



An Interview With President Goldberger
Profs Must Teach

By Lily Wu and Ken Whang

Last of three parts.

MARVIN GOLDBERGER: What do your professors say when you talk with them about teaching? Or don't you?

LILY WU: Well, some students complain about excessive homework assignments, and lost of professors try to make a joke of it and say, "Well, it only took my T.A. four hours to do it," and, "this one's trivial," and I don't see, by and large, a very understanding faculty.

Part of the problem seems to be that teaching doesn't have very high priority here. I don't think the professors have enough incentive to take time to teach us properly.

MG: In my inaugural address, I

"Any reasonably bright, brand new Ph.D. can teach a course in quantum electrodynamics or something, that's just duck soup, but to really teach freshman physics is hard."

put a great deal of emphasis on the importance of teaching and my own views about that.

I came from Princeton, which, I think, probably all around, is the best undergraduate institution in the country. Not in science and technology or this or that, but overall.

There is a true dedication to the teaching of undergraduates there, it's a historical thing. Everybody teaches undergraduates. There are not people who teach only graduate courses; everybody teaches undergraduates.

I insisted when I was chairman of the Physics Department that the older, more experienced teachers were the ones who taught the undergraduate courses, and the hot shot young assistant professors taught the graduate courses.

It's much harder to teach undergraduate courses. Students know less. They're less dedicated.

Any reasonably bright, brand new Ph.D. can teach a graduate course in quantum electrodynamics or something, that's just duck soup, but to really teach freshman physics is hard.

I made this point, and there have been some changes, I think, at least insofar as the way physics is taught here.

There's an unevenness as far as people's personal dedication to teaching is concerned. I think everybody knows how I feel about it, but I wouldn't want to try to give you the im-

pression that there is the kind of dedication, overall, to undergraduate teaching as an institution, as might be desirable.

There are a lot of very good and dedicated teachers and there are a lot of people who don't like to teach, and don't do a very good job.

LW: But they teach anyway.

MG: They teach anyway. Everybody has to teach. Professors are professors, they will, by God, profess.

But there is a spiritual element to it, which is hard to get across, about the importance of it.

But you have to be careful. I mean, if you write anything about the subject, there are an awful lot of people on campus, maybe you don't see so many of them, but there are a large number who take teaching extremely seriously, and a suggestion that nobody takes teaching seriously at Caltech would produce mass outrage, and appropriately so.

LW: Do the department heads or the professors actually pay attention to the TQFR?

MG: Absolutely.

LW: Because that very clearly shows that there are a few professors who get very mediocre or, even downright turkey grades as they're called, yet they teach the same class over and over again. This is the fourth year they're teaching the class and for the fourth year they'll probably earn four turkeys again.

MG: Well, the question is, "What do you do about it?" You have people who are bad teachers for a variety of reasons.

One of the most brilliant

"Professors are professors; they will, by God, profess."

theoretical physicists that I've ever encountered is a man by the name Eugene, his name is pronounced "vigner," it's spelled Wigner. He's a truly great theoretical physicist.

He was one of the all time worst teachers I ever had, and he used to come to me and say, "Why am I such a rotten teacher?" This was when I was chairman; I was his boss, nominally, at Princeton, and I tried to explain to him why he was a rotten teacher. There was no way to help him. His specific case, I'll tell you, is interesting.

He is a person who cannot make a statement that's not a hundred percent true. So if he starts to explain something, suddenly he thinks of a counterexample which is so im-

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Committees Recommend Curriculum Changes

by Ken Whang

The 1984 faculty-student conference concentrated on issues from the last conference in 1982 that have not yet been resolved.

The main topics of discussion were reform of the freshman chemistry course (Chem 1), problems with the humanities and social sciences program, option for students wishing to transfer out of Caltech, relations between graduate and undergraduate students, and the Summer Undergraduate Research Fellowship Program (SURF).

The conference attracted roughly equal numbers of faculty and students. Many students missed the conference because of scheduling early Saturday morning.

Each topic was given a 40 minute time slot, during which the committee studying the issue presented its recommendations and members of the audience voiced their opinions in response. The program was moderated by Jim Morgan.

Following the last committee presentation, Dean of Educational Computing Geoffrey Fox presented a report and addressed comments on educational computing at Caltech.

Points brought up repeatedly in the discussions were that the curriculum at Caltech is too narrow and that more emphasis needs to be placed on teaching.

Following are summaries of the discussions at the conference:

Chem 1

Committee Recommendations:

- The freshman chemistry course should be changed from a 6-unit course to a 9-unit course to enable the faculty to develop the material more fully. Three of four students polled felt that this would be appropriate.
The institute chemistry requirement should be raised from 18 to 27 units. This would ensure that students take all three terms of the proposed 9-unit course.
Students should not be required to take Chem 3, the introductory lab course, during their freshman year. They could take it another term, after they had learned more

background material in Chem 1.

- Chemical bonding and quantum mechanics should be taught third term, after the freshman have a better mathematical background.
The course should be more continuous, with no more than one professor per term.

Committee members were Evan Cromwell and Teresa Solberg.

Sunney Chan noted that within the current 6 units for the course, professors can assign nothing more than "Mickey Mouse problems" and can not cover the material completely.

Bill Goddard, another Chem 1 professor, emphasized repeatedly that his material, quantum mechanics and bonding, is very important and can not be adequately under the current course structure.

Chan also explained that the course is lectured by several different professors so that each can spend more time on his research and lecture only on topics in his area of expertise.

Perhaps this is less a problem of heavy research obligations than of lazy professors, suggested aeronautics professor Hans Liepmann, who pointed out that, on the other extreme, Richard Feynman was able to prepare the Feynman Lectures while he was working on Nobel Prize physics research.

Maile Smith, who has T.A.ed Chem 1 for two years, noted that while professors are expected to lecture only in their areas of expertise, graduate students teach in their recitation sections the whole year's worth of material.

Humanities and Social Sciences

Committee Recommendations:

- Humanities and social sciences faculty should give students more instructive comments on the structure and style of their papers. Students polled were concerned that their writing was not improving at all in the course of their humanities education at Caltech.
Courses on technical and expository writing should be offered. Similar courses emphasizing oral presentation are currently offered by other divi-

sions.

- The remedial English course is not rigorous enough to prepare students for other humanities and social sciences courses.
The current selection of social science courses is too small. The prerequisite of Ec 11 for many courses is restrictive.

