

The Summer at Caltech

Campus Progress Report

The summer campus was more or less a mess. Physically, that is.

Where solid old Throop Hall used to stand like a national monument in the center of the campus, there was now a bombed-out crater. All through the summer months, though, workmen were putting in water lines, sewer lines, and electrical conduits so that construction could begin in November or December on the three new pools that will cascade down a grassy slope from the Millikan Pool to Throop Alley.

The cascading pools are pretty much the result of undergraduate student pressure. An earlier plan for the site involved long concrete steps, and it was student resistance to concrete that helped bring about the pools.

San Pasqual Street, between Wilson and Chester Avenues, was closed to automobile traffic on August 7.

In September, workmen started, at Chester Avenue, to move San Pasqual's palm trees to other locations and to tear up curbs, gutters, and paving to turn the street into pedestrian walkways.

Gates Laboratory, which revealed much of the same kind of structural weakness as Throop did in the San Fernando earthquake, has now had its interior cleaned out so that it stands, outwardly the same, but actually just a structurally sound shell. When funds, and programs, become available, the interior will be developed for central administration offices.

The Mabel and Arnold Beckman Laboratories of Behavioral Biology, across the Beckman Mall from the Donald E. Baxter, M.D., Hall of the Humanities and Social Sciences, will be dedicated in January.

The Seeley G. Mudd Building of Geophysics and Planetary Science, under construction since March 1972, is due to be completed in May 1974.

There will be a few other visible changes



Moving even one 80-foot-tall, 50-year-old palm tree requires men, machines—and belief in the value of saving trees. But multiply the job by 22, and you get a bigger idea of what it's taking to relandscape San

Pasqual Street. Three of these *Washingtonia robustas* now form a small oasis on the northwest corner of Hill Avenue and San Pasqual, and most of the others are dressing up the area around the gym.

in the campus this fall. The age-old ivy between Guggenheim and Thomas will finally give way to turf and a new ground cover. And the service driveway between the Winnett Student Center and the Spalding-Thomas engineering buildings will be replaced by a pedestrian walk. For the information of the Page House White Horse & Railroad Company, Inc., the campus architect's office has a spot in mind at the north end of that walk for their David Smith Memorial Ramp.

New Librarian

The office of the director of libraries on the second floor of Millikan has a new occupant this fall—Johanna Tallman. She replaces Harald Ostvold, who retired this summer.

Mrs. Tallman comes to the Institute after 28 years on the library staff at UCLA. Her most recent positions there were as head of the Engineering and Mathematical Sciences Library, coordinator of physical science libraries, and lecturer in the School of Library Service.

Born in Germany, Mrs. Tallman attended UC Berkeley, where she received both her AB and her graduate library certificate from the School of Librarianship. Her first job was at the San Marino Public Library, and



Johanna Tallman

it was followed by service at the Los Angeles County Public Library and the Pacific Aeronautical Library. She has been prominent in national and regional library affairs, and in 1966-67 held a Fulbright grant to lecture in Brazil. She has also been a consultant to such firms as Beckman Instruments, Lockheed Aircraft Corporation, and System Development Corporation—and to the University of Arizona.

The library system that Mrs. Tallman takes over in 1973 is very different from the one Harald Ostvold found in 1963 when he arrived at the Institute from New York where he had been chief of the reference department of the New York Public Library. Ostvold's first few years on campus included countless meetings with architects and faculty committees to plan Millikan Memorial Library. Then in 1967 he organized and supervised the moving of more than 130,000 books scattered in five other libraries across the campus into Caltech's first central library.

Accessions—including a bevy of Administration refugees from Throop Hall—have since filled Millikan to overflowing, and what may keep Mrs. Tallman walking a tightrope is balancing preference and practicality—specialized collections, interdisciplinary needs, and budget and space realities. But she is increasingly enthusiastic about her new job—and she's met challenges before.

Named Professors

Caltech has two new named professorships this fall—and two distinguished scholars to occupy the chairs.

