

## Koonin discusses earthshine

by Michael Benedetti

Dr. Steven Koonin discussed the status and future applications of his current work in climatology last Wednesday evening at the year's first Watson lecture. In his lecture, titled "Global Change and the Dark of the Moon," Koonin explained how he and his colleagues are updating a 65-year old French experiment to measure global climate change.

According to Koonin, understanding the mechanisms of global climate change is difficult, because of the complex feedback loops that occur in nature. For example, if something were to cause the earth to heat up, this heat would in turn melt the ice caps a little, making the earth less reflective. The planet would then absorb more sunlight, making it even hotter. However, this heat would also increase global cloud cover, which would make the earth more reflective, helping to cool the planet.

One of the most important elements of the earth's complex climate is the amount of sunlight the earth reflects (its albedo). Global temperature is very sensitive to the albedo, so precise albedo measurements are needed if we are to learn just how much of an effect mankind is having on temperature changes.

Koonin's experiment measures the earth's albedo using earthshine—light that comes from the sun, reflects off of the earth, and illuminates the dark part of a crescent moon. Ordinarily, this earthshine is hard to see (especially compared to the sunshine on the bright crescent of the moon), but it is easily measured with instruments.

In Koonin's experiment, the



photo courtesy Capitol Records

Capitol finally coughed up a copy of Frank Sinatra's new album, Duets. Find out what we thought of it on page 4.

amount of sunlight reflecting from some light point on the moon is compared with the earthshine on a point in the dark part of the moon. From this comparison, the earth's albedo can be measured.

Koonin explained that the method his team is using to measure albedo is superior to satellite measurements for several reasons. First, satellites can only look at a small portion of the earth at any one time. In contrast, the earthshine experiment measures the light reflected from the entire surface of the earth. Also, satellites are very expensive to build and maintain. "In fact," said Koonin, "at the

moment, there are no satellites doing precision measurements of the earth's albedo."

The technique used by Koonin's team was first developed by the French astronomer Andre Danjon early in this century. Danjon took data on earthshine as far back as 1927, and Koonin hopes that errors in Danjon's data can be corrected to provide a 65-year record of earthshine records. Such a lengthy record would show any major changes in the earth's albedo during this century.

At present, Koonin's team is perfecting their equipment and methods, and looking to the future.

## It's part of our past: A look at the history of Caltech's Black students

by Edray Goins

*Editor's Note: this is the first in a series of articles that will appear throughout the term. These articles are excerpts of research performed over the past 12 months on "The History of Caltech's Under-represented Students".*

Every year, we use the second month of the year to pay homage to Presidents Washington and Lincoln. While some may call them our Founding Fathers for their work in organizing America, others call them Nefarious Gangsters

for their work in institutionalizing slavery. Whatever you believe, we have set aside both February 21 and 22 to acknowledge their deeds.

Not many years ago, the United States declared this season Black History Month. In 1926, the historian Carter G. Woodson helped to create Negro History Week. Now, after Negroes have turned into African-Americans, Blacks are proud to joke that "the Man" has given them the shortest month of the year during which to celebrate their history.

However, Black history is limited to neither pictures from 1963 of children and police dogs in Birmingham, Alabama, nor speeches from 1968 by militant men preaching about "blue-eyed devils." It is more familiar than we choose to believe—Caltech itself has a rich history of Black students.

Dr. James Ellis Lu Valle was perhaps the first Black graduate student to enroll at Caltech. Many of us believe that since there are presently 25 African-American students out of a community of 1800, Black students have been at Caltech for only the past ten years. This is not true; Dr. Lu Valle entered the doctoral program in 1937. In fact, he entered just one year after he won an Olympic medal.

Jim Lu Valle was born in 1918 in San Antonio, Texas. He moved to California, where he attended Los Angeles Polytechnic High School. One day, the track coach needed someone to pace one of his half-mile distance runners. Reluctantly, Lu Valle agreed. All were surprised when he ran faster than his "competition."

