

**BRAD STURTEVANT
1933 – 2000**

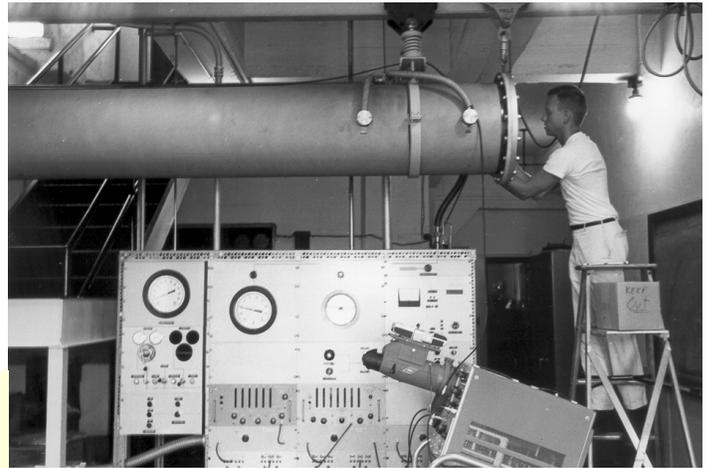


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Bradford (Brad) Sturtevant, the Hans W. Liepmann Professor of Aeronautics, died October 20, of pancreatic cancer at the age of 66.

Arriving at Caltech as a graduate student in 1955, with a bachelor’s in engineering from Yale, Sturtevant earned his PhD in 1960 and stayed on at GALCIT (Caltech’s Graduate Aeronautical Laboratory) for the rest of his career. He was preceded by his great uncle, Alfred Sturtevant, who, with Thomas Hunt Morgan, was among the founders of the Division of Biology in 1928. But while the elder Sturtevant studied the genetics of fruit flies (and irises), Brad’s research was in fluid dynamics, particularly shock waves and nonsteady gas dynamics. He was named associate professor in 1966, full professor in 1971, and appointed to the Liepmann chair in 1995.

A memorial gathering in remembrance and celebration of Sturtevant’s life was held Saturday, February 24, following a reception and buffet and Scott Joplin piano music. Hans Hornung, the C. L. “Kelly” Johnson Professor of Aeronautics and director of GALCIT, surveyed the large crowd in Dabney Lounge and declared that if Sturtevant could see this, he would say,



Sturtevant with GALCIT’s 17-inch shock tube in the early 1960s.

“Why don’t you all go back to your labs and do an honest day’s work?” (Sturtevant was well known for working on Saturdays.) But everyone stayed, and the memorial continued.

Victoria Sturtevant stated three things she had learned from her father: “If it hurts, it’s good for you”; “think about it and work it in your head to figure out how it works before you break it”; and “choose a career where you’ll constantly learn.” Brad Sturtevant took these tenets extremely seriously himself, as his colleagues, students, and friends proceeded to attest.

Hans Liepmann, the Theodore von Kármán Professor of Aeronautics, Emeritus, and former GALCIT director, recalled Sturtevant’s style in designing experiments: “very prepared. He thought he could design an experiment that would work the first time,” whereas others, including Liepmann, had a different approach: “We would first do it lousy and then a little better and then a little better.”

Liepmann noted that Sturtevant exemplified GALCIT’s mission: “We do not want to produce specialists but we want to produce people who can specialize wherever they want to.” From the molecu-

lar beam that he built for his PhD thesis under Liepmann, Sturtevant became interested in kinetic theory and then in shock wave structure. He went on to apply his shock wave research to motorcycle noise and sonic booms and to fields as disparate as geology and medicine. With Hornung, he built the T5 Hypervelocity Shock Tunnel in 1988. Hornung joked that, throughout construction, “Brad wanted everything to be done *right*,” even the cleaning up. (A slide showed Sturtevant directing his boss at the vacuum cleaner.)

Representing colleagues from the Indiana University School of Medicine, Andy Evan spoke of Sturtevant’s work with a group interested in shock wave lithotripsy. The Indiana group had met him in 1988, when both were seeking other investigators. “Brad was very interested in how shock waves break up kidney stones,” said Evan. “We were interested in how shock waves caused damage to tissue. It seemed a perfect match for collaboration.” Despite initial disappointment in attracting NIH funding, it was Brad’s optimism and contagious enthusiasm that kept the project going, said Evan. “I don’t need to remind you how

incredibly bright Brad really was, how gifted he was at analysis, and what a fertile flow of original ideas he generated.”

His forays into volcanology were described by geologist Sue Kieffer, PhD '71, who, although she had audited one of Sturtevant's courses, didn't run into him again until Seminar Day 1981, when she gave a talk on the Mount St. Helen's eruption. Sturtevant challenged her conclusions, and the encounter led to a “fruitful collaboration resulting in two papers that proved a number of things about the destructive forces of the supersonic nature of the blast of 1980.”

