author in a paper with seven authors. I have my own work, and it's about time—now that I'm 62—that I devote more time to it."

As a cooperative enterprise, Greenstein admits, the astronomy department has

Jesse Greenstein

accomplished a lot to be proud of over the past quarter-century. "We're very modest here," he says, "but if you want me to be chauvinistic, I can be. In both the teaching of astronomy and in the research we do, we are extremely good. I brought almost everybody here; they're all my foster children scientifically—and they are the best."

When Greenstein came to Caltech in 1948, there was only one other professor in astronomy—Fritz Zwicky. When funding was at its height in the 1960's, the department had about 100 people. Now there are approximately 10 professors, 30 undergraduate students, and another 30 graduate students.

"Our impact on astronomy has been profound," he says. "We've had a finger in almost every major development in ground-based astronomy, and we're becoming increasingly involved in space astronomy. We are, in essence, the establishment—the Caltech Mafia—which is another good reason for a change. You start to worry when people begin to ask if you are prejudiced. Has the picture of the universe that is official in Pasadena anything to do with the universe as seen by astronomers who are 50, 100, or 1,000 miles away?"

Greenstein thinks the picture of the universe that has been formed by Caltech and Hale Observatories astronomers is based on hard, scientific data—not on prejudice. He points out that it is generally accepted throughout the world, although specific details are debated ferociously.

Despite his load of administrative duties, Greenstein has done his part in painting that portrait of the observable universe. Since 1948 he has published more than 250 papers on astronomical investigations such as the nature of gas and dust in interstellar space and their interaction with the stars; absorption and polarization of light in space; the composition of stars from their spectra; the discovery and study of stars of peculiar composition; nuclear processes in the stars; the interstellar magnetic field of our galaxy; and the study of quasars.

"When I came here at the age of 38, astronomy was just an immense blackboard to fill in," Greenstein says. "It was wonderful. Every possibility was open to us. We had the biggest telescopes in the world to work with, and every place to look. Everything in cosmology was up for grabs. I don't know that there will ever be another period quite like it."

Watson Lectures

Caltech's regular Monday evening lecture series in Beckman Auditorium has been given a new name to honor the memory of the man who started the lectures: the late Earnest C. Watson. From now on the series will be called the Earnest C. Watson Caltech Lecture Series at Beckman Auditorium.

Watson, who died in 1970, came to Caltech in 1919. He was made a full professor of physics in 1930 and dean of the faculty in 1945. He also acted as chairman of the division of physics, mathematics and astronomy from 1946 to 1949. He originated a series of Friday night demonstration lectures on campus that became one of the most popular public events in Pasadena—and his own lecture on liquid air was the most popular of all. He repeated it for many groups over many years. In 1964 he gave it for the last time—as the first faculty lecture in the brand new Beckman Auditorium.