"As of then I was officially on the  
see LU VALLE, page 3

## ASCIT election cycle begins

by David R. Derkits

Over the next six weeks, all ASCIT elected offices will go up for vote. This annual cycle begins with the nomination and election of the President, Vice-President (who is also the Board of Control Chairman), and the Editors of *The California Tech*. In the fourth week it will continue with the nomination and election of the other Directors, the Athletic Manager, and BOC Secretary. All offices, and the election procedures, are fully described in the bylaws and student government sections of the *little t*. Weekly articles in the *Tech* will provide updated information on the election cycle. Questions should be directed to the ASCIT Election Chairman, David R. Derkits, at dderkits@cco, Page 130, or x1402.

Nominations for the offices of President, Vice-President/BOC Chair, and *Tech* Editor open on Wednesday, 12 January 1994, at 8:00 A.M. and close the following Tuesday at 5:00 P.M. If you are interested in running for one of these offices, please print your name on the nomination sheet posted on the east side of Winnett (outside the MOSH's office) and send a signed note to the ASCIT Secretary, Karen Shih, at MSC 686.

It is strongly recommended that every nominee submit a campaign statement to the *Tech*; the submission deadline is 5:00 P.M. on 19 January. The election for these three offices will be held on Monday, 24 January 1994.

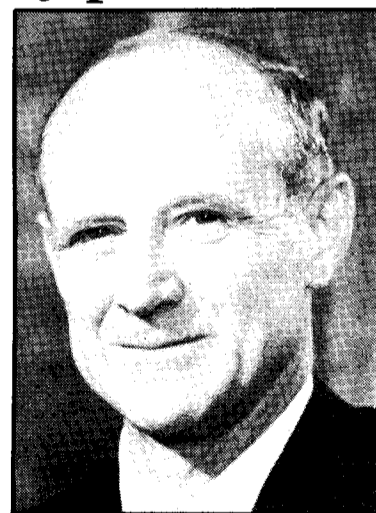
The President, who may not be a freshman, is the official head of ASCIT; he represents the undergraduate student body on several faculty committees and works closely with the administration. He presides over the meetings of the Board of Directors (BOD), but without vote unless a tie occurs. The Vice-President, who may not be a freshman, serves as the Board of Control (BOC) Chairman. His primary duty is the enforcement of the Honor System. Along with the BOC Secretary, he investigates all potential violations of the Honor System and, if necessary, presents the case to the Board of Control. The Vice-President serves on the BOD and is a representative on several faculty committees. The *Tech* Editors are responsible for the weekly publication of the *Tech*. An individual or a team may run for this office. The *Tech* Editors receive compensation, currently at a total of \$180 per week (which is split among them), for their work. [Editor's note: Don't take this job for the money.]

## Pickering awarded Japan Prize

Dr. William Hayward Pickering, Professor Emeritus in Electrical Engineering, has been awarded one of two 1994 Japan Prizes.

For 22 years, Pickering served as director of JPL, where he played a leading role in the development of all U.S. unmanned lunar and planetary exploration programs. Under his direction, JPL also developed new digital image processing technologies now widely used in field including HDTV, medicine, and industry.

The Japan Prize recognizes scientists and technologists from any nation who have made original and outstanding achievements. The prize was created in 1983 by the Science and Technology Foundation of Japan under the endorsement of the Japanese Cabinet. The



prize includes a ¥50 million (\$467,00) cash prize.

Dr. Pickering will receive the award at a ceremony on April 27 in Tokyo.

## The California Tech

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It's not too late to turn in your CLUE reviews. Thanks to everybody who already turned one in.

Flora Ho

# ASCIT BOD minutes, January 4th

by Karen Shih

Present: ASCIT BOD (minus Michael Brundage), Dave Derkits, Barbara Weir, Tatsuya Murase, Christian Waite, Michael Zeineh, Gavin Claypool

**New business**

- Interview for Publications Darkroom Chairman: Barbara Weir. Motion to appoint Barbara for the remainder of the term passes, (6-0-1).
- Motion to appoint Karen Shih to the Big T Staff as requested by the current staff passes, (5-0-1; Asif was late).
- RF Club—possibly starting a new club for future endeavors.

