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CALIFORNIA THE TECH

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Volume XCIV, Number 14

Pasadena, California

January 29, 1993



Professor Jackie Barton.

Professor Jackie Barton Appointed to Board of Directors of Dow Chemical

Max Benavidez

Jacqueline K. Barton, a professor of Chemistry at the California Institute of Technology, was elected on January 14 to the Board of Directors of The Dow Chemical Company, effective February 1.

Frank Popoff, chairman, president and CEO of Dow, said, "Dr. Barton's addition to our Board of Directors will bring a highly valued insight into scientific and academic issues important to Dow, and her perspective on corporate governance will serve us well. We are delighted to have someone of her stature and recognition join us."

Thomas Everhart, president of Caltech, remarked, "Professor Barton is a superb professor of chemistry, both in research and teaching. Just as she contributes to Caltech, she will contribute to The Dow Chemical Company Board of Directors in many ways. The insight she gains from her activities on the board will improve the understanding between industry and academia and will lead to more significant interaction between corporations and universities. I congratulate both Professor Barton and

Dow Chemical on her appointment."

Barton is a member of the National Science Board Commission on the Future of the National Science Foundation, and of the California Council of Science and Technology. She is also the recipient of numerous honors, among them the 1992 American Chemical Society (ACS) Garvan Medal. In 1991, she was elected a member of the American Academy of Arts and Sciences, and was named a MacArthur Foundation Fellow. In 1988, she received the ACS Award in Pure Chemistry.

In 1987, Barton was Awarded the ACS Eli Lilly Award in Biological Chemistry, and received the Alan T. Waterman Award of the National Science Foundation in 1985, awarded to the outstanding young scientist in the United States. The previous year, she won a National Science Foundation Presidential Young Investigator Award.

Commenting on her election, Barton said, "I very much look forward to joining the Board of Directors of The Dow Chemical Company. It certainly represents a tremendous challenge and opportunity for me, as an academic chemist, to participate as a director of one of the world's foremost chemical companies."

"Dow has shown great vision over the last several years in its response to global economic changes, to environmental concerns, and to the

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Ahmed Zewail Wins 1993 Wolf Prize in Chemistry

*Jay Aller
& Max Benavidez*

The Wolf Foundation announced today they have awarded the Wolf Prize in Chemistry for 1993 to Ahmed H. Zewail, the Linus Pauling Professor of Chemical Physics at the California Institute of Technology.

The prize committee decided unanimously to confer the award on Zewail, who has pioneered the new field of femtochemistry - chemistry on the femtosecond time scale. Using lasers and beams of molecules, Zewail was able to probe chemical reactions as they happen in real time. Some of the chemical steps occur in amazingly short intervals, measured in a few femtoseconds, or a few billionths of one millionth of a second.

"Ahmed Zewail's seminal experiments in what he has termed femtochemistry have been widely recognized for their novelty and originality," said Fred Anson, chair of the Division of Chemistry and

Chemical Engineering. "He and his co-workers have created new ways to examine the most fundamental aspects of chemical reactions. All of his colleagues in the division are delighted to see Professor Zewail's achievements honored by the award of the Wolf Prize."

Zewail, 46, was born and raised in Egypt, where he received both his bachelor's (with honors), and master's degrees from Alexandria University. He earned his doctorate from the University of Pennsylvania in 1974, and joined the Caltech faculty in 1976 after two years as an IBM fellow at the University of California, Berkeley. Zewail, now a US citizen, is a member of the National Academy of Sciences. In 1989 he received the King Faisal International Prize in Science, and last year received the Carl Zeiss International Award. Among his national prizes are three from the American Chemical Society, the Harrison-Howe Award, the Nobel Laureate Signature Award, and the Buck-Whitney Award; and the

American Physical Society's Earle K. Plyler Prize.

"I am delighted that the Wolf Foundation has recognized Dr. Zewail's outstanding contributions in the field of chemistry," said Caltech President Thomas E. Everhart. "His pioneering efforts allow us to visualize what occurs as a chemical species dissociates, or as two species react. His seminal work will promote a greater fundamental understanding of chemical processes and will eventually lead to the utilization of chemistry for the betterment of all humankind."

Since the prestigious Wolf Foundation began awarding its prizes in 1978, Caltech faculty have won 5. The prize consists of a medal and \$100,000, and has proved to be a good predictor of future Nobel Prize winners. Of the 140 Wolf Prize recipients, 13 of the winners in Physics, chemistry, and medicine have gone on to become Nobel laureates.

Recently Caltech's Rudolph continued on page 3

Undergraduates Discuss Women's Center

Catherine Hafer

On January 19 and 25, women undergraduates met at Kim West's house to talk about the planned women's center, the Caltech Resource Center for Women. Karen Hong and Catherine Hafer organized these discussions to determine what types of programs and services undergraduates would like

the Center to provide, and to answer questions about the Center. There will be at least two more meetings, on Thursday, February 4, and Monday, February 8, with food provided by the Residence Life Office. Any undergraduate interested in attending should sign up in the DRL's Office or

call x6194 to reserve a space. Men are invited to attend the Thursday meeting, and women are invited to the Monday meeting; Karen and Cathy hope that this arrangement will encourage relaxed and open discussion.

Karen Hong is the undergraduate member of the committee that is screening candidates for the posi-

tion of center coordinator. She is using information she gathers at these meetings to help her evaluate applicants, and to encourage undergraduate participation in the women's center. Because undergraduate women have not collectively voiced their concerns in the past, and because they were not active as a group in supporting the proposal for the Center, many

*As stated in the OWC's proposal,
"the primary objective of a Women's
Center should be to provide women
with a sense of community and em-
powerment in an effort to promote
equality and fairness."*

terested students to contact her if they would like to help interview job candidates in March.

The Organization for Women at Caltech has advocated a women's center at Caltech for several years, and last Spring the Faculty Board approved their proposal. The Center will probably be located on the second floor of Winnett Student Center, in what is currently the OWC office, next to the

Caltech Y. As stated in the OWC's proposal, "the primary objective of a Women's Center should be to provide women with a sense of community and empowerment in an effort to promote equality and fairness." The Center will offer programs and services appropriate to the needs

of women at Caltech, as well as providing a library of women's literature and a comfortable meeting place for women.

The undergraduates who attended the first two meetings had many ideas about the women's center, but a few general themes were particularly strong. Many women felt that

people in the Caltech community are unaware of their needs and believe them to be apathetic toward the Center. Undergraduates are under-represented on the committee that has been charged with finding the Center's first coordinator; Karen is the only undergraduate out of 14 members. At the last meeting, she strongly encouraged other in-

The Passing of Thurgood Marshall

Michael Oder

American civil rights suffered two great blows this week. The first was the death on Sunday of retired Supreme Court Justice Thurgood Marshall. The second blow was a series of Supreme Court rulings on Monday curtailing the rights of appeal of death row inmates.

Thurgood Marshall's career as a champion of civil rights spanned six decades. After joining the N.A.A.C.P. legal staff in 1936 and becoming its head in 1938, Marshall won cases which began the widespread desegregation of American society.

One of his lesser known cases involved the exclusion of blacks from the Democratic primaries in Alabama. At that time the Democratic party had such a lock on Southern elections that the party's primary was the decisive factor in the outcome of the general election. Up to that point the southern Democratic party had managed to limit participation based on a 1936 Supreme Court ruling giving private organizations absolute control over their membership. In 1944, Marshall argued and the Supreme Court concurred that the Democratic party's policy effectively deprived blacks of their constitutional rights and thus was unconstitutional. This decision led to the desegregation of the Democratic party and its eventual reorientation into a promoter of civil rights.

Perhaps his most famous case was the 1954 *Brown vs. Board of Education*. The Supreme Court's unanimous ruling in favor of Marshall's argument that the South's system of "separate but equal" school systems was "inherently unequal" and thus a violation of the constitutional guarantee of equality. This landmark decision led to the sweeping away of many aspects of America's system of apartheid put in place after the Reconstruction.

Marshall was appointed to the Federal appeals court in 1961 by President Kennedy and to the Supreme Court by President Johnson in 1967, joining a solid liberal majority under Chief Justice Earl Warren. The Warren court expanded the rights of defendants, continued the desegregation of school systems, delineated the right of privacy and provided broad protection for freedom of speech and freedom of press.