Committee members were Glen Crawford, Peter Fay, Paul Filmer, Castor Fu, Jerry McGann, Mac Pigman, Aaron Roodman, Robert Rosenstone, and Chris Wood.

McGann defended the division's lack of writing instruction, saying that the faculty are hired as humanities and social science researchers, and really don't know how to teach writing.

Daniel Kevlas put the responsibility on the students to spend more time writing and rewriting drafts of their papers.

Undergraduate Brad Marston stated that, for the tuition he pays to come here, the humanities and social sciences classes offered are not diverse enough and are too low in quality. (See Marston's letter in the issue.)

Several professors in the division offered the argument that the classes they teach do not have the problems that the students see in the humanities and social sciences classes in general.

Transfer Options

Committee Recommendations:

- Caltech should demonstrate recognition that it is not the right educational environment for all students, and commit itself to enabling all of it admits to get the best possible education, at other schools if necessary.
Counseling for potential transferees should be available and advertised.
Concerned faculty should make an effort to exploit academic connections to increase a transferee's chance of acceptance by other schools.
An official administrative position should be set up that can deal with these needs effectively.

Committee members were Paul Graven, Barbara Turpin, Aaron Roodman, and Don continued on page 5

Notes

The recipients of the 7th Annual Awards for Excellence in Teaching for the year 1982-83 are:

- Allan Acosta - Thermal Engineering
John Bercaw - Chemistry
James Knowles - Engineering Math
Herbert Ryser - Combinatorial Analysis

ASCIT Chooses Best Teachers for Awards

- Thayer Scudder - Anthropology
Thomas Tombrello - Physics

Thank you for your outstanding teaching!

The recipients of these awards were chosen by the

Board of Directors of ASCIT on the basis of the 1982-83 Teaching Quality Feedback Report and the Reports of past several years. Students have consistently rated these professors highly, indicating that they are superior teachers.

The Inside World

Blacker: The party featuring the Young I-publicans was a real pencil-sharpener. "A real pencil-sharpener." How am I to read that? I see that and I say OK, the party is a pencil-sharpener. So what?
Well, it's kinda the way I felt about the party. You know, when you like... when you're at a party and it's... it's kinda like a... a pencil sharpener, in a way. It's just... just the way I felt.
Well, OK, but we don't learn anything about the party from the fact that it's a pencil-sharpener. Why is the fact that this party is a pencil-sharpener significant?
I read it like the party was full of nerds so everyone was like sharpening their pencils to do integrals or something.
No, that's not what I meant at all.
Anything else on the I-publican party?
— Apologies to appropriate parties

P.S. BROOMBALL!! and WE WANT BLOOM COUNTY!!!!!!!!!!!!!!
Dabney: DROP THEM, DROP THEM, HEAR MY CALL!
DROP THEM, DROP THEM, DROP THEM ALL!
DROP THEM, DROP THEM, HEAR WHAT I SAY!
DROP THEM, DROP THEM, DROP THEM TODAY!
— The Ghost of Drop Days Past

Fleming: Wine and Candlelight was this past Saturday. Great job done by Egg, Social Team, and waiters. Juniors won Indoor Olympiad by taking the relay. Ned Day was yesterday.
Lookout Mammoth, here we come.
— Al Fansome


Page: In a valiant effort, Alley-Gory tried, but could not retain the coveted bowling pin.
Ethnic is accepting challenges/bribes.
Looking forward to the Penthouse Party with Fleming tomorrow night.
— Kent Noble

Lloyd: No entry.

Ricketts: Well, I take some time off and everything happens at once. First, two Saturdays ago was Apache, which once again managed to beat the deadline of construction to be used for wild partying followed by rapid destruction in the early morning hours.
Last Thursday were Ricketts' elections with Andy Wold moving up into the post of Big Enchilada and Bob Mackey as the new President of Social Vice. The new Veep is Andre 'the Zot' Burgoyne and your faithful reporter as house secretary. Last Saturday was the first annual Ath Lawn Barbeque and football game organized by Santosh and Sunday was an unsuccessful discobolos challenge against Blacker in volleyball (5-15, 17-15, 11-15).
Thanks to Cookiefriend (Ricketts' most off-off-campus member) and Fleming's hospitality, we are all invited to a party (dancing ☺) with Pepperdine, Saturday at 8:30 in the Spaulding Penthouse. Go be social and have fun too!
— Bob Bolender

Ruddock: Last Week: Frosh party. Jammin'.
This Week: Broomball.
'Nuff said.
— Chris Mihos

THE ASCIT MOVIE
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The Caltech Y Fly-by

Friday... March 2
Noon Concert—enjoy a wild and crazy drop day with the Caltech Glee Club.

Sunday... March 4
Whale Watching—just a reminder: transportation leaves at 8:15 a.m. from Winnett.

Monday... March 5
Sign up in the Y office for the L.A. Philharmonic's Friday, March 9th performance, featuring Debussy's La Mer and Strauss's Concerto for Oboe and more.

Tuesday... March 6
Elie Wiesel—"When the Unthinkable Happens," a and Jewish-Christian dialogue on the implications of the Nazi holocaust for the nuclear arms race. Student tickets are \$2.50. Thorne Hall, in Occidental College, 8:15 p.m.

Wednesday... March 7
Noon Update—"A Business Economist's Perspective on the Soviet Economic Record," with Horace Gilbert. Upstairs at the Winnett Clubroom 1.

Tickets to Disneyland for April 7th and 8th are available at the Y office. Open to students faculty, staff, everyone.

7 more trolling days to Decompression. The Y is proud to offer its services Saturday & Sunday from 9-12 p.m. It will prove to be better than ever. We would like to see your smiling face among the crowd.

But Why Can't He Teach?

from page 1

probable as to be of no relevance whatsoever. So he stops to rephrase the matter so as to encompass that counterexample. Then he'll, when explaining the new way, he'll find another one, and so on.

As a result, he would sometimes never get through a single statement almost, and the students used to go just bats with him.

He also had a slightly unpleasant habit of, having taught quantum mechanics 43 times in his life, he didn't think it was necessary to prepare the lectures. Which I think is a catastrophic mistake and something that's unforgivable as far as students are concerned.

I don't think I have ever in my life given a lecture that I have not, not written out every word but, virtually written it. I feel that it's unfair to the student to go and just do it off the top of your head. But that's my own personal hangup.

That wouldn't mean necessarily that I'm a superb teacher, but that was always one thing I always did.

