

The Past Recaptured

WHEN CHARLES RICHTER died last year, he left his papers — correspondence, unpublished writings, course notes, and technical reports — to Caltech. The collection from the inventor of the well-known earthquake scale was packed into dozens of cartons and delivered to the Caltech Archives, and then left in the hallway of the Millikan Library basement. There was no other place to put it.

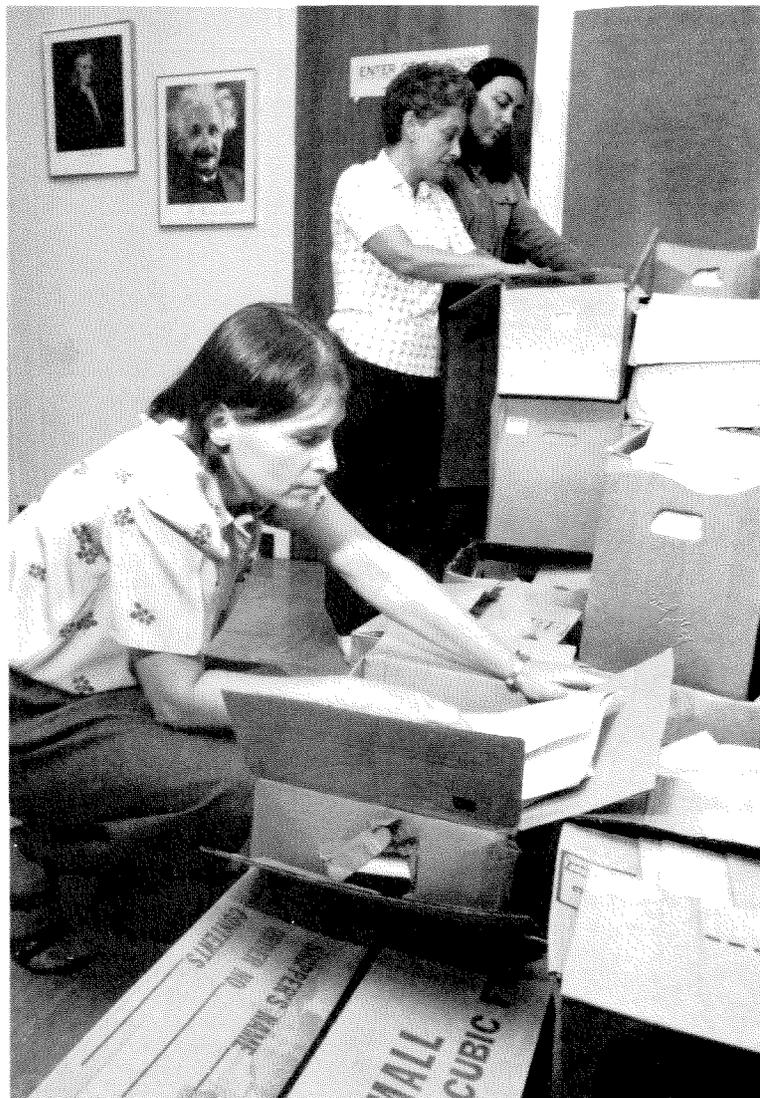
The next morning Archivist Judith Goodstein and her assistant Carol Bugé discovered to their horror that the janitor had tossed out six or seven boxes, thinking they were trash. Bugé tracked down the garbage truck driver, who held up unloading his cargo until the Archives rescue team could reach the city dump. Fortunately the driver knew his route across campus and was able to determine approximately where in his truck the library trash might be located. “Then he dumped it inch by inch in front of us,” remembers Goodstein. They managed to recover some but not all of the Richter cartons. “It broke my heart,” says the archivist, even though she had figured that something like this was bound to happen sooner or later. The Archives had long since outgrown its space.

Although Goodstein has managed to seize some adjacent space over the years, the center of the Archives is still the same room that she walked into in 1968 as Caltech’s first archivist. The room contained a map case, a filing cabinet full of medals, a bunch of boxes wrapped in brown paper — and the papers of Robert A. Millikan and George Ellery Hale. Theodore von Kármán’s papers arrived a week later.