Over the years, Marshall witnessed the turning back of many of these successes, as appointments to the court under the Nixon, Reagan and Bush administrations relegated him to a minority position on an increasingly conservative court. In 1991, unable to keep his vow to outlast the conservative bent of American presidencies, Marshall resigned from the court sighting health problems. President Bush appointed Clarence Thomas to assume Marshall's seat on the court.

The passing of Justice Marshall leaves a great vacuum in the leadership of the American legal community. His uncompromising vision and eloquence shaped the fabric of American society guiding many of the dramatic changes which have taken place over the last half century.

Highlighting the loss are three Supreme Court rulings which came down Monday which turn back many of the protections for capital defendants which Marshall, a fierce opponent of capital punishment, voting against capital punishment in every case which came before the court, had helped to put in place.

In a 5-4 decision the court ruled that an incompetent defense is not a basis for an appeal to federal courts in capital cases. In a second 5-4 decision the court ruled that a judge in the sentencing phase of a trial does not have to advise a deliberating jury to consider the age of the defendant even when that defendant is a minor, before imposing the death penalty.

The most disturbing was a 6-3 decision ruling that evidence of innocence is not admissible in Federal court except in the "truly extraordinary" case in which such evidence is conclusive.

Justice Rehnquist writing the majority opinion stated that once a jury convicts the defendant that federal judges have no authority to second-guess the verdict. He goes on to say that federal judges should intervene only in the case of a violation of constitutional procedure.

As the sole irrevocable act of society towards its members, the death penalty should be imposed with the utmost caution.

The immorality of the court's ruling is plain. In such a case the bias should lie against the imposition of the death penalty not with it. The crime of an execution of an innocent person weighs heavily on a society, and if reasonable doubt of actual guilt exists, the sentence should be commuted to life imprisonment.

The callousness of the Rehnquist court needs no highlighting. Note the spat of rulings overturning the injunction on the execution of Robert Alton Harris in the California gas chamber imposed by federal district courts last year. In that case, the court ruled that society's right to a speedy enactment of sentence outweighed the question of whether that sentence carried out represented "cruel or unusual punishment."

In an egalitarian society in which all defendants would be equally represented to the full extent possible such safeguards would not be necessary, but America is not such a society.

More often than not the question of whether or not a jury recommends execution of those convicted of capital crimes is decided on the basis of the competency of their defense lawyers. The difficult of this type of cases and low levels of compensation discourage most lawyers from taking up capital cases, leaving the defendants, unless they have the wealth to hire their own attorneys, with second-class court-appointed representation.

State sponsored organizations, which will take up on the behalf of those sentenced to execution, exist in many states, but after sentencing it becomes all but impossible to get a reasonable review of the cases under state law.

Many states limit the introduction of new evidence in capital cases to within 60 days after the trial. In most cases new evidence does not come up for years after the trial, preventing its introduction into appeals in state courts, and thus federal courts are the only forum remaining in many cases.

Such a system which now exists in this country is inherently inequitable, reserving justice for those who can afford it. The only recourse of the disadvantaged has been to the federal courts, which with these rulings have been all but cut off.

Some would argue that these problems should be remedied by reforms at the state level. But the current political atmosphere makes passage of legislation to address these problems a political liability which most politicians would be wary to carry. Such matters should be devoid from political decisions, thus the courts as a supposedly apolitical institution should carry the weight for the maintenance of justice. Not living in an ideal world, we see ideological appointments making ideological decisions.

The defense of the rights of the accused is not coddling of criminals but rather protection for the innocent. The current conservative court has conscientiously turned back the clock on civil rights in this country, abridging the rights of freedom from unreasonable search and seizure, free exercise of religion, freedom from cruel and unusual punishment. Marshall's dissent in *Payne vs. Tennessee* (1991) forewarned the very excesses the court is now adopting, "power, not reason is the new currency of this court's decision making... the majority today sends a clear signal that scores of established constitutional liberties are now ripe for reconsideration, thereby inviting the very type of open defiance of the precedents that the majority rewards in this case."

The passing of Justice Marshall dimmed the light of freedom and justice in America, over which is cast the grim shadow of Monday's rulings. Such decisions are based neither on the basis of justice or reason but on an ideological zealotry for blood.

EDITORIAL

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Jackie Barton

changing character of the chemical industry. Particular concerns today that are shared by the university and industrial communities include how best to link scientific discovery with technological development and how best to link the training of the next generation of workers with future demands and opportunities in industry.

"For chemists and chemical engineers in industry and academia, it is important also that we find ways to enhance the public understanding of issues involving chemistry. I hope that as a university chemist, I might bring a useful perspective to the board."

"Jackie Barton's election to the Board of Directors of Dow add yet another important entry to her list of recognitions and awards," said Fred Anson, chair of the Division of Chemistry and Chemical Engineering at Caltech. "The insight and knowledge about the goals and strategies of a major industrial chemical company which Professor Barton will acquire as a member of Dow's Board will surely prove valuable both to her and to the students she teaches and counsels."

Barton earned her bachelor of arts degree *summa cum laude* at Barnard College, New York City, in 1974 and went on to receive a doctorate in inorganic chemistry at Columbia University in 1979. She joined the Caltech faculty in the fall of 1989.

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The Tech will hold its weekly meeting TODAY at 12:15 PM in the Coffeehouse. Free Pizza. Open positions include Crime & Incident Editor, World News Editor, Staff Photographer, and Off-Campus Distributor.

FRIDAY NIGHT ASCIT MOVIE

Baxter Lecture Hall:
7:30 and 10:00
\$1.50 A.S.C.I.T.

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ASCIT Election '93

Results

ASCIT Election Dates

- Jan 27: Nominations open for remaining ASCIT offices.
- Jan 29: Runoff election for ASCIT President.
- Feb 2: Nominations close for remaining ASCIT offices.
- Feb 8: Initial election for remaining offices.
- Feb 12: Runoff election for remaining offices.

Ewald Hueffmeier

The results of the first ASCIT elections are in. For ASCIT President, no candidate received a majority in the initial election so there is a runoff today between Moeen Abedin and Derek Surka. Circle your most preferred and/or cross out your least preferred candidate. (See election boxes for more details). In the Vice-President/BOC Chair race, Michael Brundage received a majority and is thus the new ASCIT Vice-President. The *Tech* Editors race was also won in the initial election by the team Mike Benedetti, Chris DuPuis, and Michael Radford.

The results of the bylaw proposals

were as follows:

Proposal 1 (Appoint Activities Chair) passed by a 335:54 vote.

Proposal 2 (Island Vacation for BOD) failed by a 91:322 vote.

Don't forget, there are more elections to come! Nominations are still open for ASCIT Secretary, ASCIT Treasurer, IHC Chairman, Director for Academic Affairs, Director for Social Activities, the Directors at Large, Athletic Manager, and BOC Secretary, but they close Tuesday, so don't wait. If you decide to run, remember to write a statement for the *Tech*, due at 5:00 pm the Wednesday before the date of publication. The initial election for these offices will be held Monday, February 1: tell your friends!

VOTE in the runoff election today

The Ghost of the Executed Engineer

Chris Echols

Dr. Loren Graham from MIT delivered his talk "The Ghost of the Executed Engineer: Technology and the Fall of the Soviet Union" on the demise of engineers in the heyday of the Soviet Union. In the 1920s, Stalin purged the ranks of Soviet engineers in order to eliminate opposition to his authority. The Soviet authorities, however, were less than competent as engineers. Huge projects intended to show off the miraculous productive power of collectivism ended in failure. Numerous engineers opposed the regime's decisions on technical grounds—they had different ideas on how to be productive. But Stalin

was committed to the idea that technology Soviet style could overcome all obstacles.

Dr. Graham illustrated this with the story of Peter Palchenski, a Russian engineer who butted heads with Stalin and lost. Although initially arrested by the Bolsheviks for being opposed to their regime, the Bolshevik's emphasis on technology and industrialization encouraged him to help in the effort. Palchenski was committed to the idea that socialism was capable of great feats of progress (many years later, the tremendous productive power of the great and prosperous Soviet Union collapsed for some mysterious reason). Palchenski was bold enough to think he knew more

about engineering than Stalin and so was subsequently shot. Many talented engineers shared his fate.

The next generation of Soviet engineers stayed out of politics and policy making, concentrating instead on only the technical aspects of the profession. Now, however, there is a movement to reform technical schools in the former Soviet Union in order to produce more "well-rounded" engineers that can competently deal with engineering problems. They may even get to live.