There are some people who are bad teachers, as I said, there are a variety of reasons why people are bad teachers. Now you say, "They're so damned bad, why do you let them teach?"

We're very thin here, as far as people are concerned. We have a terrible time manning the freshman physics. We want to have the discussion sections taught by professors, not by graduate students.

We don't have very many people, so you have to almost

continued on page 3

letter

Social Science Offerings are Insufficient

To the Editor:

I am a graduating senior severely disappointed by the Social Science Department at Caltech. I am paying \$8,700 this year to attend Caltech and I do not want to waste my time taking highly specific classes such as "Microeconomic Theory III" that represent the majority of the Social Science offerings. I asked the department to grant me social science credit for a history course I took, since most major universities consider history a social science. The faculty responses ranged from a "NO" written in six-inch letters to indecent comments. Such arrogance characterizes the Social Science Department and reflects the immaturity of many of the social science faculty. Why are they so frightened by my proposal?

Social Scientists at Caltech have narrowly defined their own field to be the numerical understanding of human beings. Such an approach is naive and simplistic in the extreme; it is also a poor imitation of real science. Thus, if a student is not interested in the quantitative ideology of the department, there are just barely enough classes available to him to satisfy the minimum social science requirements. This situation is not acceptable—if the department requires attendance in its courses, it must provide a wide range of good general courses. Note that even good courses such as An122 (introduction to the anthropology of development) are far from general—an introduction to the anthropology of mankind might be more appropriate (for example, Stanford offers such a course).

President Goldberger says he "would like to discourage students from trying to become graduate students while they're undergraduates." Yet, the Social Science Department offers primarily graduate type courses and ignores the needs

of undergraduates. These esoteric offerings exist because they are easier for the specialists in the department to teach than are relevant general courses. Laziness also explains why many courses meet only once a week in one long boring session—it is easier to drone on for two hours than to prepare exciting short lectures three times a week. The department does not seek to give undergraduates a broad understanding of Western Civilization; rather it requires students to attend dreary, narrow classes so it can justify its own budget and existence.

I challenge the department to overcome its unreasonable bias by making the following changes: first, that it offer more general courses and second, that it consider history a social science. If the administration is honest when it says "in short, every effort is made to provide undergraduates with well-rounded, integrated programs that will... develop character, intellectual breadth and physical well being" it will surely regard these proposed changes to be in the best interest of the students.

Sincerely,
—Brad Marston

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Goldberger Encourages Professors To Teach

from page 2

drag them in off the streets and, so that's one of the problems. I don't think it's...

You know, if people thought they could get out of teaching by being rotten teachers, you would see turkeys all over the place. You know, people like to do their research.

LW: *Actually, one thing is that just being a Nobelist or a brilliant professor isn't what the student needs.*

MG: I know.

LW: *I mean, just because*

"I hate to see someone graduate from Caltech so turned off about science when they came here just burning with the desire to be a scientist of some sort, and then have them turn their back on it. That's tragic."

there's a professor teaching each section, that doesn't mean the quality of teaching is better. Sometimes graduate or even undergraduate T.A.'s convey the meaning even better than the prof does.

For conveying the ideas some people seem to have it and some, unfortunately, just don't.

MG: Just don't, that's right.

LW: *So it doesn't seem the emphasis should be necessarily on getting a professor to teach but to find somebody who can.*

MG: Well, let's talk about the freshman physics as an example. I do believe that, on the average, it's better to have experienced professors than graduate students. That there are some graduate students who are better than experienced professors I'm perfectly happy to admit. But as a class, I would rather have those graduate students T.A.ing in a graduate course, or an advanced undergraduate course. But you're speaking on the whole, not exceptional situations.

But it is hard when someone is, for whatever reason, a bad teacher, you nevertheless have to insist that they teach. We don't allow people to be professors if they don't teach. I don't know what to do about it, I really don't know what to do about it.

KEN WHANG: *You keep talking about manpower problems, but I think many people come here thinking that the student faculty ratio here is really good and, therefore, there's going to be almost an excess of professors ready to help them out.*

MG: Well, the ratio is good, from a straight numerical standpoint.

LW: Right, but practically it doesn't always show up because some of the professors just disappear into their labs.

MG: That's right, and there are some people, unfortunately, some professors here who haven't taught undergraduates for fifteen years. I raise hell with them.

On the other hand, some are extremely conscientious. Dick Feynman for example, he's phenomenal. He happens

to be also a very good teacher. He loves to teach, he likes to teach undergraduates, and he does an outstanding job on the whole. Others who just don't, but I try to exert as much moral pressure as I can about this.

You know, I taught one quarter of freshman physics last year. I was not terribly happy about my performance. I think it was adequate, but neither terribly rotten nor terribly good. The problem I had was that I had time to prepare the lectures and I had time to

give the lectures, but I didn't have time to think about the lectures.

My time is so constrained, fractionated, that I would start to prepare a lecture, and the way I started was the way I did it. I didn't have time to think about it and say, "No, maybe that isn't really the right way to do it. I ought to do it another way." I didn't have that luxury, that freedom, which I used to have when that was my business.

But I taught, I wanted to do it partly for symbolic reasons, so nobody else could say they didn't have time to teach.

I don't know when I'll do it again, and I think, if I do teach again, it'll probably more likely be an advanced undergraduate class than to do the freshman. I found that very, very hard.

But all I can do is cajole, try to provide an example, and keep on cajoling to develop this attitude.

One thing I did say in my, if I remember correctly, in my inauguration speech is that I was very concerned about the dropout rate. And I wanted to be absolutely sure that for all of the multitudinous reasons that students might have for leaving Caltech, and there are lots of them which I can explain but you understand and I understand, I wanted to make sure that bad teaching wasn't one of them. That we had to do our absolute level best over the part of those aspects of the student experience that we had control over.

Now we have control over teaching. There's no excuse for our doing bad teaching, or turning students off by bad teaching or, to come back to your first point, trying to do too much in a short period of time. It's inexcusable.

I hate to see someone graduate from Caltech so turned off about science when they came here just burning with the desire to be a scientist of some sort, and then have them turn their back on it. That's tragic.

LW: *But that happens.*

MG: I know it happens.

LW: *And it's not just one in*

thousands either.

MG: I know. It happens in too large a number of cases. Even if it happens in a relatively small number, of course there's a limit, but, if the numbers are significant, we're doing something wrong and we ought to pay attention to it, because I think it's curable.