Daniel J. Kevles, now professor of history,

had already begun to organize the Millikan and Hale collections, also getting the first crack at their contents. (This resulted in Kevles’s prizewinning book, *The Physicists*,

Judith Goodstein (foreground), Paula Hurwitz (center) and Carol Bugé inspect the recently delivered boxes of the papers of former Caltech President Harold Brown — stacked on the floor in the Archives’ basement hallway.



A 1926 letter from Einstein to Paul Epstein, then professor of theoretical physics at Caltech, urges him to try to arrange an academic post in America for a young Jewish colleague, who was denied a teaching post in Berlin for "political" reasons. He concludes with the comment that everyone there was caught up in Schrödinger's new theory of quantum states.

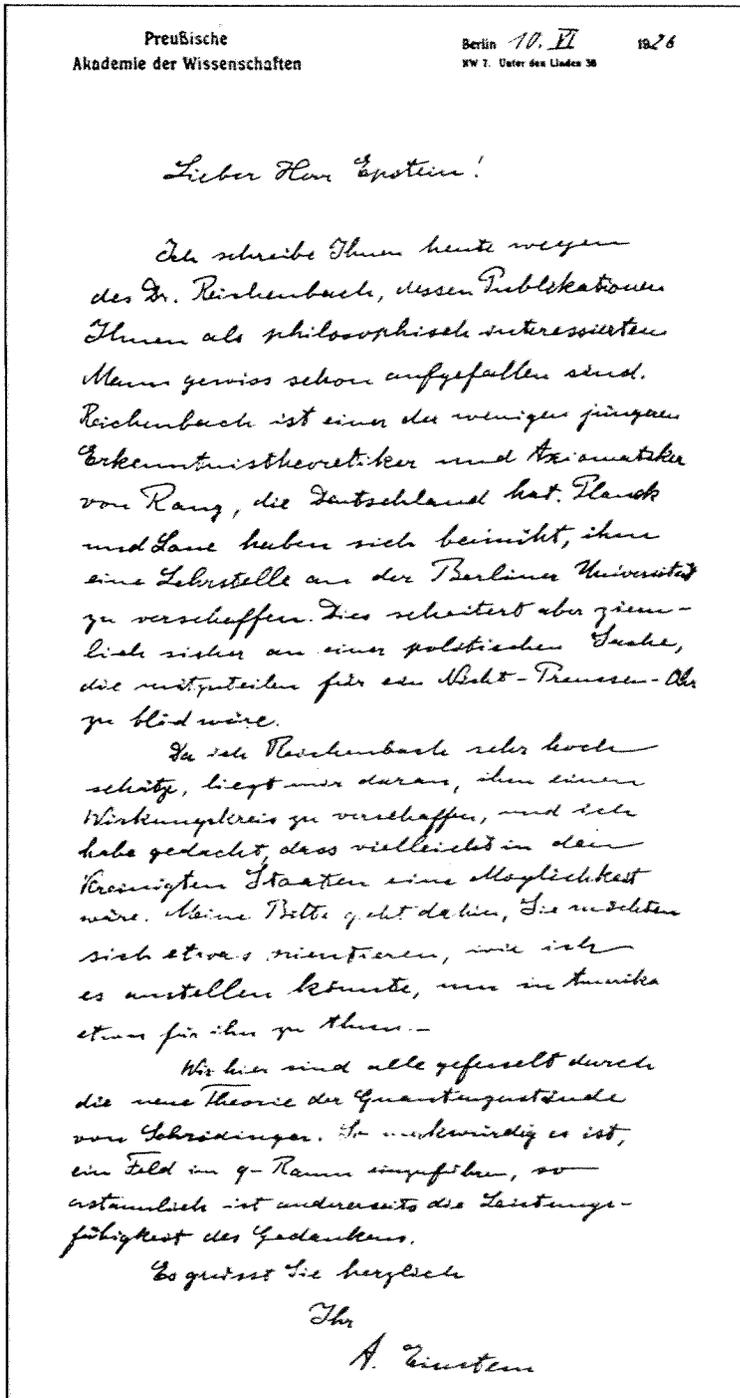
published in 1978. Scholars since have tended to avoid the Hale papers, presuming, falsely, that it has all been done, says Goodstein.) Kevles played an important role in getting Caltech's Archives established. In a memo to then-provost Robert Christy, he wrote: "The principal reason [for maintaining an archive] is that the study of history rests heavily upon the records of institutions and of the activities of its members. . . . Given the central importance of science in the 20th century, it would seem that, as one

of the leading institutions in the world and as a community of scholars, Caltech has an obligation . . . to preserve the record of its life."