**Old Business**

- Two out of three little t editors are on leave; lots of financial business is left hanging.

**Treasurer**

- Waiting for second term dues to arrive; everything looks O.K. for now.
- Jam Room gets its first term money.

**Freshman Director-at-Large**

- UROH is done! It is the Undergraduate Research and Opportunities Handbook, and contains research job openings listed by department. Copies are available for viewing at the Deans' Office, DRL/

MOSH Office, Millikan Library, Financial Aid Office, International Student's Office, CDC, all Departmental Offices, and in each of the undergraduate houses, including Marks and Braun. Many jobs, summer and school year, are open; don't miss your chance to get a jump start on that SURF proposal!

- This year, the UROH came in under budget and is out earlier than ever before, so that everyone can get some worthwhile research done before the end of the year. Some late entries (mostly in the physics department) will appear as a loose-leaf addition sometime next week. Thumbs up for a job well done, Angie! Motion to approve salary for Angie's UROH passes, (6-0-0).

**Upper-class Director-at-Large**

- The Old Van is in search of a final resting place.
- The New Van is doing well; there is a new reservation calendar for van usage.
- The Copier is running well, though the quality is a bit off; will be fixed soon.

**Director of Academic Affairs**

- The Student-Faculty Conference is set for February 25th, 1994. All sub-committees should be close to wrapping up research and writing up concise proposals and recommendations for discussion at the Conference.

- The CLUE is looking at a thick and informative book for next year. So far, the return rate is about 50%, which is much better than past years; Flora will insert past reviews for those classes which received none this year, provided that the professors are still the same.

**Director of Social Activities**

- The ASCIT/GSC Party is next Saturday, January 15th, at Winnett. We're in charge of food. Come and party down with the wild and crazy grad students!

**IHC Chair**

- The Grievance, UASH, and Secondary School Relations Committees are looking for replacement members. Sign ups for one alternate member for each committee and a full member of the Grievance Committee will go up soon.

**Elections Chairman**

- The election for ASCIT President and Vice-President/BOC Chair is in three weeks. For the politically ambitious among us, now is the time to stir up some campus dust and hope that it lands in your favor.

**President**

- Dinah Lee Schaller from the Counseling Center will be here next week to talk about Wellness Week.

# Ernest Explains

Ernest Tomlinson

Dear Ernest,  
I accidentally opened my AMa 95 final while reading in the bathroom. What should I do?  
—Desperate in Dabney

Dear Anatoly,  
You should take the exam in one continuous sitting.

Dear Ernest,  
You hear a lot of different stories about the origin of quantum mechanics—sometimes Planck did it, sometimes Schrödinger, Heisenberg, or even Einstein! Who *really* invented it?  
—Looking For My Roots in Kellogg


Dear Steve,  
Although the modern age's greatest scientific theory is commonly attributed to these turn-of-the-century Germans, quantum mechanics is considerably older than you suspect. The name "quantum" was first seen in the 1400's as a corruption of the ancient Chinese *Kuang Dong* mechanics, which was brought to Europe in the early renaissance via the Arabian peninsula, where the classical Islamic scholars had translated the works of the Han dynasty *Kuang Dong* masters nearly two hundred years before. The ancient Chinese, unfortunately, never found a practical application for the infant *Kuang Dong* discipline, and the field languished for nearly two millennia before Schrödinger and Heisenberg made the next significant advance.

Dear Ernest,  
What is your opinion on Catherine the Great's death? Horse, or no horse?  
—A Curious Historian

Dear Phil,  
No horse.