LW: *But what can be done about it?*

MG: Well, as I say, I think the student-faculty conferences historically have been a place where serious student concerns have been met by serious faculty consideration. You go to an individual professor and he chews you out because the problems are trivial or he says the T.A. takes four hours and it takes you sixteen hours, but if you get up with that group where the faculty has to listen, it's not just one professor, I think you can have an impact.

In connection with any concern about teaching, I try to really put my money where my mouth is. When it comes to salary increases, I have a little tiny fraction of the total salary pool that I use to reward people who perform a variety of institute services, and anybody who wins an ASCIT teaching award gets noticed by me.

I must confess I don't religiously take money away from the people who get three or four turkeys, but I try to use a carrot, at least, and I do everything I can.

But you know the problem with the role of teaching in evaluation of professors is always a difficult one.

If you're considering someone for a promotion of some sort, the issue of teaching does come up. But it's a subjective question, by and large. Whereas the research evaluation is very objective. Peer evaluations, articles in refereed journals, letters from respected people in the field.

When you try to weigh in teaching, you run into those terrible paradoxes. Here's a person who's published ten papers during the course of the year, all of the highest quality, and he's a pretty good teacher, or a fair teacher. Then there's another person who's published two papers and the students go ape over him. He's just the greatest teacher the world has ever seen.

How do you weigh those things in considering, say, the promotion of these two people who are otherwise, more or less at the same level. Well, I'll tell you how it comes out, and there's no question as to how it comes out in the real world, and you know the answer.

LW: *The one with the ten papers wins.*

MG: Exactly. Exactly.

And because you say, "Is B twice as good a teacher as A, 75% better?" It's not anything you can quantify, but I do try to reward in a small manner—the amount of money that I get to distribute is not very high, it's three-tenths of a percent of the total salary pool, peanuts, but I try to use it judiciously.



Jon Swihart's examples of superrealism are being featured at Baxter Art Gallery for two weeks.

"Five Artists" are Featured at Baxter

Caltech News Bureau

Caltech's Baxter Art Gallery will present the works of five young southern California artists in an exhibition of photography and painting, open now and continuing through Saturday, April 21.

"Five Artists—Southern California" features the work of artists Don Gregory Anton, Stephen L. Berens, Grey Crawford, Stephanie Sanchez, and Jon Swihart. Anton, Berens, and Crawford are scheduled to discuss their work in sessions to be held at the Gallery during March and April. These informal talks will be free and open to the public.

Curator of the exhibition is Baxter Gallery director Jay Belloli. In his introduction to the exhibition catalogue, Belloli discusses the concern with imagery that characterizes all five artists. This "evocative power of images" is significant to the artists in expressing the content in their paintings or photographs.

Another artistic influence shared among the five is the southern California landscape. Architectural forms and urban scenes familiar to the region are frequently in their compositions.

Anton's black and white photographs present figurative, emotional images and settings that refer to specific moments or locations in the artist's life.

Berens collages photographs of architecture, which he then draws on, or paints, to construct his compositions.

Crawford uses architectural and landscape images in his col-

or photographs, but creates a very different type of work through his process of printing multiple images from various negatives on a single sheet of paper.

The personal images that painters Sanchez and Swihart use in their work show their concern with traditional aspects of painting. Sanchez uses a very painterly application in her landscapes, still lifes, and dream-like figure paintings. Swihart achieves the same feeling of otherworldliness in his scenes of contemporary figures in southern California locales—figures posed in dramatic stances that echo the religious compositions of the Renaissance.

Informal talks by the artists are at noon in the gallery:

•Don Gregory Anton, Tuesday, March 6

•Stephen L. Berens, Tuesday, March 13

•Grey Crawford, Tuesday, April 3

The final event of the series will be a lecture, "Contemporary Art in Southern California," by Susan C. Larsen, associate professor at the University of Southern California, on Tuesday, April 17 at 8 pm in Baxter Lecture Hall.

A 16-page black and white illustrated catalogue of the exhibition will be available at the gallery for \$4.50.

Baxter Art Gallery is open seven days a week, from noon until 5 pm. Parking is available in the Chester Avenue lot adjacent to the gallery.

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Ramo Auditorium

Mimes to Appear Silently

Office of Public Events

Using only sound, music, costumes and props, the mime troupe Theatre Beyond Words will appear in Ramo Auditorium, Saturday, March 3. Two different shows will be presented: "Potato People" at 3

pm and "Five Good Reasons to Laugh" at 8 pm.

"Potato People" is a mask-mime play. Performers wear large, white, dome-like masks, which give the impression of having been carved out of a potato. This sketch involves the adventures between the

Potato and Pearblossom families.

"Five Good Reasons to Laugh" is a set of vignettes, including the tale of a pear who discovers himself hanging on a branch and subsequently suffers an attack of vertigo.

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Folk Music

A Small Concert

The Caltech Folk Music Society will host a concert featuring topical singer/songwriter Fred Small this evening (Friday) at 8 pm in Winnett Lounge. Tickets for the concert are \$5 in advance

or \$6 at the door, but Caltech students can purchase tickets for \$3, thanks to a subsidy from the GSC. Additional information and tickets are available through the Caltech Office of Public Events box office (818) 356-4652.

Fred Small, who gave up his law practice to pursue a career as a musician and activist, sings songs concerned with sexism, peace, social change, labor and thermal underwear. He makes his home in Boston where he performs often in the area's folk clubs, when not touring around the country. Noted writer Jeff McLaughlin wrote for *The Boston Globe*, "Fred Small seems well on the way to broad popularity on the folk music circuit. His voice is excellent, his songs have light, bright melodies and sprightly rhythms, and his strong political consciousness is leavened by wit and a keen sense of irony."

Fred's songs seem to have a life of their own, partly because they have been performed by so many other musicians. Fred's song, "Fifty-nine Cents," with lyrics like "Fifty-nine cents for every man's dollar...it's a low down deal...they give you a job, it's your paycheck they steal," has become very popular with feminists, many of whom don't know of the song's author. Pete Seeger, who also includes some of Fred's songs in his own repertoire has said, "Beautiful songs! He never fails to unite an audience in song, let alone get them on their feet." Activist Ralph Nader wrote, "witty, lyrical, insightful—Fred Small's music is a memorable and enjoyable carrier of truths."



Fred Small

The society is happy to announce that this concert will interpreted for the hearing impaired by American Sign Language artist, Dana Farley.