The record of Caltech's life had already been pretty well preserved, chiefly through the efforts of Roger Stanton, director of the Institute libraries from 1948 to 1963. Stanton was careful to save all the papers and files given to him over the years. The creation of the Archives provided a place to put these records, as well as a person to organize and make them available to the scholarly world. The boxes that Goodstein found when she arrived had been brought from various store-rooms around campus to this "dumping ground" in the basement of the new Millikan Library when it was built in 1967. "What I inherited was everybody's little attic, plus Hale and Millikan," comments Goodstein.

Opening up the boxes and sifting through the papers was a heady experience. From Amos Throop's death mask to letters from Einstein, from long-lost photographs to the personal notes of Thomas Hunt Morgan — Goodstein found herself spellbound. The Caltech cache and its documentation of the rise of science and technology as a dominant influence in the 20th-century exerted a considerable influence on her own studies. Although her PhD work at the University of Washington dealt with the history of science in the 1800s, after arriving at Caltech she "never again looked back to the 19th century." Goodstein is currently writing a book on Caltech's history.

The immediate task at hand was cataloging 96 manuscript boxes (containing 76,000 documents and covering 144 linear feet) of Theodore von Kármán's papers, left to Caltech in his will. But Goodstein lost no time in laying the groundwork for future donations. She sent a memo to all faculty members and administrators raising their historical consciousness and urging them not to be hasty in throwing things out. "Students of the history of 20th-century science turn to unpublished primary sources . . . when they want to unravel the genesis of a particular idea, or how a particular research field grew, or how knowledge of it was communicated within and outside of the scientific community." Personal records that she considered worth preserving included "preliminary drafts of published papers, privately circulated memoranda, data books, records of experiments (the unsuccessful ones, too), original drawings or photographs of equipment . . ."



Her plea was heeded only too well. There are more than 100 manuscript collections (70 of which have guides prepared by Goodstein and her staff) splitting the Archives' seams, and now Goodstein reluctantly has to turn material away. The one missing collection she coveted was Linus Pauling's; he gave it to Oregon State, his alma mater — including the Caltech chemistry division papers from the years Pauling was chairman. Such division records provide a wealth of information. "You can get a whole new perspective on the history of biology," says Goodstein, "in the Division of Biology papers between 1928 and 1955, the years of Thomas Hunt Morgan and George Beadle. And it's not just budgets . . ."

Sometimes the art of the archivist has demanded more than just sitting in the library basement waiting for the stuff to roll in. Frank Malina was an avid collector of primary source material relating to Caltech's rocket research project and the founding of the Jet Propulsion Laboratory (see article on page 8). When he left his collection to the Library of Congress on his death in 1981, Goodstein flew to Paris to survey the papers and subsequently shipped 302 kilos of paper back to Caltech for microfilming before relinquishing it to Washington.

Not content with collections of papers, which might not tap the details and nuances of important events, Goodstein also began to mine people's memories. She started the oral history project in 1978, and it now consists of nearly 70 transcribed interviews with people who were on the scene during Caltech's formative years. (Portions of a number of the oral histories have been published in *E&S*.) Since many of these world-famous scientists led other lives before (and after) Caltech, their stories encompass a much broader scientific and political arena than the Pasadena campus.