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Ahmed Zewail

Marcus, a Wolf Prize laureate in 1985, won the 1992 Nobel Prize in Chemistry. "Zewail's winning this high award is a reflection of his ability to recognize important problems and his fearlessness in attacking them," Marcus said. "In his work on seeing molecules fall apart, cited by the Wolf Prize committee, he combined two different techniques - femtosecond light pulses and molecular beams - and opened up a new area of study. He is utterly dedicated to his work and ap-

proaches it with enthusiasm and good humor. It is a delight to have him as a colleague."

The Wolf Foundation was established by the late Dr. Ricardo Wolf, inventor, diplomat, and philanthropist, "to promote science and art for the benefit of mankind." Born in 1887 in Germany, Dr. Wolf emigrated to Cuba before World War I, and in 1961 was appointed Cuban Ambassador to Israel where he lived until his death at the age of 93.

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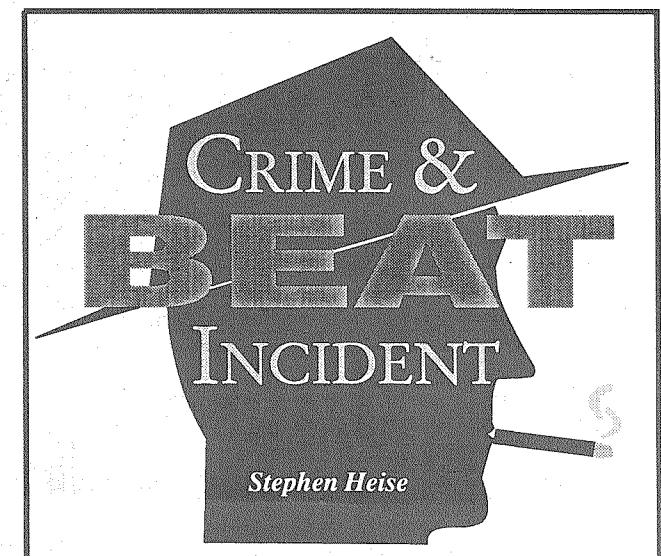
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No Appointment Needed



Crime Tip: Office theft is up, murders are down, weirdness is ever present.

1-18 (daytime) A car parked by the Cooling Towers had its passenger side window smashed and its tape deck removed by unauthorized personnel. A gym bag left within was also taken. (\$600)

1-21 (afternoon) A staff member discovered a crazy person wandering through Noyes who started yelling obscenities at him. When Security arrived the suspect started a fight. Apparently the fellow has a history of mental illness and was transported back to a Mental Health Spa.

1-22 (morning) A car parked on Holliston had its passenger side window smashed. A leather jacket and a bag of tapes were stolen. (\$500)

1-22 (daytime) An intelligent car stereo parked at the Tournement Park lot (disguised as part of a car) decided that life on Earth was not all that it was cracked up to be. (\$300)

1-22 (afternoon) A rear passenger window was stolen from a car parked at the Wilson structure. The front driver's window was smashed to gain access. (\$400)

1-23 (daytime) A student biked to a Hum class, leaving his transport inside the building. Class was distracting and he forgot about his bike. Hours later he regained his track of thought, but alas, it was too late. (\$200)

1-23 (afternoon) A passerby took advantage of the fact that a bike locked at BBB had a quick release seat. (\$65)

1-25 (afternoon) A house on Holliston was broken into by someone cutting through the screen door. A Sony Discman and two dozen CDs were stolen. The thief apparently locked him/herself inside the room and then jumped out the window with the stuff. (\$600)

1-25 (daytime) "The passenger side door lock spontaneously popped out and then everything mobile inside just gravitated to my arms. I didn't ask any questions." (\$500)

1-26 (morning) A mountain bike parked at a Fleming House stairway was stolen. (\$300)

1-26 (afternoon) A wallet in a purse on a bench in a lab in Kerckhoff was stolen. (\$23 + \$6000 credit limit)

Two Week Total: \$3488 + mystery credit charges

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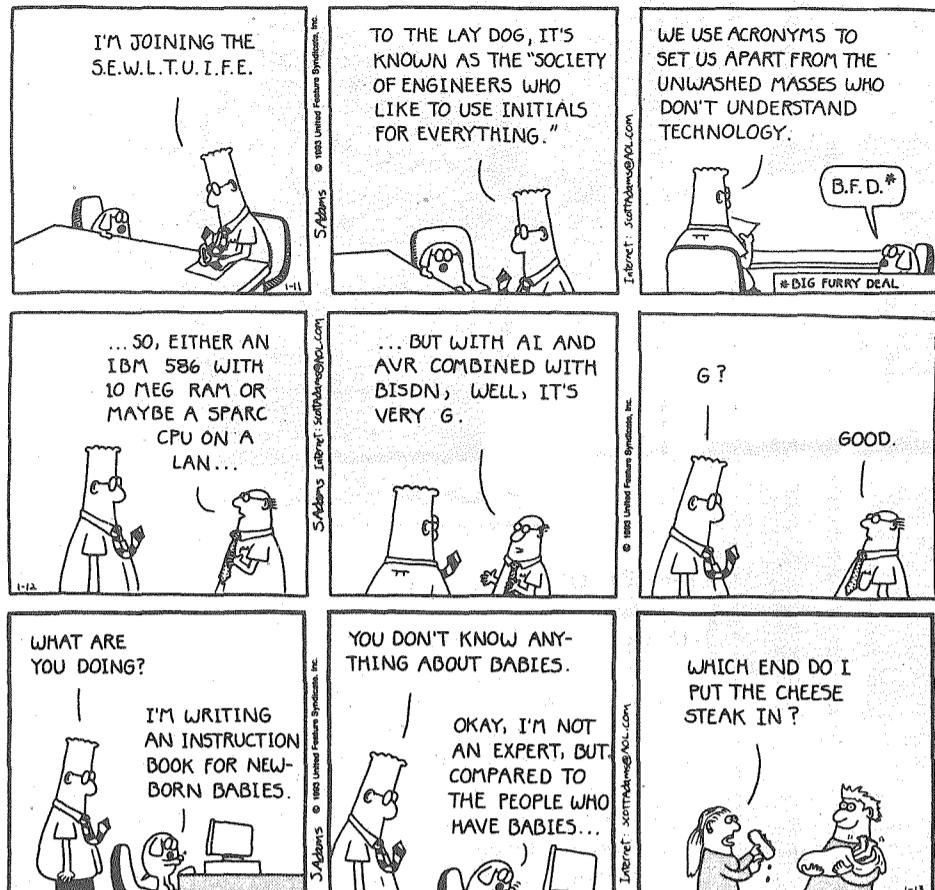
The offices of Financial Aid, Graduate Studies, and International Student Programs, in cooperation with the Faculty Records Office, have arranged for a panel of specialists to address various questions pertaining to the preparation of individual federal and California state income tax returns. International students and faculty with specific concerns about federal and/or state tax preparation are encouraged to attend. The panel's membership will consist of an immigration attorney and three tax attorneys.

Monday, February 22, 1993

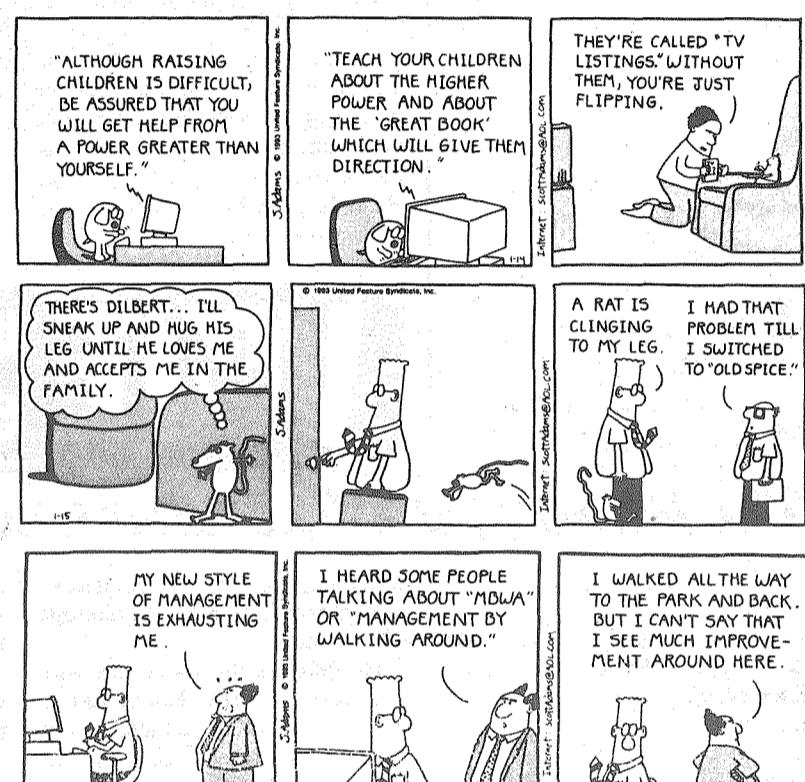
(Instructional Recess)

Baxter Lecture Hall

1:30 - 3:00 p.m.