The society is also organizing a concert of traditional Irish music featuring De Danann, who will appear on Friday, March 23 in Beckman Auditorium. For information and tickets for either of these concerts, call the Caltech Ticket Office at 356-4652.

EE, ME, CS GRADUATES

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will find the technical world of the 1990's ...at ITT Gilfillan

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**On Campus Interviews
Thursday (March 8, 1984)**

Contact your Placement Office to sign up or write directly to Dick Dorsey, 7821 Orion Avenue, Van Nuys, CA 91409.

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Go See Seven Samurai

by Anirvan Ghosh

Seven Samurai, perhaps Kurosawa's most famous film, shows at Baxter Lecture Hall this Sunday at 6:30 pm.

Seven Samurai was the movie on which the highly successful *The Magnificent Seven* was based. The story is about a small village which is yearly invaded by bandits, and the farmers lose their crops and sometimes their lives. The farmers decide to hire some samurai to protect their village. A group of seven samurai is finally formed to defend the village, and the story thereafter deals with the encounters between the samurai and the bandits.

Not the most sophisticated plot for a movie, some of you might think, but that is where Kurosawa's genius comes into play. The movie is thoroughly

entertaining, at the same time very serious. The movie follows three groups of people almost independently—the farmers, the bandits, and the samurai—and brings out the distinct characteristics of each group. More closely, it follows each of the seven samurai individually, thus bringing out the differences in their attitudes and personalities; at the same time pointing out what makes each of them an extraordinary fighter.

Seven Samurai is believed to be one of the best Japanese movies ever made. The movie is brought to you by the Associated Students of the Indian Subcontinent and the Caltech Y. Admission for non-member Caltech students is \$1.50. The price includes refreshments at intermission.



Six samurai look on in *Seven Samurai*.

Beyond Words

from page 4

A five-member Canadian troupe, Theatre Beyond Words has been touring for seven years internationally, including Japan, France, Australia and New Zealand. They are the resident company at Brock University in St. Catharines, Ontario.

Caltech student tickets are priced at \$5.50-5.00-4.50; \$4.00

rush tickets will go on sale beginning one hour prior to performance time (subject to availability).

Caltech faculty and staff tickets are priced at \$10.00-9.00-8.00. They are available at the Caltech Ticket Office, just north of the Beckman Auditorium parking lot. For information, call X4652.

Students and Faculty Debate New Computing Policies

from page 1
Skelton.

Theresa Birdseye, a senior now, brought up from her own experience as a student here some of the reasons students would want to transfer. In an emotional statement, she stated that her classes always were paced too fast and required so much work that she never had any free time.

Ricardo Gomez recommended that, instead of the student transferring to a less demanding school, the student's adviser should be fired for letting his advisee overload himself.

Grad-undergrad relations

Committee Recommendations:

- Social relations between graduate and undergraduate students could be improved through small scale social events, off-campus housing open to both groups, increased formal interaction between ASCIT and GSC, and graduate participation in the Tech.

- Graduates and undergraduates should be graded on separate curves in required classes where one group has significantly better preparation than the other.

- Faculty and T.A.'s should be better educated about the Honor System.

- A T.A. feedback system similar to Tom Apostol's TASSIST (The Analytical Survey Studying Interactions of Students and T.A.'s) used in Math 1, should be implemented in all classes with teaching T.A.'s.

- Graduated students should have the flexibility to take part time teaching and research jobs. Undergraduate graders should be used when possible to lessen graduate time burdens.

Committee members were Candice McCoy, Markus

Meister, Richard Premont, Steve Salyards, and Eliza Sutton.

The recommendations that graduate and undergraduates be graded on separate curves when appropriate was strongly supported by students in the audience.

Graduate student Morgan Gopnik noted that the graduate curve would not necessarily be higher than the undergraduate curve, she for one being scared of some undergraduates' abilities at least as much as undergraduates fear graduate students.

Graduate students supported proposals that would make it easier for them to T.A.

SURF

Committee Recommendations:

- Students should be made more aware of undergraduate research opportunities.

- The Development Office should actively pursue funding for the endowment of the SURF program. An endowment of 2.5 to 3 million dollars will be needed to fund SURF on an annual basis.

- An administrative office should be set up for SURF.

- The SURF stipend should be increased from its present level of \$2600 for 10 weeks.

Committee members were Praveen Asthana, Mehrdad Haghi, Sergay Mnatzakanian, Richard Regen, and Fred Shair.

Everyone seemed to agree that SURF was a good thing, without many serious problems to talk about.

Asked whether the funding for SURF was a top priority in his administration, Goldberger stated that SURF was important, of course, but that he wasn't about to compute its rank among dozens of other important priorities.

Regarding changes propos-

ed for SURF, Shair noted that "Everytime we do something new, it's going to be controversial. That's why nothing gets done."

The Caltech Educational Computing Project

A Report by Geoffrey Fox:

- The objectives of the project are to enable students to explore abstract concepts in greater detail or in a broader context than is usually possible and to show students how to use the computer as an investigative tool.

- The computing environment at Caltech has developed in the last five years into a decentralized group of ten connected networks. In the next few years, the number of nodes will on this network will increase by a factor of fifteen to cover the entire campus.

- Three major lower-level undergraduate courses are available to teach students the use of computers, CS 10, E 1, and Ph 20-22. Upper-level courses are also available.

This report attracted more attention from the students than it was intended to.

Several students complained that the computing courses available were not practical introductions that effectively taught students how to use computers.

Fox defended the style of instruction in the new introductory courses, saying that the most effective way to learn to use computers is to be given a simple problem and then to try to figure out how to solve it.

Faculty in the audience pointed out that programming style, heavily emphasized in CS 10, is also important, and as the humanities division should develop students' writing styles, the other divisions should work on students' programming skills.

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Erickson Debut in Ramo Auditorium

Women's Week

Office of Public Events she won first prize in the Soprano Kaaren Erickson will appear in Ramo Auditorium, Friday, March 2 at 8 pm. This will be Erickson's Caltech debut.



Karen Erickson

Included on the program will be works by Mozart, Debussy, Brahms, Diemer and Wolf. Erickson will be accompanied by pianist Armen Guzelimian.

A native of Seattle, Erickson studied under the baritone Martial Singher and made her professional operatic debut in 1982. Later that year,

Munich International Competition as well as awards from

the Metropolitan Opera and the San Francisco Opera.

This concert is sponsored, in part, by a grant from the National Endowment for the Arts.