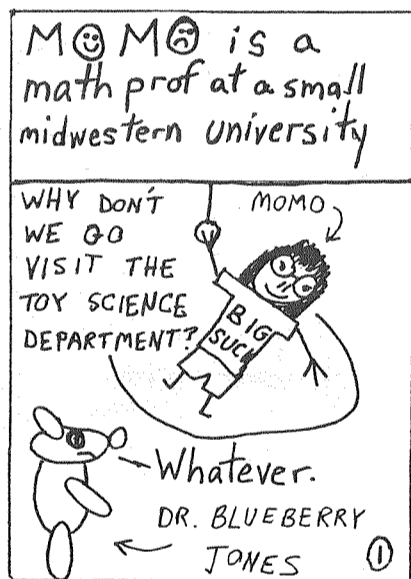
Dear Ernest,  
I recently purchased a frost-free refrigerator for my collection of severed snowman heads, assuming that frost build-up would adversely affect the purity of the snow. My question is, how does a refrigerator of this type keep things frozen without causing frost to form?  
—A Puzzled Child

Dear Calvin,  
In the United States Constitution, the states are specifically authorized to enact tariffs dealing with the commerce of solidified water between cooling units and the outside atmosphere. To avoid these taxes, manufacturers began producing refrigerators with frost-eating bacteria installed in the air circulation systems. Thus, while your snowman heads will not be coated with frost, they probably won't survive the bacterial onslaught.

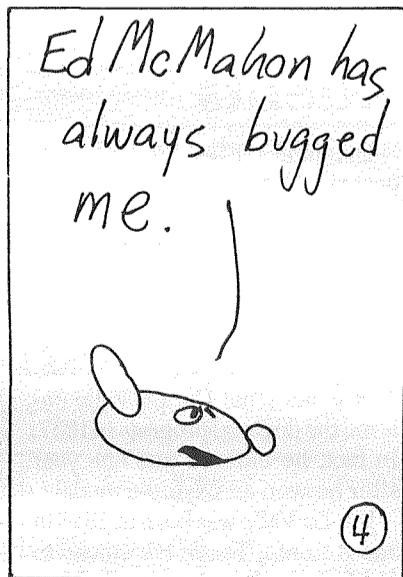
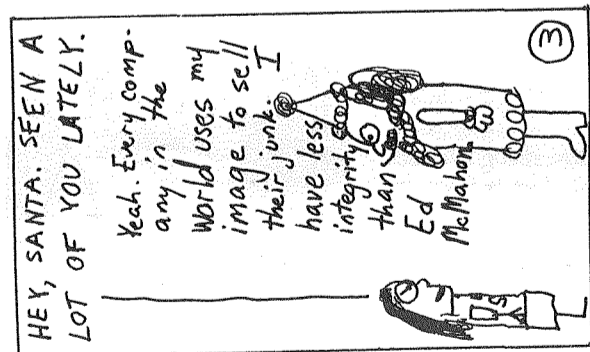
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MOMO-ANUGLY CARTOON  
BY MIKE B

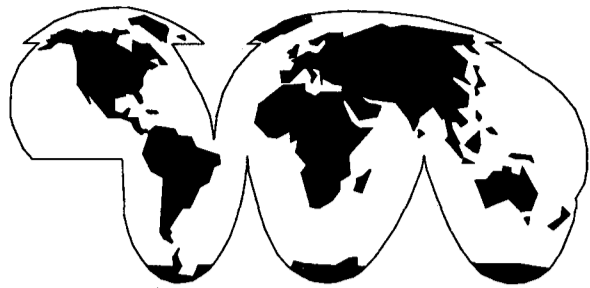


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# World News



by Michael Radford

## Afghanistan

Troops loyal to the former Communist government began shelling Kabul, the capital, on New Year's Day. Dozens of people have been killed. President Burhanuddin Rabbani accused Prime Minister Gulbuddin Hekmatyar, leader of the conservative Muslim resistance group Hezb-i-Islami, of conspiring with the communists to overthrow the government.