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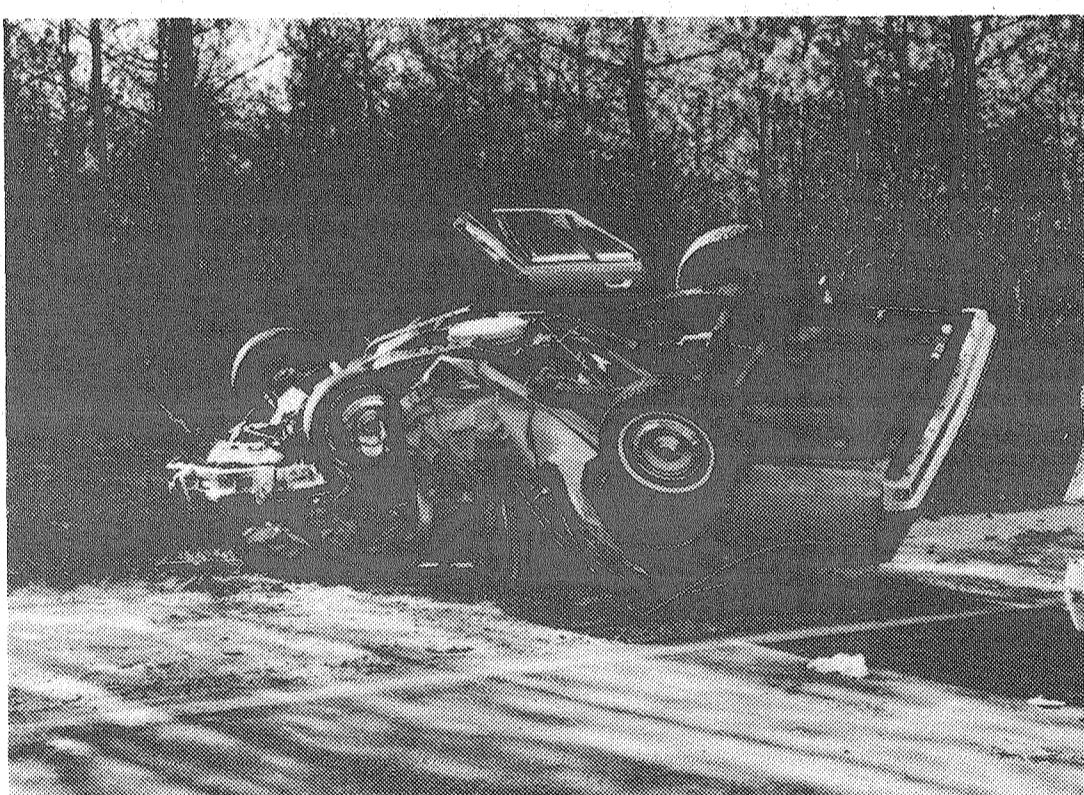


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Women's Center

they could not relax with a group of female friends because Tech's lopsided social dynamics make it nearly impossible to do so without attracting attention from other students. Others simply felt isolated from other women, and missed spending time with female friends. They hoped that the women's center would organize some social activities for women, in addition to more "serious" endeavors. Some women were also frustrated by past difficulties in finding places for groups to meet, in getting mailing

lists of undergraduate women, and in other logistical aspects of organizing activities. The women's center staff could help women students make contact with each other by maintaining a data-base or mailing list, providing a meeting place, and being a central source of information on the services and activities for women on campus. The Center could also help women find roommates, upperclassmen "big sisters," or graduate student women in their field of study. Many women expressed interest in discussion groups and support groups, and workshops on various topics (e.g. communication between the genders) for both men and women. Both groups wanted the director to be able to counsel people on sexual harassment, both informally and as an advocate in registering formal complaints. Some women also noted that there is an unmet need on this campus for abortion counseling, and for peer support groups for rape victims.



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ENTERTAINMENT

Bridge Without Sam

Jeff Goldsmith**A Solid Suit**

Bridge is a funny game. Would you believe that a 10-card fit to the AKQJ might afford some technique in playing the suit?

Playing in a matchpoint tournament where each player allegedly has more than 750 masterpoints, I pick up second position:

♦K98 ♠A4 ♦A10 ♣AQ8765

against two players I have never seen before. We are playing a 15—17 notrump, but this hand is definitely too good for 1NT. This feels like about a 19 count to me, so I open 1 ♠ intending to rebid 2NT. LHO overcalls 1♦, partner raises to 2 ♠, and RHO passes. 3NT seems obvious, and when I bid that, everyone passes.

After fidgeting for a little while, RHO selects the ♠K as his opening lead and I see

♦ Q654
♥ 10832
♦ 5
♣ KJ94

N
W
E
S

♠ K98
♥ A4
♦ A10
♣ AQ8765

Partner made an unusual call at his first opportunity; most would make a negative double to try to get the spade suit into the picture. I would then rebid 2NT and we would likely play there, so I probably need to make this contract to get a good board. Actually, I think partner's bid was reasonable. It seems more likely that we have a club fit than a spade fit and the initial raise might be what I need to be able to compete to the three-level. What makes me unhappy, however, is the opening lead. 3NT is cold on the expected heart lead; the diamond has struck a vital blow to my chances.

I have eight tricks on top and only one real chance for another, that being the spade suit. But before I can set up a spade trick, they will be able to cash at least four diamond tricks and a spade to beat me. I can try to steal my spade trick at trick two by leading the ♠9, or I can try the effect of running my clubs. Maybe they will make an error. Without much confidence, I decide upon the latter line. To conceal my diamond holding, I win the first trick. Holding up will be futile, anyway.

I begin the clubs by cashing the King and both opponents follow. Since I want them to make damaging discards, I want to play clubs in order to force the opponent with the singleton to make two discards before his partner makes any. So, I continue with the ♠J off the dummy and righty shows out, pitching a diamond (yay!) I let this hold and continue with a third round of clubs from the dummy. Righty pitches another diamond, which is fatal if diamonds are 6—4, and it turns out that I make 3NT when they don't have enough diamonds to cash when I give up the ♠A.

Note again the play of the club suit. If RHO had followed to the second club, I would have overtaken the ♠J with the Queen and continued a third round of clubs from my hand, unblocking the Nine from dummy. That way, LHO would have to make a second discard before seeing any of partner's. Who would think that the play of the hand would revolve around the play of the club suit?

Saturday, 1/30 is the 3rd annual Pro-Am. It begins at 1PM in Winnett student center, 1st floor. After the game will be free pizza and a panel show hosted by some of the visiting experts. Play a hand with Eddie Kantar or Grant Baze!

The deadline for the first round of the Winter Double Knockout Teams is 2/1. The first and second round match-ups are:

First Round Matches:
1. PAGEvs. LLAME DUCKS 2. THE RUDS vs. DAMN SCURVES
3. CFI. vs. GRADS+GHOST 4. WILD CARDS vs. NADS

2nd round matches:
5. winner of 1 vs winner of 2 6. winner of 3 vs winner of 4 7. loser of 1 vs loser of 2 8. lower of 3 vs loser of 4

Experimental Tomatoes Gone Bad

Daniel Maskit

I've been thinking about tomatoes lately. They have a lot to do with scientific research, you know. It's not immediately obvious when you look at them. "Yuck, these don't look very good at all", you remark on your way through Ralph's or Von's. "But", you are reminded by your companion, "it's January, and nobody really expects good tomatoes in January." But that's the whole point, you see. Nobody expects good tomatoes in January. Nevertheless all of the supermarkets sell these horrid-looking nearly-red spheroids as tomatoes. Worse, they sell tomato-like things which don't look (or taste) a whole lot better in July and August. The height of tomato season, as any home gardener will testify. Curiouser and curioser.