Caltech students may purchase tickets to this event for \$5.50-5.00-4.50 with a Caltech student I.D. Rush tickets may be purchased by Caltech students for \$4.00 each beginning one hour prior to performance time (subject to availability).

Tickets for Caltech faculty and staff are priced at \$10.00-9.00-8.00. They are available at the Caltech Ticket Office, just north of the Beckman Auditorium parking lot. For information, call campus extension 4652.

At the turn of the century March 8th was declared "International Women's Day" in recognition of the contribution of women to the labor movement. In keeping with this spirit the entire week of March 4-March 10 is now proclaimed yearly by Congress as "National Women's History Week."

Women's place in history, whether in the more "traditional" fields of education, office work, health care and volunteer work or in the mainstream of professions such as science, medicine and the arts, has been largely ignored and undocumented. This blind spot of historians is just beginning to be filled in by patient research into and reconstruction of the lives of ordinary, and often extraordinary,

women.

The Organization for Women at Caltech, with the support of the Caltech Y, the GSC, the MOSH, and the President's Office, is planning to celebrate Women's History Week with famous speakers (Shirley Hufstедler on Tuesday!); interesting displays (come by the Red Door Cafe); outdoor concerts (Ruth Barrett and Cynthia Smith are appearing); refreshments every day and general festivities. All events will take place at noon on the Quad. Look for flyers and notices on Winnett for more info and plan to keep your lunch hours free next week!

Schedule of Events: (All events at 12 noon on the Quad unless specified otherwise)

Tuesday, March 6-Shirley Hufstедler (attorney, former judge, politician); Caltech Women's Glee Club.

Wednesday, March 7-Baked goods on sale on the Quad; Talk on women in history followed by discussion (in the Red Door Cafe)

Thursday, March 8-(International Women's Day) Special Noon Concert with Ruth Barrett and Cynthia Smith (beautiful dulcimer music)

...and all three days: free refreshments on the Quad; special display in Red Door Cafe with taped speeches by famous women; general fun and celebration!

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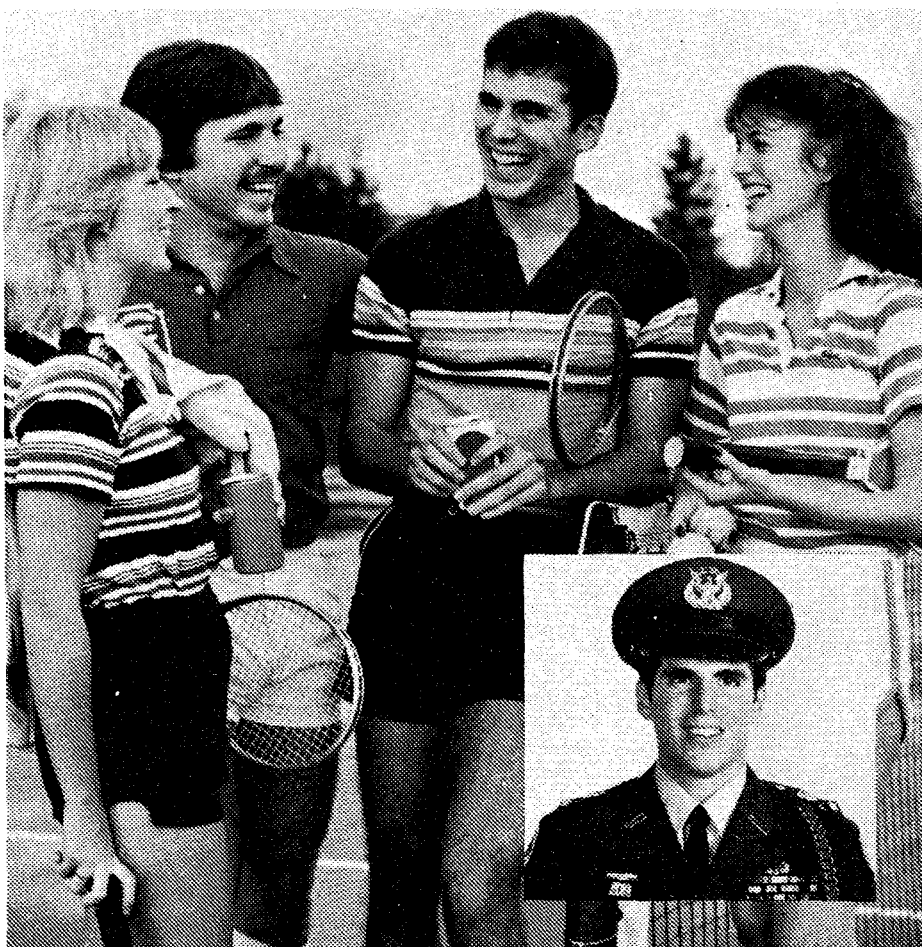
Saturday Evening in Baxter Lecture Hall Students, \$1 All Others, \$2

"MOST STUDENTS DON'T KNOW THAT ARMY ROTC LEADS TO AN ARMY OFFICER'S COMMISSION AT GRADUATION."

Besides studying for his degree in management, senior Scott Bacon is also learning what it takes to become an officer through Army ROTC.

"I attended an Army ROTC Day during my freshman summer orientation. When I found out you weren't obligated to anything your freshman and sophomore years, I decided to try it. I enjoy ROTC. I'm learning things I normally wouldn't learn in college. Like leadership theories. And tactics. The management training you receive is really good, too. It helped me a lot with my other management courses.

"I'm pretty involved with the University, so I'm glad ROTC doesn't take up a lot of time. It's just a couple of hours a week. At the end of your junior year, you have to go to Advanced Camp. It's a lot of fun. You get introduced to everything the Army has to offer. Tanks, helicopters, you name it.



Scott Bacon, management major and member of Army ROTC.

"In your last two years of ROTC, you receive \$100 a month. The way I see it, ROTC is paying you money and you just give the Army back a little of your time. When I get out of the Army, my experience should make it easier to get a job. Corporations look for officers, because they have experience managing people and equipment. And I think starting salaries might be higher because of that experience."

For Scott Bacon, adding Army ROTC to his college schedule has really paid off. Because it actually added another dimension to his college education.

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For more information, stop by the Army ROTC office nearest your campus. Or call (213) 863-5819 for details.

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sports

Beavers Open Season in Traditional Fashion

by Doug Oute

The Beavers opened up the 1984 league season in the traditional fashion of Caltech baseball teams. Caltech had a tough time with Redlands, and lost all three games.