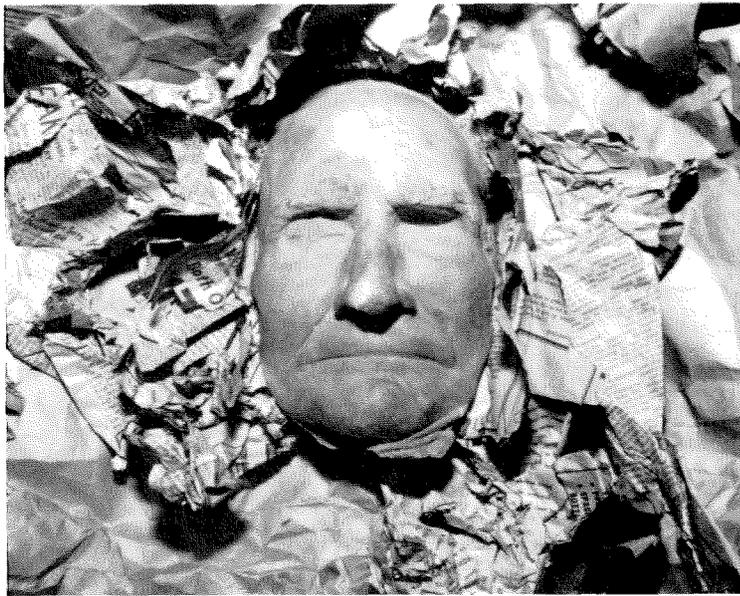
This is what makes the Caltech Archives such a great resource of intellectual history — its collection does not just concern Caltech. Most other places are far more parochial and hence far less interesting, but here "these guys sat at the center of the storm," says Goodstein. Caltech people corresponded with just about everyone who was anyone in 20th-century science. And science wasn't the only thing they wrote about. For example, the horrors of the rise of Nazi Germany and fascist Italy can be read in some of the scientists' letters. Paul Epstein's papers contain unopened letters from relatives in Europe plead-

Collections in the Caltech Archives

bold face — guides available

* available in microform

Walter Adams	Tullio Levi-Civita
American Society of Civil Engineers,	Frank J. Malina*
Caltech student chapter	Jon Mathews
John A. Anderson	Jack E. McKee
Architectural Drawings	Medals
ASCIT Research Project-4	Aristotle Michal
Audio Cassettes including	Clark B. Millikan
Alumni Day Seminars	Glenn A. Millikan
The Feynman Lectures on Physics	Robert A. Millikan*
Frontiers of Science	Edward W. Morley
Watson Lecture Series	Thomas H. Morgan
Richard Badger	(Henry) Victor Neher
Edward C. Barrett	Arthur A. Noyes
Harry Bateman	Observatory Council
George Beadle	Office of Sponsored Research
Frederick Bedell	Oral Histories
Eric T. Bell	Palomar Site Survey
Biology Division Records	Pi Kappa Delta
Ira S. Bowen	Physics 3 Project:
Norman Bridge Medical Library	World War II Rocket Project
Harold Brown	Russell W. Porter
John P. Buwalda	Greennady Potapenko
California Graduate School of Design	Press Releases
Caltech Carnegie Program,	Prints, Photographs, and Slides
Science and Government	Arthur Raymond
Caltech Clean Air Car Project	Charles F. Richter
Caltech Committee Files including	Howard P. Robertson
Ad Hoc Study Group on	Henry Robinson
JPL/Campus Interactions	W.C. Rockefeller
Papers of Faculty Advisory	Bruce H. Rule
Committee on Presidential	Bruce H. Sage
Candidates	James A.B. Scherer
Caltech Faculty Board Minutes	Scientific Apparatus
Caltech Faculty Minutes	Seismology Microfiche Publications*
Caltech Historical Files	Sigma Alpha Pi
Caltech Physics "Bone Books"	Robert L. Sinsheimer
Caltech Population Program	William R. Smythe
Dan H. Campbell	Royal W. Sorensen
Marshall H. Cohen	Homer J. Stewart
Robert S. Corey	Chester Stock
Norman Davidson	James H. Sturdivant
Max Delbrück	Alfred H. Sturtevant
Charles H. Dix	Synchrotron Program
Lee A. DuBridge	Charles Taylor
Jesse W.M. DuMond	Aviation Memorabilia
Paul S. Epstein	Amos G. Throop*
Richard P. Feynman	Throop Polytechnic Ledgers
Arthur Fleming	Richard C. Tolman
William A. Fowler	Albert Tyler
Horace N. Gilbert	Anthonie Van Harreveld
Alexander Goetz	Video Cassettes including
Jesse L. Greenstein	Ditch Day activities
Beno Gutenberg	The Mechanical Universe
Herbert Hahn	Mirror-Casting Construction,
George E. Hale*	200-inch reflector
Marshall Hall	Jerome Vinograd
Institute Libraries	Morgan Ward
Institute Publications	Earnest C. Watson
Jet Propulsion Laboratory	Leon Watters
Kanpur Project Files	Jean Weigle
Theodore von Kármán*	Cornelis A.G. Wiersma
Arthur L. Klein	Harry O. Wood
Charles C. Lauritsen	Don M. Yost
Thomas Lauritsen	Laszlo Zechmeister