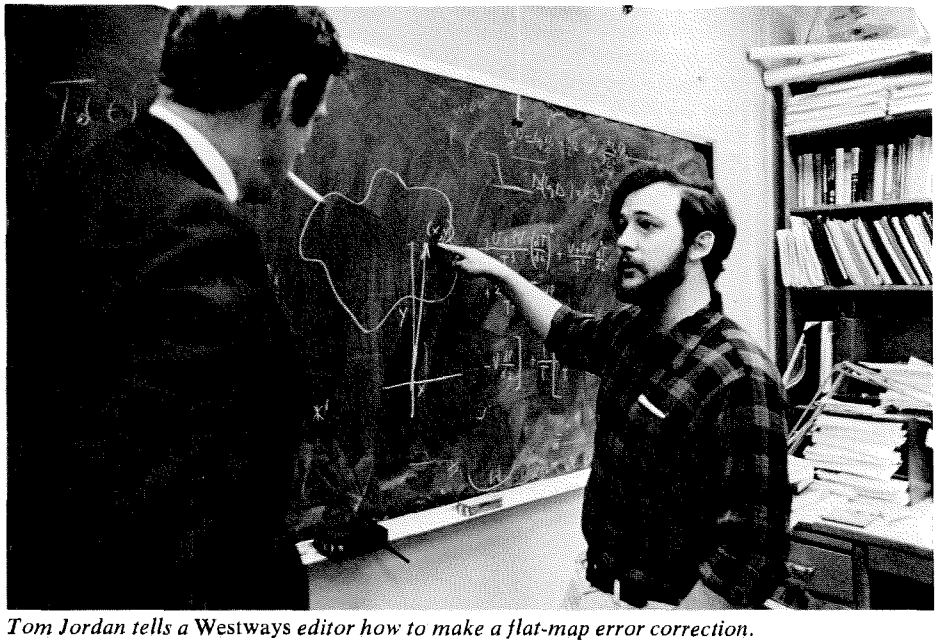
Project Centroid

If you don't know where the centroid of Los Angeles County is (or even *what* it is), you have a lot of company. But if you read the August and September issues of *Westways* magazine, you no longer have an excuse.

At the request of one of the magazine's editors, a quartet of graduate students in geophysics at Caltech—Tom Jordan, George Mellman, Richard Strelitz, and Larry Burdick—recently figured it out. They began by editing the editor's question. A nonscientific man, he first asked them to find the county's geographical center. Too meaningless, they replied. But if the editor asked them to find the "centroid," it could be done. The centroid, or center of mass, is "that point where if you cut out the exact shape of Los Angeles County in cardboard and molded it to conform to the curvature of the earth, it could be balanced on the head of a pin."

To make the problem a bit more difficult a number of conditions were stipulated:

Graduate students Tom Jordan, Larry Burdick, Richard Strelitz, and George Mellman scan a computer print-out to find the centroid of Los Angeles County.



Tom Jordan tells a Westways *editor how to make a flat-map error correction.*

►The offshore islands would be included in the computation.

►The land being measured would be considered "smooth-faced."

►The mean high-tide line would be considered the boundary with the sea.

►The answer must be accurate to within ten meters.

For two months during the summer the graduate students used their time off from earthquake research to work on Project Centroid.

For those who, like Jordan, Mellman, Strelitz, and Burdick, had time, know-how, ingenuity, and/or access to a digitizer and a computer, the August *Westways* provided all the information needed to get an answer. All the rest of us had to wait until that nonscientific editor revealed it in the September issue.

Where is the centroid of Los Angeles County? Why, where else but at 34°19′15.358″ north latitude and 118°13′24.276″ west longitude.

In case you're still baffled, the centroid of Los Angeles County is just below Condor Peak—about 2½ miles due north of Big Tujunga Station in the Angeles National Forest.

In appreciation of the effort the four geophysics students put into Project Centroid, *Westways* donated $1,000 to Caltech for the scholarship support of a graduate student in seismology.

The Summer at Caltech . . . *continued*

Dino Morelli, 1916-1972

Dino A. Morelli, professor of engineering design, died on September 12 in Pasadena. He had been a member of the Caltech faculty for 24 years.

Dr. Morelli was born in Queensland, Australia, in 1916. He attended the University of Queensland, receiving a BE in 1937 and an ME in 1942. He taught at the University of Queensland and owned a sheet metal firm and instrument-making company in Brisbane before coming to Caltech, where he received an MS in 1942 and a PhD in 1946.

An inventor and developer of precision instruments as well as a teacher of machine and engineering design, Morelli also served as a consultant to several firms, and for a time designed children's furniture. Among the instruments he designed at Caltech were a number of vibration generators for testing the earthquake resistance of various kinds of structures. Morelli was frequently called as a technical expert witness in court trials. He was a member of the American Society of Mechanical Engineers and of Sigma Xi.

Elbridge H. Stuart, 1888-1972

Elbridge H. Stuart, trustee emeritus of Caltech since 1962, died on September 16 at the age of 84. He was elected a member of the Institute's board of trustees in 1950, and was also a life member of the Associates.

A native of El Paso, Mr. Stuart graduated from Yale University and was first employed by the Carnation Company in 1911. At the time of his death—having been president, chairman of the board, and chief executive officer—he was honorary board chairman of the company. He was a Chevalier in the Order of the Legion of Honor of France and held the Order of Merit of the government of Peru.