Saturday's double-header at Redlands was played in winds that gusted at up to 40 mph, which made for an interesting day. The wind aided Redland's pitching staff, which allowed only four hits in the first game. Caltech generated most of its offense in the fourth inning, when a passed ball and a single by Phil Scott gave the Beavers three runs. Caltech ended up the game with a total of four runs; unfortunately Redlands managed to score nine and Caltech dropped the first game 9-4.

In the seconds game, Caltech came out smoking and scored seven runs in two innings. In the first inning, Pat Harrison and Jim Hamrick both had RBI scoring singles. In the second inning, five more runs were scored. Doug Shors led off with a single, which was followed by a single from Steve Havstead. Bob Mostert then drove in a run with a sacrifice fly to the center. The Beavers scored three more hits in the inning, knocking the pitcher from Redlands out of the game. Redlands took its

revenge in the bottom of the second, scoring seven runs on a grand slam and a few errors by Caltech. That left the score 7-8 after two innings. Sadly for the Beavers, baseball games last longer than that, and Redlands outscored Caltech 13-1 after the first two innings and the Beavers lost 21-8.

In Tuesday's game against Redlands, Caltech hoped for a measure of revenge. Redlands thumped Caltech in the top of the first, scoring ten runs. Steve Havstead continued his mastery over the Redland's pitching staff, leading off the bottom of the first with a single. The rest of the Beaver bats were silent, however, and Caltech failed to score in the inning. Redlands continued to pile up runs on route to another massacre, beating the Beavers 19-5. Offensive highlights of the game for the Beavers were Steve Havstead's two hits in three at bat, and Jim Hamrick's home runs in the bottom of the fourth, along with Kurt Schwartz's double.

Steve Havstead ended up the series batting an even .500, putting his average among the top ten batting averages in the league thus far into the season. Caltech takes on a talented La Verne team next Tuesday at home.

Weekly Sports Calendar

Fri.	3-2	TBA	Swimming	NAIA Championships	Arkansas
Sat.	3-3	TBA	Swimming	NAIA Championships	Ark, Ark
Sat.	3-3	10:30 am	Women's Tennis	Whittier	Caltech
Sat.	3-3	11:00 am	Track	Pomona & Occidental	Redlands
Sat.	3-3	12 noon	Baseball	La Verne	La Verne (2)
Sat.	3-3	1:30 pm	Men's Tennis	Whittier	Whittier
Sun.	3-4	1:00 pm	Women's Soccer	Jazz	La Salle
Mon.	3-5	1:00 pm	Golf	UCSD	CIT-Annandale
Tue.	3-6	3:00 pm	Baseball	La Verne	Caltech
Tue.	3-6	3:00 pm	Men's Tennis	La Verne	Caltech
Thu.	3-8	1:00 pm	Golf	Whittier	Candlewood CC
Thu.	3-8	TBA	Swimming (W)	NCAA Div. 3 Nationals	Atlanta
Fri.	3-9	TBA	Swimming (W)	NCAA Div. 3 Nationals	Atlanta
Sat.	3-10	TBA	Swimming (W)	NCAA Div. 3 Nationals	Atlanta
Sat.	3-10	All Day	Fencing (M)	NCAA West Regionals	CS Northridge
Sun.	3-11	All Day	Fencing (M)	NCAA West Regionals	CS Northridge

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Denon DRA-400 45 watt/channel rcvr.	\$399 + free spkrs.

and many more. We have a limited number of Prototype speakers so this is first come, first serve to pick your free speakers. Friday, Saturday, Sunday only.

A few other special prices for this weekend only are

Quantity	Model	Was	Now
1	trade-in Yamaha C-4 preamp	450	229
1	trade-in Yamaha 2010 integrated	450	229
1	trade-in Pioneer TX-6700 tuner	225	79
1	trade-in Sansui AU999 integrated	350	149
7	new Ortofon FF15XE MKII cartridge	65	19
5	new Ortofon OM5 cartridge	80	24
4	new Ortofon OM10 cartridge	95	29
3 only	new NAD compact disc player		499
5	new Sherwood ST880 turntable		87.70
2	demo Nakamichi CX-5 cassette		649
2	demo Denon DP52 turntable		399
1	demo Perreux 1150 power amp		699

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announcements

CAIES Scholarships

The Chinese-American Institute of Engineers and Scientists (CAIES) is seeking deserving undergraduate students in Engineering, Engineering Technology, Architecture, Physics, Chemistry, Mathematics and the Life Sciences as candidates for the 1984 scholarship awards.

Sophomores, Juniors and those Seniors not graduating until after July 31, 1984 with an overall grade point average of 3.35 or above may apply. Application forms are available at the Financial Aid Office.

Contra-Bass Balalaika?

Russian folk music will be performed by the Odessa Balalaikas, Saturday, March 10 at 8 pm in Beckman Auditorium.

In addition to folk songs, this five-member ensemble will perform works by Andreev, Dunayevski, Soloviov-Sedoi, Dmitirev, Mozart, Stravinsky and others. These pieces are performed on the triangular balalaika as well as other Russian instruments.

Founded in 1972, current members of the group are Emanuil Sheynkman, prima balalaika and prima domra; Peter Rothe, prima balalaika and bass domra; Ksenia Sudarikova, alto balalaika and piano; Linda O'Brien, sekunda balalaika and bayan; and David Lieberman, contra-bass balalaika and guitar.

Both the Odessa Balalaikas and Emanuil Sheynkman record for Nonesuch Records. The ensemble's latest recording is "The Art of the Balalaika."

Caltech students may purchase tickets to this event for \$6.50-6.00-5.50 with a Caltech student I.D. Rush tickets may be purchased by Caltech students beginning one hour prior to performance time for \$4.00 each (subject to availability).

Tickets for Caltech faculty and staff are priced at \$12.00-11.00-10.00. Tickets may be purchased at the Caltech Ticket Office, just north of the Beckman Auditorium Parking lot. Call campus extension 4652 for information.

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A Scrooge's Heaven

Beautiful Switzerland, a travel film, will be personally narrated by Philip Walker, Friday, March 9 at 8 pm in Beckman Auditorium. This presentation is one in a series of Armchair Adventures travel documentaries.

Switzerland's banks physically buy and sell 80 percent of the world's traded gold bullion. For this film, a storage room in one of the basements of the Swiss Bank Corporation was made into a temporary studio. Bags of gold, platinum, and hundreds of thousands of dollars, francs and other world currencies were brought in for the scenes.