New to the campus is Michael E. Levine, Henry R. Luce Professor of Law and Social Change in the Technological Society. A graduate of Reed College, where he was a science major, Levine received his LLB from Yale University. He served as an attorney for the Civil Aeronautics Board and then as a special assistant to the Task Force on Economic Growth and Opportunity. In 1967 he was offered a fellowship in law and economics at the University of Chicago, and he has been on the faculty at USC since 1968. He is a trustee of the Southern California Center for Law in the Public Interest.

His Caltech appointment is made possible by a five-year grant from the Henry Luce Foundation, and it is part of a program established by the foundation to encourage an integrative approach to the study of the humanities and social sciences.

Caltech's first IBM Professor of Mathematics is Marshall Hall Jr., who has been a member of the faculty since 1959. He is being honored for his "outstanding scholarly abilities and achievements, particularly in the fields of group theory and combinatorial analysis." In expressing appreciation to IBM for endowing the chair, President Harold Brown pointed out that Hall's work is linked with the mathematics of computers, "by happy coincidence a field in which IBM is closely associated."

Ding-a-Ling

We all know that Caltech telephone operators have to be trustworthy, loyal, helpful, friendly, courteous, kind, obedient, cheerful, thrifty, brave, clean, and reverent. But we are inclined to forget that they also have to be unflappable. (Could *you* handle a caller whose dog just swallowed a bee and what should she do? Or one who wants the Seismo Lab to investigate a strong earthquake whose epicenter is under his rumpus room?)

At any rate, Betty Bosserman, supervisor of telephone services, who works as a correspondent for a rival campus publication, has reminded us once again of how much self-control it takes to work as a Caltech phone operator. In her column in *Physical Plant's* lively *VIP* she reports:

Operator Nancy answered a signal from a campus phone. A pleasant masculine voice asked her for some long distance information. Nancy supplied it—but couldn't help remarking on a peculiar noise in the background.

"It sounds like an *elephant*," she said. The gentleman caller considered this for a moment.

"It isn't an elephant," he said reassuringly. "We don't have to have elephants here as long as I wear my paper hat."

He hung up after that—and it's no use pumping Operator Nancy or Chief Operator Betty. They won't even tell you what *division* the call came from.

New Options for Undergraduates

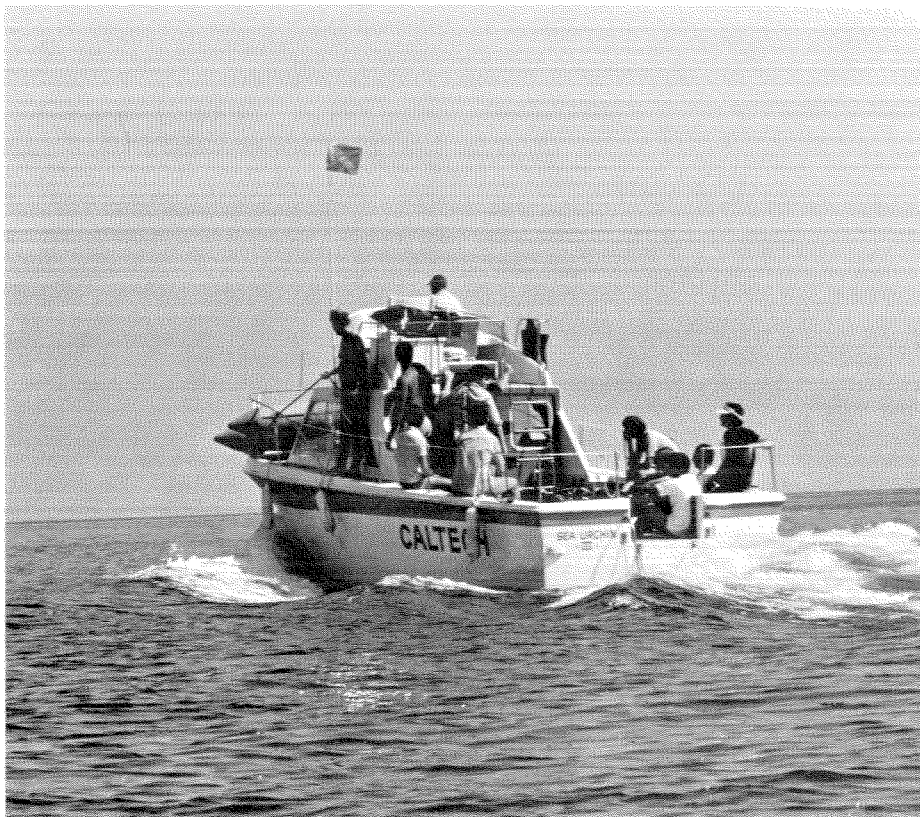
Life will be a lot different in the undergraduate student houses this year.