Let me give you some background: Years ago people ate tomatoes when they were in season. They were delicious. Take my word for it. So people got to thinking: 'If only we could eat these during a larger portion of the year.' This resulted in many experiments in canning or drying tomatoes. These yielded some tasty results, but not real, fresh, tomato results. So, the agriculture people and the botany people and the biology people all got together and they decided to find a way to grow tomatoes all year 'round. They tinkered with this, and puttered with that. Soon they had some mutated tomatoes that sure enough grew all year long. Only problem was, even when they were ripe they didn't taste as good as old-fashioned, non-mutated tomatoes. But, the big supermarket chains decided to only sell the mutant varieties. Pretty soon the only way to get 'real' tomatoes was to grow them yourself. Funniest thing about it all: Those canned tomatoes people didn't like so much when this all started are now more appetizing than the fresh tomatoes.

And it seems to me that here is a classic example of research gone horribly wrong. Why? Because people didn't take a big picture view of their project; and they didn't consider the consequences. If they had taken a big picture view of this problem they would have concluded that the problem to be solved was 'How can we provide tomatoes to the public for a longer period of time without changing the taste.' This view would have dictated that all of their experiments live within the boundary condition of "the taste must be maintained." Losing sight of this condition, due to being too close to the problem, led to a wonderful solution to the wrong problem.

This was all compounded by the researchers not considering what the implications of a year-round tomato (minus the taste) would have for the people who ran agribusiness. They

gave the clients what they asked for, without regard to the harm that this solution could do. It is our responsibility as scientists to always think about what the negative aspects of our work might be.

I know that this might all seem

like a trivial example. But someday, you will have a real, fresh tomato. And you will understand how you have been cheated all these years. It really is the little things that make life worth living.

YNEWS YNEWS YNEWS

Clo Butcher

Here's what's coming up:

The Y is sending volunteers to Union Station every Monday from 8:30 am to 11:30 am and every Friday from 11 am to 2 pm to help prepare and serve meals to the homeless. We also will be sending people to Union Station (8 pm to 8 am)—any night of the week. Please come talk to Chris if you would like to go or if you have any questions.

Over spring break, the Y will be sponsoring a canoe trip down the Colorado River. It will cost \$195 for 5 days with a \$95 deposit due when you sign up. Start making those spring break plans now!

We will soon have tickets for *Homeward Bound* for February 7 at 5:15 pm. They will cost \$3.50 per ticket. It should be Disney at its finest.

Attention Y-hikers and all those who are interested in next year's hike but missed this year's hike. We will be having a meeting at 4:30 pm in the Y lounge on Wednesday, February 3, to begin discussing locations, group size, etc. Anyone is welcome—we hope to see you all.

There will be a trip to the L.A. Foodbank on February 6. Contact Chris if you are interested in helping out.

That's all for now. Take care and have a good weekend.

Jim's Journal

**by Jim**

In September 1950 Peter John Kousakis opened **Pete's GRANDBURGER**. For 40 years this tiny, yet mighty establishment located at Wilshire & Bixel, generated one of the most successful fast food clienteles' in the downtown Los Angeles area.

Although Pete decided in 1990 to stop and hang up his apron, don't despair! The tradition lives on!

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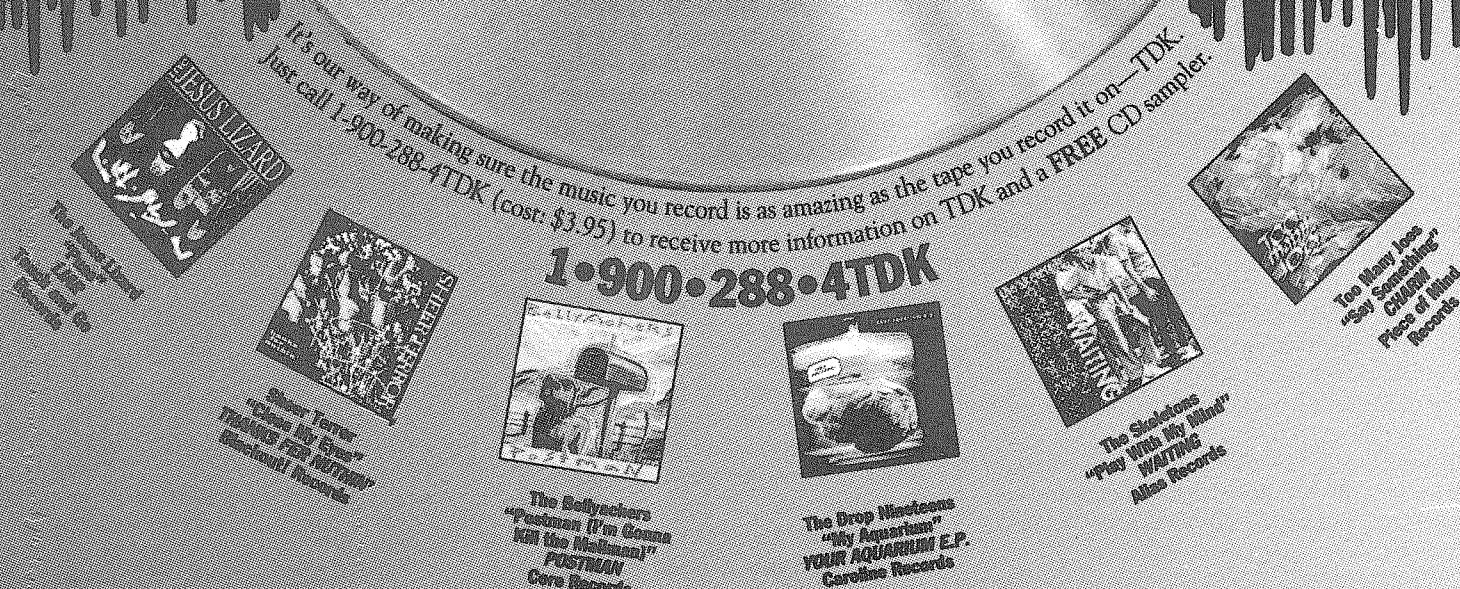
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Preview: Kodo, "The Heartbeat Drummers of Japan"

Gavin Claypool

Most *Tech* reviews of Caltech Public Events offerings serve only the purpose of telling the reader what a great show he missed. This is one of the rare occasions where you can still see the show without waiting a year (or more) or leaving campus.

Kodo, the "Heartbeat Drummers of Japan," who performed so magnificently in Beckman Auditorium Wednesday night, have a second performance tonight at 8 p.m. Ticket sales have been brisk, so call the Ticket Office early.

The opening piece, "Nobi," featured most of the company on oke-daiko, drums slung from the shoulders and played while in motion, accompanied by shouts of encouragement and one member on hand-sized brass cymbals. The second number, "Miyake," follows without pause, music bridging the pieces as the drums for this particular style are brought onto the stage. (Many of the evening's pieces were linked in this way, preserving the building mood.)

Several pieces performed were "modern" pieces, written especially for Kodo. "Monochrome" (Maki Ishii, 1976) suggested many different things, but parts should have reminded locals of the heavy rainstorms that recently drenched Pasadena. The interior of the auditorium (shaped like a drum itself) fills and swells with the sound of the drumming.

The highlight, of course, was "O-Daiko", performed by two drummers on a drum measuring about 5 feet across and weighing about 900

pounds. Dressed only in a loincloth, the principal drummer brought sculpture (in a mobile form) to the assemblage of arts on stage.

Sound was the most obvious aspect of the performance, but rhythm and movement were too. Watching the hands strike, often so rapidly that the image was a stroboscopic blur, seeing the rhythms change and the lead shift from drummer to drummer, added impressions that a sound recording cannot bring forth.

The group performs traditional Japanese music not only on drums but on other instruments as well, including the bamboo flute, wooden clacker, and shamisen. The shamisen is a three-stringed instrument featured in a solo piece early in the program. Its sharp vibratory sounds contrasted nicely with the deep sounds of the drum pieces that bracketed it.