Other highlights of the film include visits to Arenenberg Castle, home of Napoleon III before he became the French emperor; the city and lake of Geneva; and the Swiss Alps.

Tickets to this presentation are priced at \$6.00-5.00. Rush tickets at \$4.00 each are available to Caltech students with a Caltech student I.D. beginning at 7 pm at the Auditorium Box Office. Tickets are available in advance at the Caltech Ticket Office, just north of the Beckman Auditorium parking lot. For further information, call campus extension 4652.

A Career In Industry?

SWE is sponsoring its annual dinner with industry on Thursday, March 29th at the Alumni House. Dinner starts at 5:45 pm. It's an excellent chance to discuss summer and permanent employment opportunities with representatives from Bell Labs, IBM, Hughes, Sohio plus many more. The cost is \$2.50 for SWE members and \$5.00 for all others. Please RSVP by Mar. 26. For more info, contact Linda Liu, 356-0742 or Kelley Scott, 793-9666.

We're 6153!

Speaking of the Dean's Office, *The California Tech* has an announcement to make, to wit: while it's been fun answering all those phone calls intended for the Deans' Office, making crucial decisions anonymously and with great fervor, we feel that enough's enough, and that the campus ought to realize that the Deans' Office number is x6351, not x6153, as this year's directory has it in at least one place. Dialing 6153 will, at best, put you in the hands of a surly and overworked production staffer who has only the power of the press, not the power of a Dean.

Don't say we didn't warn you.

ASME Student Section Meeting

There will be an ASME student section organizational meeting Tuesday, March 6 at 4 p.m. in 210 Thomas. New members are welcome. For more information, contact Alaric Clinton, ASME section secretary, at X6829.

Tech Staff Meets Mondays

at 12:15 pm in 127 Baxter. All are Welcome.

Right Brain Lab

While Baxter Art Gallery eats its heart out, a show of Right Brain Lab drawings is currently on display at Winnett Lounge.

The exhibition of "journeys into the creative imagination," as Instructor Cynthia Corngold terms it, is the work of students who have taken part in this year's Right Brain Lab.

"They aren't to be thought of as finished works," says Ms. Corngold of the paintings, "but rather as artistic expressions."

Students represented in the show include Paul Berglund, Tracy Furutani, Keith Hughes, Andy Swanson, Sylvia Luedeking and Ketan Shah.

The aim of the Right Brain Lab has been to exercise and develop the creative potential of the brain's right hemisphere which, according to the theory, has grown flabby during a week's worth of left-brained Tech classes.

Pending approval of the Excomm of The Caltech Y, which has funded the Friday afternoon sessions since last October, the Right Brain Lab will resume next term.

Weingart Fellowship

The Division of Humanities and Social Sciences will offer its Weingart Fellowship again this summer for study in England. The Fellowship pays travel to England and a stipend. The student who is selected takes residence at Lady Margaret Hall, Oxford University, and will work on a subject in the field of politics under the supervision of an Oxford don, Dr. Gillian Peele. Applications should be sent to Dr. Bruce E. Cain by Monday, March 12th. Questions about the program should be directed to Dr. Cain, or to Michael Chwe, last year's Fellow.

Free Tickets to Coleman Concert

The Takacs String Quartet will perform in Beckman Auditorium, Sunday, March 4 at 3:30 pm. This is one in the series of Coleman Chamber Music Concerts.

Fifty free tickets and fifty tickets at \$4 each will be available to Caltech students beginning Tuesday, Feb. 28, at 10 am at the Caltech Ticket Office (limit one free ticket and one ticket at \$4 per student).

Tickets are regularly priced at \$13.00-11.50-10.00-8.00. The Caltech Ticket Office is located just north of the Beckman Auditorium parking lot. For information, call X4652.

Football Flick

People have always complained about Caltech social life, but few do anything about it. A non-credit class, Frat1 P/F (party/??) will be formed next term. Our first road trip will be to see the L.A. Express vs. the N.J. Generals football game on April 1. If you are interested in this social group, or just the game, come to the Y-lounge next Wednesday (March 7) at 7:30 p.m. or contact Kent Noble at 578-9833.

Political Internment Sex-Biased Money

The Beckman Internship will be available for the summer of 1984. This internship, supported by friends of Dr. Beckman, pays a stipend of \$2,600 plus travel expenses. It allows a selected Intern to spend the summer working in the office of a politician and to see the process of government from the inside. The Intern is expected to make arrangements with the appropriate political persons. It is open to any Techer who intends to be a Caltech undergraduate next year. If interested, contact either David Wales or Chris Wood in the Deans' Office, x6351, by April 2nd.

Can You Write Like This?

*I just killed
The only living Ant
And it's crawling
All over me.*

You, too can have material published in this year's *Totem*. Send contributions of prose, poetry, photographs, and drawings to David Schnow, 1-55.

Pedalists Unite!

The Caltech Cycling Club will be having a meeting on Saturday, March 3 at 4:00 in Winnett Lounge. Anyone who is interested in bicycling and would like to use the Club's repair shop, participate in group rides, or just meet other cycling enthusiasts, is invited to attend. If you are interested in the club but can't come to the meeting, contact Irene Replogle at mail code 2-54 or phone 578-9918.

The Bank of America as Trustee under the Jake Gimbel Scholarship Fund has funds available for \$1000 *interest free*, ten-year loans to male student applicants. Applications will be considered from two categories of students: 1) male students currently in their senior year at Caltech and who are planning on pursuing a Master's or a Doctor's degree either at Caltech or at any other university or college in the State of California, 2) current graduate students in pursuit of a Master's or a Doctor's degree either from Caltech or from some other university or college in California. Applications are also restricted to U.S. citizens or permanent residents.

Please come by the Office of Financial Aid (Parsons-Gates Room 10) for applications and further information on the Jake Gimbel Scholarship Fund. The Office of Financial Aid will recommend each candidate for a scholarship loan upon review of all completed application materials. The deadline for returning all completed applications and letters of recommendation for this program to the Financial Aid Office is Friday, April 27, 1984.

Not Lauren, But Still Polo

Ladies, if you are hungry for an invigorating new way to exercise; in search of the perfect reflective environment for tanning; and fed up with the traditional ways of removing aggression; why not join Caltech's women's water polo club. It is open to all undergrads, grads, and staff, with practices at 4 pm Monday, Tuesday and Thursday. For more information contact Suzy Rosik, 449-9192, or Clint Dodd at the pool.

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