Faced with the possibility of an increase of as much as 50 percent in board cost, students reluctantly agreed last spring to do away with board contracts. From now on, instead of being served by waiters in their own house dining rooms, most undergraduates will eat their meals cafeteria-style in Chandler Dining Hall or in the three "new" houses—Page, Lloyd, and Ruddock. But at least one of the other houses plans to keep its former style by having dinners catered and assessing house members—in either money or time—to pay for service.

Students who prefer some other alternative can cook their meals on stoves installed in some of the alley kitchenettes. At present, each house has one or two stoves, and there are plans for putting in more. Seniors over 21 years old can now join the Athenaeum and eat there. And some students will probably patronize the commercial restaurants on Lake Avenue.

Another alternative to on-campus housing and eating exists in the co-op houses. First opened a year ago, these four Institute-owned houses are about a block north of the campus. They accommodate some 25 students, who pay rent to the Institute and share the expenses of running the houses. With their convenient location, good cooking facilities, and low rent, the co-ops are so popular that they all have waiting lists. This fall a new residence was opened on Lura Street for undergraduate and graduate women who prefer not to live in the co-ed student houses. This house is being run just like the on-campus student houses, with weekly linen exchange and rent at the student-house rate. The six-bedroom house has room for ten women, though at the start of the term only six had moved in.

Obviously, the effects of these changes on undergraduate student life won't show up for a while. But some sour seniors will tell you it's already putting an end to the old fraternity-like camaraderie that house residents enjoyed as recently as last year.



The Caltech Navy

Possibly because she can be classified as a freshman, the new—and only—member of Caltech's Navy went to freshman camp at Catalina this fall. With students and faculty aboard for cruises, she displayed her speed (20 to 25 knots), her special gear (scuba equipment and a custom ladder and storage areas), and her holding tanks (with recirculating water).

The 31-foot-long, fiberglass *Sea Urchin III* will be used by Wheeler North, professor of environmental science, for his kelp rehabilitation projects. And three scientists from the division of biology—Charles Brokaw, professor; Eric Davidson, associate professor; and Roy Britten, senior research associate—will be using her to

collect sea urchins for their research. Despite her roman numeral, *Sea Urchin III* is the first Kerckhoff Marine Laboratory boat to be constructed specifically for Caltech's marine biologists; her predecessors were old Navy wooden launches. *Sea Urchin II* simply wore out in the late sixties, but in the late fifties *Sea Urchin I* met a sadder fate. Loaned to an institution which shall be nameless, her solitary occupant left her alone, and when he rose from his dive, found she had drifted to shore and been reduced to flotsam and/or jetsam.

The new boat was financed by grants from the National Science Foundation and the J. W. Kieckhefer Foundation.

Chinese Junket

Harrison Brown, professor of geochemistry and of science and government, spent almost a month in China last spring as a member of a delegation representing the Committee of Scholarly Communication with the People's Republic of China. The delegation was jointly created by the National Academy of Sciences, the Social Science Research Council, and the American Council of Learned Societies so that almost every major field of scholarly endeavor was represented. The group made the trip at the invitation of the Chinese, to discuss scholarly exchanges. Here are some of Brown's comments on the visit:

The most impressive element of Chinese life, I thought, was their determination to develop their nation on their own, minimizing the need for outside assistance. Indeed, the amount of outside assistance they are receiving now, after the pullout of the Russians, is zero. To be sure, they are getting grain from the United States and Canada, but they are purchasing this with hard currency.