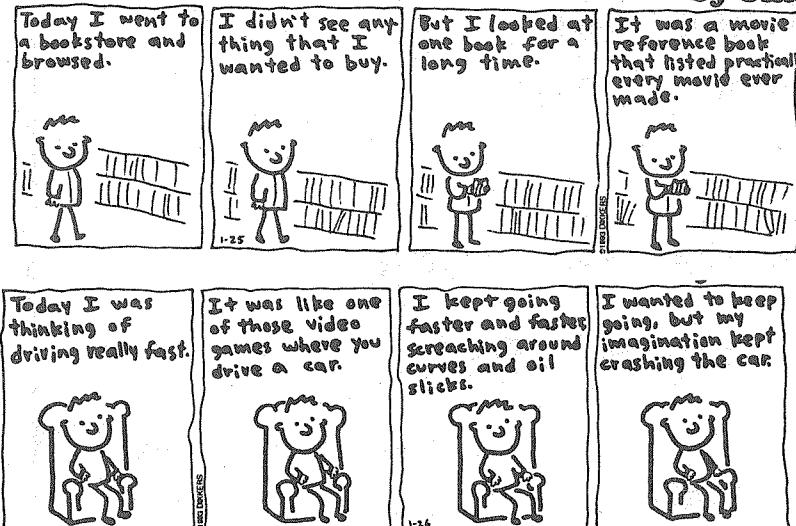
As a change of pace, "Nishimonai" is a dance with its musical accompaniment offstage. The sole dancer is kimono-clad, a large straw hat angled as to completely obscure the face as she weaves her path across the stage. The expression is all in body language, without the easy facial clues to follow.

The show is a continuous performance of approximately 90 minutes. You won't notice that there isn't an intermission.

Tickets are \$30.00, \$27.50, and \$25.00. Caltech students can purchase half price tickets and rush tickets for \$7.50 (subject to availability).

Arrive early, find your seat, settle down comfortably. Don't worry about dozing off before. You'll know when it starts.

Jim's Journal



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Chalk Circle Makes Its Mark

Anne Dudzik

Last term, Caltech was blessed with the chance to see Chalk Circle's last 1992 show at the Page House

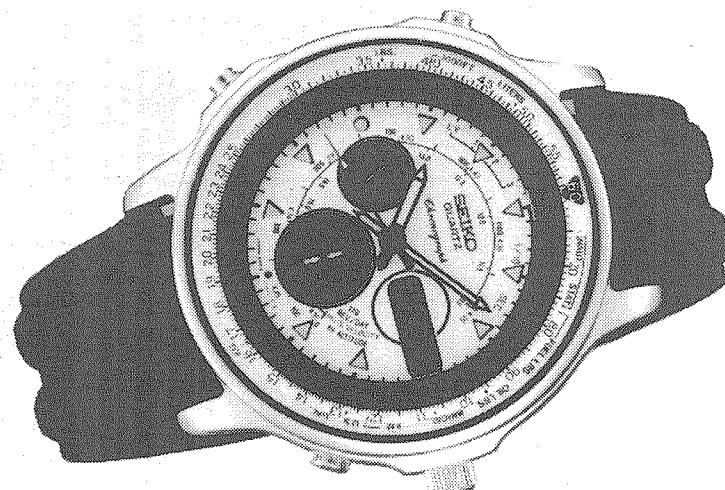
party. Now, everyone in the area can see them on February 2 at the Roxy. Balancing neatly on the rail of deconstructive alternative music, Chalk Circle has a polished and

experienced lineup, with Xandr on vocals, Erik Travis on keyboards and vocals, Tony Tisdale on drums, Matt Passmore on bass, and Jessy Greene on violin. Fortunately, the violin here isn't used as a tool for press attention; it fits in well with the band's occasional psychedelic tune. Chalk Circle's demo is very impressive, and their first album is due out in a couple of months.

If Chalk Circle sounds familiar, it may be because they played at Lollapalooza last year, along with a few inferior bands such as Pearl Jam and Soundgarden. The band's precise, unfaltering music is a sneer at the homogeny of so many cities' current scenes (a.k.a. Seattle subpop, Chicago house, Manchester post-modern). Look out for their first release, and if you haven't heard them before, go check out the Roxy. Call (310) 376-2222 for concert details.



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Charlotte Manly	Yun Fong Loh	Ed Lew	Dave Krider	Andrew Lines
Dave Proctor	Kevin Luster	Dong Lin	Brady Montz	
	Eric Newman	Jay Obernolte	Jared Smith	
		Chris Rosin	Yair Zadik	

SPORTS**Women's Tennis Ready To Roll****John Haba**

Caltech's women's tennis is cruising into '93 with high hopes for a successful season. A solid team nucleus of experienced juniors and seniors, a well planned schedule and an excellent training program orchestrated by third year head coach Karen Nelson, are all factors which should make women's tennis the sport to watch at Caltech this coming spring.

While Coach Nelson and her assistant Monica Holboke have yet to determine the seeding order, it is certain that the four returning seniors will all play important roles on this club. Diane Wong, Miran Rhee, Yu-Chien Kuo, and Monica Oei all come into this season having three years experience, and having played among the top six singles or top three doubles teams all last year. Juniors Jill Bush and Karen Shih are also back as integral parts of this team's roster after two solid years of contribution. And the future of the program lies in the newcomers and underclassmen of the squad, who include Juniors Frances Kim and Linda Springer, Sophomores Monica Silva, Jun Yang, Esmeralda Nava, and freshman Laura Verhoff. The loss of last year's top two singles players Nancy Hua and Fiona Lo to graduation will leave the '93 lineup with some difficult adjustments to make in playing against higher seeds this time around. But Coach Nelson is confident in her players' abilities, and feels the adjustment will be more mental than anything else.

Playing in SCIAC, one of the premier Division III tennis confer-

ences in the nation, the Caltech women cannot fairly measure their success in terms of wins and losses. Individual competitive improvements and overall team progress are much better barometers of achievement. Coach Nelson is definitely focusing on these items in '93. "As far as this season's goals are concerned, I'm looking for each individual to improve their level of play, while of course enjoying it, too; because that's what sports and athletics is all about. We worked a lot last year on the mental aspect of athletics as a whole, but tennis in particular... We'll still be working on that, and on trying to work more as a team unit. Another one of my goals this season is to work more with doubles so we have stronger pairings this year."

In the ten year history of the women's tennis program, the cumulative winning percentage is only a little over .200, thanks to facing national Div. III powers such as Occidental, Claremont, and Pomona-Pitzer twice each year in conference competition. Prospects for this season look a little brighter however, considering that many of Tech's upcoming non-conference opponents are teams that they have been able to defeat sometime in the past two years. Also, the Beavers cannily scheduled the weaker SCIAC schools such as Cal Lutheran, Whittier, and Laverne twice, while Oxy, Claremont, and Pomona will only be seen once. A final master stroke of planning has the vast majority of matches slated for third term during the latter part of the season. The flurry of early

away matches, including a fun-filled three day, three match, whirlwind tour of the S.F. Bay Area, should serve to bring the team together both on and off the courts. Thus throughout the extended home stand in the second half of the season, Caltech will be a well-honed and well rested force to be reckoned with. The coaches and the Athletic Department must be congratulated for their efforts to maximize this team's competitive chances through intelligent scheduling.

Perhaps the biggest difference in this year's program compared to previous years' is the advanced conditioning program instituted by Karen Nelson. For instance weight lifting was included in this season's training regimen for the first time ever. "I didn't have [weight training] my first years here because I thought I might not have a team," joked Nelson when quizzed about this innovation. Now that she has several players "hooked" on her tennis program, weights can become a valuable weapon in her conditioning arsenal. The prolonged rainstorms this winter have also meant a lot of extra conditioning time for the players. Rather than having days off when the courts were unusable, team members did a lot of cross-training; with running, stretching, aerobics, and even basketball, joining weight lifting on the list of team activities. All of this training should prove invaluable to each

continued on page 11

SCOREBOX

Basketball	
vs Pomona-Pitzer	L 30-65
vs La Verne	L 33-81
vs Claremont-Mudd	L 41-62
Men's Swimming	
vs Colorado College	L 56-143
vs Occidental	W 118-44
vs Whittier	W 152-31
Women's Swimming	
vs Colorado College	L 25-152
vs Occidental	L 43-118
vs Whittier	W 101-81
Men's Tennis	
vs So. California U	L 0-9

Caltech Swims to Victory**Clinton Dodd**

freestyle.

The swim team hosted a bevy of swim meets this last week. On Thursday, Colorado and Occidental colleges came over for an evening match. Saturday, the Beavers fought Whittier College in an important SCIAC Conference meet. Sunday, Trinity University from San Antonio Texas was scheduled, but they didn't show up.

Thursday, the men won the meet against Occidental 118-44 while the ladies and gentlemen Techers fell to Colorado. Swimmers of the meet were Alan Kulawik with a fine 100 yard backstroke race and Captain Karen Ross winning the 1000 yard

The conference meet against Whittier on Saturday proved the most exciting as the women's team won a cliff hanger, erasing a 20-44 deficit and pulling out a squeaker 92-81. Tamara Tulou was outstanding as she won the 50 free, 100 fly, and the 5000 free. Debi Tuttle dove well placing first on the 3m diving event, while Ross pulled ahead of the competition in the last 75 yards to win the 200 IM.