Faculty and Administrative Changes 1972-1973

ADMINISTRATION

ROBERT A. HUTTENBACK—*chairman of the division of humanities and social sciences*
W. BARCLAY KAMB—*chairman of the division of geological and planetary sciences*
HANS W. LIEPMANN—*director of graduate aeronautical laboratories*
JAMES J. MORGAN—*dean of students*
JOHN D. ROBERTS—*acting chairman of the division of chemistry and chemical engineering*

PROMOTIONS

To Research Associate, Emeritus:
JOSEPH B. KOEPFLI—*chemistry*

To Professor:
BARRY C. BARISH—*physics*
GORDON P. GARMIRE—*physics*
JAMES E. GUNN—*astronomy*
WILFRED D. IWAN—*applied mechanics*
PAUL C. JENNINGS—*applied mechanics*
FREDRIC RAICHLEN—*civil engineering*

To Research Associate:
JAMES E. BROADWELL—*aeronautics*
EVA FIFKOVA—*biology*
PETER H. LOWY—*biology*
MARIANNE N. OLDS—*biology*
HELEN R. REVEL—*biology*
GEORGE A. SEIELSTAD—*radio astronomy*
CHANG-CHYI TSUEI—*applied physics*

To Associate Professor:
E. J. LIST—*environmental engineering science*

To Senior Research Fellow:
ERIC E. BECKLIN—*physics*
CHRISTOPHER BRENNEN—*engineering science*
BARBARA R. HOUGH—*biology*
RICHARD B. MACANALLY—*electrical engineering*
TSE-CHIN MO—*electrical engineering*
DIMITRI A. PAPANASTASSIOU—*planetary science and physics*

To Assistant Professor:
MICHAEL ASCHBACHER—*mathematics*
MORGAN KOUSSER—*history*
GEORGE R. ROSSMAN—*mineralogy and chemistry*

NEW FACULTY MEMBERS

Professor:
HIROO KANAMORI—*geophysics*

Research Associates:
MARYLOU INGRAM—*biomedical engineering*
ROBERT C. Y. KOH—*environmental engineering science*
JOHN H. SCHWARS—*theoretical physics*
J. C. SHAW—*information science*

Associate Professors:
LOUIS BREGER—*psychology*
PER BRINCH-HANSEN—*computer science*

Senior Research Fellows:
JOHN P. HOLDREN—*population studies*
JOHN C. HUNEKE—*planetary science*
BENJAMIN D. ZABLOCKI—*sociology*

Assistant Professors:
MORRIS FIORINA—*political science*
MIHAILO D. TRIFUNAC—*applied science*
MICHAEL W. WERNER—*physics*

TERMINATIONS

JOSEF ALONI—*senior research fellow in biology*, to Israel
GARRY L. BROWN—*senior research fellow in aeronautics*, to the University of Adelaide in Australia
CHARLES B. CHIU—*senior research fellow in theoretical physics*, to the University of Texas' physics department
PETER L. CRAWLEY—*professor of mathematics*, to Brigham Young University's department of mathematics
RICHARD DOLEN—*senior research fellow in physics*
EDMUND O. FISET—*senior research fellow in physics*
MOSES GLASNER—*assistant professor of mathematics*, to Pennsylvania State University
GEORGE S. HAMMOND—*Arthur Amos Noyes Professor of Chemistry; chairman of the division of chemistry and chemical engineering*, to the University of California at Santa Cruz
ANDREW E. KERTESZ—*senior research fellow in applied science*, to the Technical Institute of Northwestern University
EVELYN LEE-TENG—*senior research fellow in biology*, to the University of Southern California's medical school
PATRICK W. NYE—*senior research fellow in applied science*, to the Haskins Laboratories in New Haven, Connecticut
HEINRICH RINDERDNECHT—*senior research fellow in chemistry*, to the Veterans' Administration Hospital in Sepulveda
EDWIN C. SELTZER—*senior research fellow in physics*

RETIREMENTS

JOHN B. WELDON—*registrar*