Whenever the Soviet Union was mentioned, it was in derogatory terms. Sometimes the comments were humorously put. Chou En-Lai and others stressed that the Russians could be numbered among the best teachers in the world: The most important single thing they did for China was to leave, which forced the Chinese to learn how to do things themselves. Indeed, again and again we saw examples of this; steel mills were left half completed, structures and industries of various sorts were left unfinished, and the Chinese had to learn how to put them together and get them into operation by themselves.

It is quite clear that the Chinese are developing a lifestyle that is unlike that of the West. We were told by Chou En-Lai that they do not intend to become an "automobile culture," and indeed in Peking itself, in a city of four million inhabitants, they have some 1.7 million bicycles. It's quite impressive to see the streets during rush hours; there are thousands of bicycles moving along, but it's very quiet. You occasionally hear the tinkling of bells, or conversations of people, the whizzing of the bicycle tires on pavement, but that's all.



The Chinese are making maximum use of their most abundant resource, which is people. It's surprising to see the extent to which people are prime movers; I think more carts are pulled by people than by horses, and there are quite a few horses, and mules. They have developed some very simple single-cylinder engines that are used to pull loads at low speed, and there are trucks, of course. But for the most part loads are pulled by people, and to a lesser extent by draft animals.

I was impressed with the activity on the communes. A commune is basically a small collection of four, five, or six villages. A village is now called a "work brigade." Each work brigade tries to be independent; they have separate bank accounts, they sow crops, they save their money, and they vote on how to spend their money. Several work brigades band together to form a commune, and the function of the commune is to develop facilities which no single village could afford by itself, such as a middle school, a hospital, a small industry—such as a fertilizer factory.

Each laborer on a commune receives a certain number of "work units," which are translated into local currency. A work unit depends in part upon the ability of individuals to work, and those who can work hardest can get more points than others. Men get more points than women, solely on the basis of the amount of physical energy they expend. There are differences between categories of laborers, but the difference between the highest and lowest paid is really very small.

I have no idea how reliable the numbers are, but the figure for total population in China was given to me as about 750 million, give or take about 20 million persons. With respect to vital statistics, it is quite clear that the Chinese death rate has been lowered, in large part because of a tremendous effort that has been made in the field of public health. I do a great deal of traveling in developing countries, and to me one of the most impressive elements of China is its cleanliness. Almost all of the members of our delegation engaged in "fly counts," and I think I counted four flies all the time I was there, which is fewer flies than I will see around Caltech in the course of a day. Even a tropical city like Canton, which used to be noted for its dirtiness and disease, is now relatively clean—at least to the point of not having obnoxious smells noticeable to the visitor. I'm not just talking about the main streets; we were quite free to wander around.

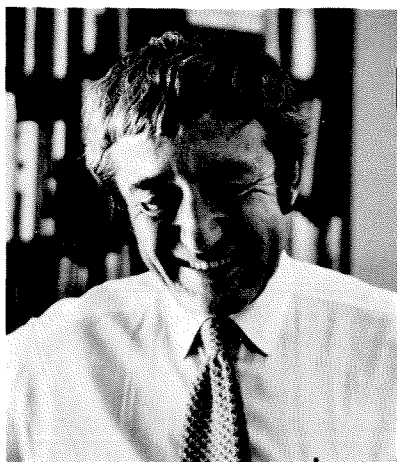
So death rates have gone down. The Chinese have also made a tremendous effort to lower their birth rate. They have been successful in the cities, but they have a long way to go before they really reach the people in the countryside—who make up about 90 percent of the population.

The people, everywhere I went, were extremely friendly. I run every morning for exercise, and as I ran people would wave and smile and laugh. No matter where we walked, people were extremely curious, but they would always smile and wave. Not once did we experience any antagonism. The political leaders were friendly too. We spent two hours with Chou En-Lai, and he said only extremely friendly things to us. We talked about the future of exchanges, and it is clear that they want to deepen and widen the relationship between the peoples of our two countries. They are interested in engaging in scholarly exchanges, not across the board, but on selective bases. We proposed a group of 12 delegations of American scholars in different fields to travel to China. We made our proposal on the basis of examining those fields in which we feel that we have something to learn from the Chinese, and we wanted to make the overall proposal as attractive as possible to them. We told them we would be prepared to receive in return approximately equal numbers of delegations in fields of their own choosing. We were pleasantly surprised to

find that they accepted 9 out of the 12 delegations we proposed. They said that they simply were not prepared yet for the other three delegations, which were in the social sciences. The delegations that they accepted were for the most part in the natural sciences. As they put it, the social scientists are still going through the process of self-criticism, which natural scientists have already gone through.