The 3m diving event allowed Caltech to open a gap of 16 points ahead as Tuttle, Maria Toronto, and Melinda Au took the top three spots in event #1. Whittier came back

continued on page 11

This Week in Caltech Sports**Baseball**

1/30	vs Cal Maritime (2)	11:00 am
2/2	Scrimmage at La Verne JV	6:30 pm

Basketball

1/30	vs Cal Lutheran	7:30 pm
2/3	at Redlands	7:30 pm

JV Basketball

1/30	vs Cal Lutheran	5:30 pm
2/2	vs Redlands	7:30 pm

Golf

2/1	vs Redlands	12:30 pm
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Swimming

1/30	Las Vegas International at UNLV	TBA
1/31	Las Vegas International at UNLV	TBA

Men's Tennis

1/30	vs Faculty	1:00 pm
2/3	at Mt. San Jacinto	2:00 pm

Women's Tennis

2/3	Scott Tournament at Caltech	3:00 pm
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continued from page 9

Swimming

strong to stretch a lead but Ross and Tulou staged a come back to hold on to a slim 2 point advantage by event #7, the 200 IM. When Whittier's talent tried to pull ahead, Virginie Leeknecht, Aimee Smith, Wing Cheung, and Hope Chang helped keep the score in check. The lead changed hands four times until the last individual event, the 100 yard breaststroke. Although Whittier won the race, the crew of Ross, Leeknecht, Cheung, and Chang got the next places to knot the score at 81-81. The 400 free relay found that Whittier had used all their swimmers to try to catch Caltech and did not have enough swimmers to compete. Caltech cruised to victory. This win puts Caltech out of the cellar and forces Whittier to try to catch them at the SCIAC Championship.

The men had a much easier time winning all the races but one and spent more of their time cheering on the women's team. Breaking into the victory circle were Kevin Kan in the 50 yard freestyle, Colin Humphries in the 100 fly, and Nick Pornsinsirirak in the 100 breaststroke. Mike Greend and Chris Buchner swam well in the 400 IM and placed first and second respectively. The final score was 152-31.

Trinity University had some last minute problems with their airplane tickets and were a no show. The Caltech team was split into two squads, "The Engineers" against "The Scientists". After an hour of spirited swims "The Scientists" prevailed 82-79. The Trinity Match has been rescheduled for February 7, at eleven in the morning.

continued from page 9

Tennis

player when their matches turn into a series of three set marathons later in the year.

By focussing hard on the physical aspect of the game early in the year, and by making the mental part of tennis one of her highest priorities throughout the year, Coach

Nelson appears to have this '93 squad extremely well prepared for an exciting and successful season. Their first match is next Wednesday at Mt. San Jacinto, and the first home match is February 24 against Mt. St. Mary's. Mark those dates on your calendar and be there if you can, so you can catch Caltech athletics at their best.

Jim's Journal

Today Dan was talking about apes, comparing them to humans.

He was talking about their social structure and behavior.

"Human society is very similar," he said, "There's male hierarchy, everyone knows their place."

Then Hal came out of the back room and told us all to get back to work.

by Jim

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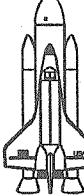
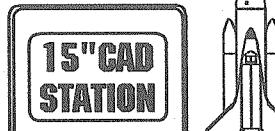
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(92'Best Printer)
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KX-4410 \$615
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>3.5" 1.44MB Floppy Drive

>2 Serial,1 Parallel Port
>Extra VGA Monitor Port

>Extra Keyboard Port
>Carrying Bag

386:\$1325
486:\$1750

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486DX2-50

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Cash Discount:

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D50:\$2250

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>AC/DC Adaptor

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>Extra Keyboard Port
>AC / DC Adaptor
>Carrying Bag

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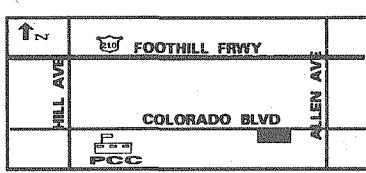
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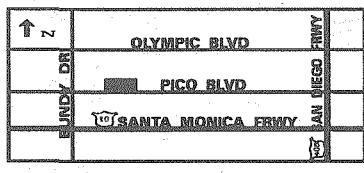
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WHAT GOES ON

NOTICES

Undergraduates - We are looking for input from men and women undergrads on the planned Women's Center. Call the DRL's office at x6194 to sign-up for an informal dinner and discussion on the Women's Center. Share your ideas, get answers to your questions, or just listen to what other students have to say about it. Men are invited to the discussion on Thursday, Feb. 4 at 6:30 pm, and women are invited to the meeting on Monday, Feb. 8 at 6:00 pm. Call x6194 to reserve a space or get more information.

Author Signing - The Caltech Bookstore is pleased to welcome distinguished physicist Leon Lederman, author of "The God Particle: If the universe is the answer, what is the question?" to our campus for a book signing at one of Wednesday, Feb. 3 in Winnett.

Senior Pictures are due to the Big T by Feb. 1. Please mail your photo with your name, option, and any quotations you want to include exactly as you would like it printed in the Yearbook, to me 27-58.

Caltech Y ExComm Meeting - The Y invites anyone who wishes to cosponsor an event to attend on the first or third Monday of each month.

EVENTS AND SERVICES

Friday Morning Donuts! - That's right ASCIT and the Caltech Y are bringing back the Caltech tradition of Friday Morning Donuts. Donuts will be served today and every Friday at 8:00 am in front of Lloyd House. Come on out, eat breakfast, read the paper, and meet interesting people. Then, you can go back to bed, but don't miss the donuts.

Friday Prayer - Prayers organized by Caltech Muslim Students are held in the Caltech Y lounge at 12:30 pm every Friday.

Caltech Hillel/Jewish Community Weekly Meeting - An informal gathering, every Thursday at noon in the Y lounge. For information call Caty Konigsberg at (213) 259-2959

Mass - Thursday at 8:15 in the Y lounge and Sunday at 10 am in Winnett lounge. Sacrament of Reconciliation (confession) is given 20 minutes before masses. Refreshments are served after mass.

Bible Study and Discussion - Every Wednesday at noon in the Y lounge. Bring your own lunch. For more information call Mike Gerfen at 356-4886.

Gay, Lesbian, Bisexual Support Group - Meets the first and third Tuesdays at 7:30 pm in the Health Center Lounge. This confidential meeting is open to all Caltech community members looking for a supportive context in which to address questions and concerns about sexual orientation - including coming out, being out, self-discovery, coping with families.... We begin with a focus topic but move to whatever is feeling most relevant to the group that night. Refreshments are served. For information, please call x8331.

The Caltech Student Investment Fund meets every Tuesday at 5 pm in Winnett Clubroom #2. Come by and learn how to obtain limitless wealth and power. No previous investment experience or knowledge required.

Preschool Playgroup - Meets on Tuesday, Feb 2 in the Caltech Villa Apartments from 10 am to noon providing structured activities for mothers and fathers and their children. For more information call Valerie Murray, 287.8960.

Adult Children of Alcoholics - A 12-step group meets on campus every Tuesday, from 12 noon to 1 pm, in Y club room 2. The group is open to any student, staff or member of the faculty who grew up with family alcoholism and other problems. For more information call Dinah Lee Schaller at x2961.

Women's International Friendship Group - All women from foreign countries are warmly invited to this meeting on 415 S. Hill at 9:30 am. Children will be supervised. For more information call Susan Dimotakis, 794.2594 or Kay Corwin, 447.1081.

Open Line - Open Line meets every Tuesday in the Y lounge upstairs during lunch, between 11:30 and 1:00. Topics discussed include developing a youth center for ages 5-12 for tutoring services, activities and cultural development for the children of Caltech students, staff and faculty, developing a multicultural book for the understanding of all nationalities, traditions and customs. Open to all of the Caltech community.

CIT-KNIT Group meets at noon on Tuesdays in the Benioff Conference Room (Rm. 256 S. Mudd). For all levels of knitters. Come and join us.

Baby Furniture Pool - The Caltech Service League loans out baby furniture to students and postdocs on Wednesday at 324 S. Chester from 10 to 11 am. For more information call 952.1631.

ENTERTAINMENT

Kodo - Heartbeat Drummers of Japan - Kodo-entertainers perform on drums of all sizes, accompanied by gongs, cymbals, strings and flutes. One drum, the "o-daike," weighs over 900 lbs. and is played by two men on a platform. Come see them in Beckman Auditorium tonight at 8:00 pm. Call x4652 for information.