“Brad made a magical connection, not only between aeronautical engineering and geology and geophysics, but between engineering and science,” said Kieffer. “Neither of these is a mean feat given the vastly different content and training of the researchers in the different fields.”

Interdisciplinary research may have its downside, however. Added Liepmann, “I, for one, firmly believe that it actually reduced the number of Brad's honors and the extent of his support. When it comes to voting for an award, the tendency to keep it within your own narrow group is widespread.”

Half of the 28 students who received their PhDs under Sturtevant returned to attend the memorial, some traveling long distances. Several, including Willie Behrens ('66), Martin Brouillette ('85), and Bert Hesselink ('77), offered affectionate reminiscences of the man as adviser—his “enormously high standards” and demanding presence, his energy, enthusiasm, and his insistence on the proper use of the English language (even semicolons). But “the most important thing I learned

from Brad is what it is to be a scientist, and I thank him for that,” said Brouillette.

Another of those PhD students, Joe Shepherd ('81), professor of aeronautics, who served as master of ceremonies at the memorial and also produced the slide show, said, “We all learned, I believe, an enormous amount from Brad, both on the personal and scientific level.” Shepherd also led into Sturtevant's “other life” as a vigorous athlete. “When I described Brad Sturtevant to the local newspaper recently,” said Shepherd, “I found that I had almost completely omitted the fact that he was also a scientist, and so the headline came out that he was a ‘sportsman.’” His “perfectly healthy” life was regarded with awe. “On one thing I disagree with him after the fact,” said Liepmann. “He died so early; you probably should not believe in doing everything to remain healthy.”

But health wasn't what it was all about. “He loved the mountains and the oceans and everything outdoors,” said Anatol Roshko (PhD '52), the Theodore von Kármán Professor of Aeronautics, Emeritus. Roshko described and showed slides of a 1957 hike in the Sierra to the Ionian Basin, which illustrated Sturtevant's penchant for planning and organization. “Along the way, he seemed to know every feature, every elevation, every contour, and the hike worked out exactly the way he planned it,” said Roshko. “Whatever he undertook, whether it was in his science, or swimming, or hiking, or whatever, he did it all thoroughly.”

He had hiked and sailed since boyhood, and when he came to California, he also took up surfing. In the '60s, he and his wife, Carol, whom he had met at the Caltech pool, “bought a boat instead

of a house” and competed in many ocean sailing races together.

Sturtevant was especially renowned for swimming, open-water swimming races in particular, for which he won numerous prizes and honors. He was a regular lap swimmer at the Caltech pool as well. During the early '80s, he worked out three times a day, said Michael Hoffmann, the James Irvine Professor of Environmental Science and a fellow member of the faculty athletic committee for many years. “He swam in the morning, lifted weights and ran at noontime, and then swam again in the evening. And each workout lasted 90 minutes or so. He also would brag that up until about two years ago, every year he bested his benchmark time from his days on the Yale swim team, which is a remarkable accomplishment.” But Hoffmann punctured the image of Sturtevant's perfectly healthy life: “I used to see him in the morning after his workouts, eating doughnuts over at the Greasy.”

And he drank wine too, said Tim Downes, director of athletics, who was selected to see that wine was served at the memorial buffet. “Some of my fondest memories of Brad are of sitting next to him at endless athletic conference meetings after we had had a couple of glasses of wine,” said Downes. Sturtevant, as well as Hoffmann and Downes, represented Caltech over the years at the Southern California Intercollegiate Athletic Conference; Sturtevant also served several terms as chairman.

He was also a key figure in the planning and construction of the Braun Athletic Center. And when that was completed, he “re-upped for a second tour of duty,” on the Sherman Fairchild Library of Engineering and Applied Science, according to Kim-



berly Douglas, director of that library. "He was not a limelight guy; his name does not appear in the library nor on the gym," said Douglas, but "these buildings are certainly testimony to his willingness to give up his time and considerable talent to make the Institute a better place for all." Added Shepherd, "He had a profound sense of responsibility to the community here at Caltech."

While Sturtevant's colleagues, friends, and students had described him as exacting, rigorous, creative, imaginative, energetic, competitive, intense, and great fun, the Rev. Douglas Vest, his next-door neighbor in Rubio Canyon for 25 years, thought one attribute had been left out. He remembered "the tender side of Brad." When he left the house at 5 a.m. for the pool, he would roll his car down the hill before turning on the ignition so as not to wake the neighbors. Vest, who ended the program, also told of sitting in silence with his longtime neighbor last summer after his disease had been diagnosed, "and I realized he was comfortable about his life; he was comfortable about his family; he was comfortable about the unknown."

An intercollegiate varsity swimming award has been established in Sturtevant's honor, but, like his great uncle, he will also have a physical tribute on campus that is uniquely associated with his life at Caltech. The iris garden north of Gates Annex, planted in memory of Alfred Sturtevant, is populated with descendants of the irises he bred in his later genetic studies. In Brad Sturtevant's memory, a Jacuzzi will be constructed at Braun Athletic Center so that "he will always have a place on the pool deck." □