The groups going to China include one each in earthquake prediction and seismology, in child psychology and childhood learning processes, acupuncture anesthesia, modern Chinese archaeological findings, anthropology (with particular reference to early man, and new discoveries about Peking man), and plant science (which will attempt to develop an exchange of plant materials to broaden our gene reservoirs of genetic materials for crop purposes).

The groups they did not accept were those relating to modern Chinese studies, with particular reference to how they organize their communes and their cities, the political processes that take place, and so forth. The Chinese were not prepared to engage in



exchanges in those areas. They are sending over groups primarily in the natural sciences. There will be a group in earthquake prediction, and they have already sent over a group dealing with problems of water management, and a group on insect control with steroid chemicals. They are planning to send a group to study how we teach the English language to foreigners; they have a very real problem of teaching English to many people in China. One of the main

limiting factors they have in receiving guests is the shortage of interpreters.

There is almost no scientific research of any consequence going on in the Chinese universities these days; most of the research takes place in research institutes, which are operated by either the Academy of Sciences or Ministries of one sort or another. Some research institutes are doing extremely good work, at the forefront of modern scientific knowledge, while others are 15 years behind the times.

I am told by my colleagues who examined the Chinese synthetic organic chemistry work that the Chinese are achieving a great deal here, particularly in the areas of steroid chemistry. For example, in their own birth control pills, the Chinese have bypassed the yam. We start off with the yam and extract steroid intermediates from it and synthesize our hormone-like contraceptives from that. They start from the beginning, apparently.

It seemed to me that the universities in China have become sort of glorified technical schools. They are used primarily to train young people in modern technological techniques. The other major difference is the admissions process. In the United States students are admitted primarily on the basis of their ability, as measured by how well they did in high school and on entrance examinations and the like. This was true at one time in China. Generally speaking, however, the sons and daughters of intellectuals tended to go to the university more often than the sons and daughters of peasants. The Chinese have made an effort to eliminate this class distinction and admit many young people from peasant villages. Some of the most important criteria for admission today relate to the applicant's political standing.

Everything is aimed at the development of China. This is the number one priority. Everyone must work on something connected with the development of the country. This is a basic rule of behavior in China these days. The leaders have done everything they can to eliminate class, to eliminate wealth, to minimize the difference between the richest and the poorest. Thus far they seem to have been successful in this.

Chemical Change

Administration of the division of chemistry and chemical engineering is under new management this fall. The recently appointed new chairman, John Baldeschwieler (*E&S*, January), arrived on campus during the summer. And two new executive officers were appointed.

Fred Anson, professor of analytical chemistry, is the new executive officer for chemistry, replacing Norman Davidson, who has held the job since 1967. Anson is a 1954 graduate of the Institute. He got his PhD at Harvard in 1957 and came back to join the Caltech faculty that same year. In 1964 he spent eight months studying in Belgium as a Guggenheim fellow, and last year he spent four months in Italy as a Fulbright scholar. He is particularly interested in chemical substances which adsorb on the surfaces of metal electrodes, where they facilitate the efficient conversion of chemical energy directly into electrical energy.

John H. Seinfeld, associate professor of chemical engineering, has been named acting executive officer for chemical engineering. He takes the place of C. J. Pings, who has held the job since 1969. Seinfeld received his BS at the University of Rochester in 1964 and his PhD from Princeton in 1967. He came to Caltech in 1967 as assistant professor of chemical engineering and became associate professor in 1970. Last year he was one of 17 young American scientists to be awarded a grant from the Camille and Henry Dreyfus Foundation for achievements in teaching and research. His research fields are optimization and control of chemical systems, and air pollution simulation and control.