Among the more peculiar items in the Archives collection is the death mask of Amos Throop, Caltech's founder, here staring out of the yellowed newspaper in which it was wrapped.

ing for help in getting out; Epstein felt so helpless and depressed that he couldn't read them. "I opened some of the letters," admits Goodstein. "I didn't feel so good about that."

The intermingling of science and politics can also be read in the Archives. For example, Hale's attempt to create the International Research Council after World War I, which foundered on the enmity of the scientists of the Allied nations as well as on Woodrow Wilson's political commitment to the League of Nations, is well documented in Hale's letters.

Other scientists' personal papers reveal somewhat off-beat personality traits. (Trivia question: Which famous Caltech professor frequented nudist camps?) A donor can place access restrictions on any material of a private or controversial nature, and many do. But "whether your interest is prurient, or more academic, in science or politics, it's all here," says Goodstein.

Grants have enabled the Archives staff (which includes, besides Bugé, Assistant Archivist Paula Hurwitz) to make the Caltech collection more available to scholars. A grant from the National Endowment for the Humanities helped process the von Kármán and DuBridge papers, and the Smithsonian Air and Space Museum financed publication of von Kármán's papers in microfiche. Hale's documents had earlier been published in microfilm under a grant from the National Historical Publications Commission.

Another large microfilming project made the earthquake records of the Kresge Seismological Laboratory (including single-copy

seismograms on 276,000 individual photographic sheets) available to the scientific community as part of an international earthquake data bank. It took the Archives staff 3½ years to film and catalog the records between 1923 and 1962, which provide a continuous long-term chronicle of local and distant earthquakes over much of the period for which instrumental data exist. Earthquake data over long periods of time are important in understanding seismicity rates and changes — in order to assess current risks, for one thing. Financial support for this project came from the U.S. Geological Survey and the National Oceanic and Atmospheric Administration.

It's always nice to have grants, as every scientist knows, but they don't solve all budget problems. So Goodstein thought up a more enterprising form of financing to counter budget cuts in the early 1970s — marketing the now well-known photograph of Einstein on a bicycle. The poster, distributed by the Smithsonian Institution and several other outlets, has netted about \$40,000, which has helped fund many of the oral history projects. Is the original photograph itself in the Caltech Archives? "Actually, I think I first saw it in *E&S*," admits Goodstein.

About 500 researchers, a steadily increasing number, now come to use the Archives every year and there are numerous other requests to the staff for information and photographs. In the early 1970s most Archives users were Caltech faculty; now almost all come from outside, most of them scholars (with an occasional "respectable" journalist) and most of them in history of science. "By and large we're pretty open," says Goodstein, "but you have to have a legitimate reason." Goodstein has lately noticed a significant switch in users' interests. Last year for the first time more historians consulted the papers of biologists, biophysicists, and geneticists than those of physicists, mathematicians, and chemists. Most popular were the collections of Max Delbrück, Thomas Hunt Morgan, and George Beadle, in that order.

Researchers using the Archives are consigned to two desks in the hallway — the same catch-all hallway from which the Richter cartons disappeared. Goodstein has been trying to get the work area improved for the past 16 years. The day may come, however, when this space too is completely eaten up by more cartons of documents awaiting either cataloging — or an errant garbage truck. □ — JD