Chamber Music - The Caltech Student Ensembles will present an evening of chamber music on Saturday, January 30 at 8:00 pm in Dabney Lounge. Selections include Schubert's The "Trout" Quintet, Brahms' Trio in A Minor, Op. 114, Mozart's Piano Quartet in G Minor, K. 478, and Bach's Quartet in D Major. Admission is free.

"Canterbury Tales" presented by the New Vic Theatre of London - A satirical version of Chaucer's "Canterbury Tales". Not suitable for children. Beckman auditorium on Saturday, Feb. 6 at 8 pm. For information call x4652.

The Pasadena Folkdance Co-op offers beginning and intermediate instruction every Friday at 7:45 pm in Throop Unitarian Church on the corner of Los Robles and Del Mar. A program of varied international dances follows the instruction at 9:00 and continues until 11:00. Wear soft-soled shoes. A contribution of \$1.50 is requested.

International Folk Dancing - Tuesday nights in the Dabney Lounge. Beginning instruction starts at 7:30 pm; intermediate at 8:00 pm and open dancing takes place from 9:00 until midnight. Donations are accepted. For more information call Mike McKenna (310) 692.0366.

Israeli Folk Dancing - Sundays in Winnett lounge, Beginning instruction starts at 7:30 pm, intermediate at 8:00 and open dancing goes on from 8:30 to 10:30. For information call Nancy Macmillan at 795.3655. Admission is \$2.00.

Scottish Country Dancing - On Wednesdays in Dabney Lounge from 8 until 10 pm. Beginners are welcome and no partners are needed. For more information call David Hills at 354.8741.

Music with James Boyk! - Pianist James Boyk gives a performance each Wednesday from 4:30 to 6 pm in Dabney Lounge. The performance is open to the public and free of charge. Feel free to come late or leave early. For more information call x6353.

SCHOLARSHIPS, INTERNSHIPS & COMPETITIONS

The Summer Undergraduate Research Fellowship (SURF) program is accepting applications. Application forms and Announcements of Opportunity are now available in the SURF Office, Room 137 Beckman Institute. Application deadline is March 1, 1993.

Eight-Week Summer Internship Program For Underrepresented Undergrads - Established to provide sophomores and juniors with the opportunity to conduct research with prominent faculty members in fields such as the humanities, the biological, physical and social sciences as well as engineering, the program will be offered on a competitive basis to individuals who are citizens or nationals of the US and of Alaska Native, American Indian, Black/African American, Chicano/Mexican American, or of Puerto Rican heritage. Asian Americans pursuing degrees in the social sciences, arts and humanities are welcome to apply.

Women, regardless of ethnicity, who are pursuing degrees in the physical sciences or engineering are also strongly encouraged to apply. Applicants should also be full-time students and have a minimum GPA of 2.8. Each student selected for the program will receive a \$1,600 stipend and room and board in one of the UCLA residence halls. Applications are in the Dean of Students Office, 102 Parsons-Gates. The deadline is Feb. 12. Completed applications, including an academic transcript, current course list, three recommendations and a personal one-page essay are due in the Financial Aid Office by Feb. 5.

Summer Student Fellowship Program 1993 - Summer Student Fellowships are awarded to upperclass (juniors and seniors) in any of the fields of science or engineering with at least a tentative interest in oceanography and/or marine policy. Fellowships are awarded to pursue an independent research project chosen by the Fellow under the guidance of a member of the Research staff. The Fellowship stipend is \$3,660 for the 12-week program during the months of June-August. Travel allowance may be provided. The deadline for applications is March 1, 1993. Notification of decisions by April 12, 1993. Further information and application forms: The Fellowship Committee, Education Office, Clark Laboratory, Woods Hole Oceanographic Institution, Woods Hole, MA 02543. (508) 427-2000, ext. 2709.

Work In Japan? - A Caltech alum is offering two jobs in his Japanese factory for the summer. Travel, room and salary are provided. Students will be doing basic factory work. Preference will be given to upperclass ME and/or students with machining experience. Deadline for submitting a brief letter of interest is Friday, January 29, 1993. If more information is required, contact the Dean of Students Office, 102 Parsons-Gates.

Monticello Foundation Internships 1993 - The Deans' Office is accepting proposals for the Monticello Foundation Internship. One to three Caltech undergraduate women (current freshmen, sophomores and juniors) will be given an opportunity to participate in research projects outside the Caltech community for ten weeks during the summer. Each student will receive a \$3,500 stipend. Applicants are required to identify the projects in which they wish to participate. All arrangements with the principal researcher will be the responsibility of the student. Interested? Identify a sponsor for your experience at a research facility for a ten-week period. In a short essay, describe your project, and submit it to the Deans' Office, 102 Parsons-Gates, along with two faculty recommendations. Proposals are due March 1, 1993.

"Progressive Social Change in the 1990's" - Monthly Review, an independent socialist magazine, announces an essay contest for people 25 and under. Entries covering such topics as, How can we change progressive change in US society today? Are emerging movements creating new ideas and posing potential solutions? In what ways can new social institutions be constructed? should be 2000 words or less, written in English and typed double-spaced. First prize is \$500, second \$300 and there is a \$100 third prize. All contestants will receive a free one-year subscription to Monthly Review. Send submissions to *Monthly Review*, 122 W 27th Street, New York, NY 10001. For more information call (212) 691-2555. The deadline for submissions is March 1.

The Financial Aid Office has applications and/or information for the following scholarships. All qualified students are encouraged to apply. Our office is located at 515 S. Wilson, second floor.

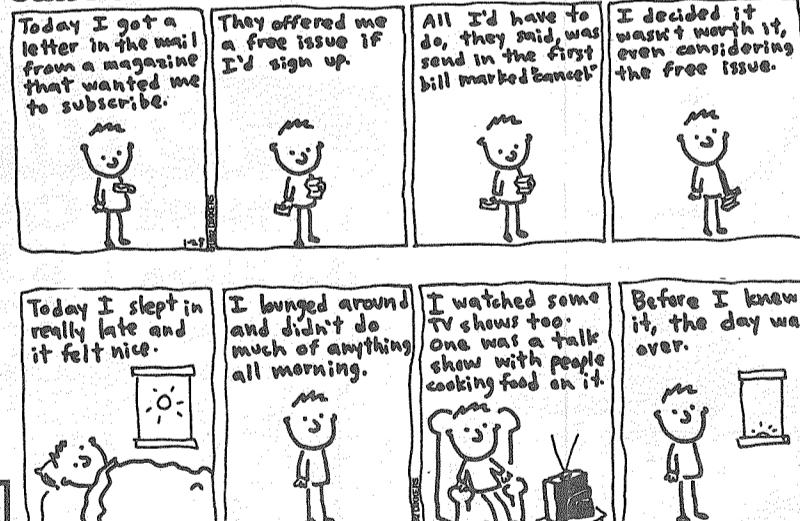
The College Women's Club of Pasadena Scholarship competition is open to undergraduate students who are planning to enroll as full-time students for the 1993-94 academic year. Applicants must be U.S. citizens with a 3.00 GPA. The awards range from \$2,000 to \$3,000. Completed applications, including an academic transcript, current course list, three recommendations and a personal one-page essay are due in the Financial Aid Office by Feb. 5.

Green Hills Software annually awards several merit scholarships in the amounts of \$2500 and \$5000 to Caltech undergraduates who have demonstrated ability and special aptitude in computer science. These awards are for the Junior and Senior school years. In addition, Green Hills will award one or two Undergraduate Fellowships consisting of a Senior year scholarship plus a \$6000 summer internship for the preceding summer. All awards are merit awards, given without regard to financial need. Any student currently holding a Junior year award must reapply in order to be considered for the Senior award. The deadline for submitting the Green Hills Scholarship application to the Financial Aid Office is Friday, Feb. 5. Applications are available at the Financial Aid Office.

The Chinese American Faculty Association is awarding scholarships (\$500 each) to undergraduate students. Undergraduate students who are interested in Chinese culture and are enrolled full-time with a GPA of 3.5 or above are invited to apply. Completed applications must be postmarked no later than Feb. 16, 1993.

The American Physical Society (APS) is offering \$2,500 scholarships to African-American, Hispanic-American, or Native-American undergraduate freshman or sophomore students majoring in Physics. The deadline to submit completed applications to APS is February 26, 1993.

Jim's Journal



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