Honors, Awards, and Appointments

Stirling L. Huntley, associate dean of graduate studies, has been appointed to a pair of additional positions. He's now also director of admissions and financial aid and a lecturer in drama.

Huntley's experience and training qualifies him for both of these assignments. For two years before coming to the Institute in 1971 he served as head of admissions, alumni, records, and community relations for the University of Hawaii's East-West Center. For ten years before that he was on the staff of the admissions office at Stanford. And for five years before that he was a member of the speech and drama faculty there. His BA and MS degrees are from UCLA, and his PhD is from Stanford.

W. Henry Weinberg, assistant professor of chemical engineering, has received the Victor K. LaMer Award of the American Chemical Society's Division of Colloid and Surface Chemistry. The prize of \$1,000 is given biennially to a young chemist or chemical engineer. Weinberg is 28.

Before coming to Caltech in 1972, Weinberg did postdoctoral work at Cambridge University in England. He received his BS from the University of South Carolina and his PhD from UC Berkeley. He is studying—both experimentally and theoretically—the way gases interact with solid surfaces and the problems of chemical adsorption and heterogeneous catalysis.

Ray Owen, professor of biology, has been appointed to the President's Cancer Panel. The three-member group, established by the National Cancer Act, supervises the National Cancer Program and reports directly to the President.

Owen has been a member of the American Cancer Society's panel on the etiology of cancer and the special grants committee of the society's California division. He has also served as chairman of the National Science Foundation's advisory committee for biological and medical sciences, and was a member of Governor Reagan's Cancer Advisory Council.

Pol Duwez, professor of materials science, who is internationally known for his research into the development of new alloys with unusual superconducting and thermoelectric properties, received the 1973 Albert Sauveur Achievement Award of the American Society for Metals. The award, presented annually since 1934, is given "to recognize pioneering metallurgical achievements which have stimulated organized work along similar lines to such an extent that a marked basic advance has been made in metallurgical knowledge."

Roy W. Gould, professor of electrical engineering and physics, has been named to a four-man advisory committee of the Electric Power Research Institute. EPRI was formed recently by the nation's electric power industry to develop methods of providing adequate electric power in the future. The new advisory committee's responsibility will be to accelerate research and development of controlled nuclear fusion to provide large amounts of power at low total cost. Gould, who is an alumnus of the Institute, has been a member of the faculty since 1955. He recently returned to the campus from a two-year leave of absence during which he was director of the Atomic Energy Commission's division of controlled thermonuclear research.

Faculty and Administrative Changes 1973-1974

ADMINISTRATION

FRED C. ANSON—*executive officer for chemistry*
JOHN D. BALDESCHWIELER—*chairman of the division of chemistry and chemical engineering*
ROY W. GOULD—*executive officer for applied physics*
NORMAN H. HOROWITZ—*acting chairman of the division of biology (January 15 to August 31, 1973)*
MAARTEN SCHMIDT—*executive officer for astronomy*
JOHN H. SEINFELD—*acting executive officer for chemical engineering*

PROMOTIONS

To Professor, Emeritus:
C. HEWITT DIX—*geophysics*

To Professor:
ROBERT G. BERGMAN—*chemistry*
JAMES O. MC CALDIN—*applied science*
MARC-AURELE NICOLET—*electrical engineering*
MICHAEL A. RAFTERY—*chemical biology*

To Senior Research Associate:
ROY J. BRITTEN—*biology*
CLAIR C. PATTERSON—*geochemistry*

To Associate Professor:
LEROY E. HOOD—*biology*

To Research Associate:
JAMES E. BROADWELL—*aeronautics*
JUSTINE S. GARVEY—*chemistry*
BOZENA HENISZ-DOSTERT—*linguistics*
RICHARD E. MARSH—*chemistry*
STEN O. SAMSON—*chemistry*
CHANG-CHYI TSUEI—*applied physics*

To Assistant Professor:
JOEL H. ANDERSON—*mathematics*
COLIN BENNETT—*mathematics*
WILLIAM H. PRESS—*theoretical physics*
ROBERT M. STROUD—*chemistry*

To Senior Research Fellow:
THOMAS H. ANDERSON—*geology*
STEVEN J. BARKER—*aeronautics*
WEI-KAN CHU—*electrical engineering*
ALLEN T.-Y. CHWANG—*engineering science*
GEORGE J. DICK—*applied physics*
ERI HELLER—*chemistry*
ARTHUR H. HUFFMAN—*physics*
HARUMI KASAMATSU—*biology*
FRANK A. PODOSEK—*planetary science and physics*

STEVEN H. SMALLCOMBE—*chemistry*
ELLEN G. STRAUSS—*biology*

NEW FACULTY MEMBERS

Professor:

JOHN D. BALDESCHWIELER—*chemistry*
ROGER C. NOLL—*economics*

Research Associate:

RICHARD M. GOLDSTEIN—*planetary science*

Senior Research Fellows:

MICHAEL A. BERTA (Major, USAF)—
aeronautics
A. GERALD BRADY—*earthquake engineering*
RICHARD C. BROWER—*theoretical physics*
GLENNYS R. FARRAR—*theoretical physics*
MICHAEL G. HAUSER—*physics*
AURORA M. LANDEL—*biomedical
engineering*
RICHARD J. POWERS—*physics*
HANS-PETER VOSBERG—*biology*

TERMINATIONS

E. RICHARD COHEN—*research associate in
engineering science*
A. R. DZIERBA—*senior research fellow in
physics*
JAMES W. GREENLEE—*assistant professor of
French*
ROBERT S. HARP—*assistant professor of
electrical engineering*
GORDON L. HARRIS—*assistant professor of
aeronautics*
ALAN J. HODGE—*professor of biology*
JAMES F. KORSH—*senior research fellow in
applied science*
HAROLD LURIE—*professor of engineering
science*
HITOSHI MIZUTANI—*senior research fellow
in geophysics*
TSE-CHIN MO—*senior research fellow in
electrical engineering*
YORIKIYO NAGASHIMA—*senior research
fellow in physics*

JAMES W. PRAHL—*senior research fellow
in biology*
BORJE I. PERSSON—*assistant professor of
physics*
DONALD G. REA—*research associate in
planetary science*
LAWLOR M. RECK—*coach*
RICHARD H. STANFORD JR.—*senior research
fellow in chemistry*
SANDOR TRAJMAR—*senior research fellow
in chemistry*
MICHAEL D. WATERFIELD—*senior research
fellow in biology*
MYONGGEUN YOON—*senior research fellow
in biology*
B. D. ZABLOCKI—*senior research fellow and
lecturer in sociology*
JOHN S. ZEIGEL—*assistant professor of
English*

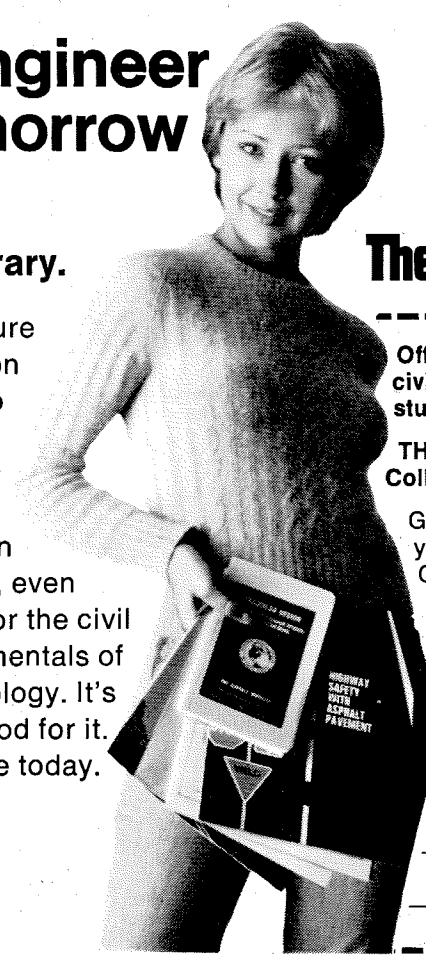
RETIREMENTS

BERT F. LA BRUCHERIE—*coach*
HARALD OSTVOLD—*director of libraries*

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