## Georgia

Ex-president Zviad Gamsakhurdia reportedly committed suicide in his compound in Dzikhaskari on December 31 after it was stormed by pro-government troops. Gamsakhurdia's nationalist, isolationist government was overthrown in 1992, when he was replaced by former Soviet foreign minister Eduard Shevardnadze.

## Kashmir

Representatives of India and Pakistan ended negotiations over the disputed Kashmir region on Monday. No progress was made, and there are no immediate plans for further talks.

## Mexico

The Zapatista National Liberation Army, an Indian guerilla group, began an armed rebellion in the state of Chiapas on January 1, the day that the North American Free Trade Agreement took effect. Hundreds of people have been killed, and the guerillas have allegedly captured a former state governor. The Indians said in their declaration of war that they are protesting Mexico's unfair economic policies, citing NAFTA as an example.

## Northern Ireland

Eleven stores in Belfast were damaged by IRA firebombs on New Year's Day.

## North Korea

North Korea is reportedly close to an agreement with the U.S. on international inspection of seven of its nuclear sites. U.S. officials fear that North Korea may already have enough refined nuclear material to manufacture a bomb.

## Russia

Vladimir Zhirinovsky, member of the Russian parliament and leader of the reactionary Liberal Democratic Party, returned to Russia last week after a ten-day "vacation" in Europe. He was denied entry to Germany because he would have "harmed state inter-

ests," according to German officials. Zhirinovsky advocates the re-occupation of East Germany. He was also expelled from Bulgaria after suggesting that president Zhelyu Zhelev should be sent to Siberia. World leaders are concerned about Zhirinovsky's rising power, as he wants to expand the Russian borders to include all of the historical Russian Empire, including Alaska.

A Russian airliner crashed outside Irkutsk on Monday, killing all 120 of its passengers and crew. One of its engines had caught fire.

## United States

A national controversy continues over radiation experiments performed on humans after World War II. The debate began when Massachusetts representative Edward Markey revealed that radioactive milk had been fed to residents of the Walter E. Fernald State School, a facility for the mentally retarded, without their consent as a part of MIT experiments on human digestion during the 40s and 50s. Disclosures of similar incidents, such as the irradiation of cancer patients at the University of Cincinnati during the 60s to determine safe levels for soldiers, have caused a widespread call for reparations to the subjects of the experiments. The Clinton Administration has not made a statement for or against such compensation.

Secretary of State Warren Christopher named Strobe Talbott as the new Deputy Secretary of State. Talbott had been serving as the ambassador to the states of the former Soviet Union, and has been a close friend of President Clinton since the two attended Oxford together. Talbott replaces outgoing Deputy Secretary Clifton Wharton.

Thomas P. "Tip" O'Neil Jr., former Massachusetts congressman and Speaker of the House, died on Wednesday night.

## Venezuela

At least 100 inmates were killed in a bloody riot at the National Jail of Maracaibo on Monday.

# Caltech Velo starts new year's racing season

by Michael Kantner

On Thursday, January 13 at Noon in Winnett Lounge, Caltech Velo, the Caltech Bicycle Club will be having its first meeting of the new year. In addition to the usual business, we will be organizing the racing team and training schedule.

The will be Caltech's second year of intercollegiate cycling. Last year we competed in several races, and performed well. This year we hope to do better.

There is collegiate racing for all levels, from beginner to Olympic caliber. The men are divided into four skill levels, and the women are divided into two. People can race in any level they desire. Races range from 12 miles to over 50, depending on skill level and race location. In the lower levels, the emphasis is on having fun.

The racing season runs from mid-February through April. There are

races every weekend, but members do not have to attend every race. Locations range from San Diego to UCLA to Santa Barbara. Caltech Velo arranges group transportation and reimburses most travel costs.

In order to race you need three things: a bicycle, a helmet, and to be registered at Caltech as a student (Undergraduate or Graduate). Of course, it does cost a small amount. Team dues are \$25 per year (for racers, less for club members who do not race). The team jersey (uniform) will cost about \$25. Each race will cost about \$6. However, it is a lot of fun, and you can receive P.E. credit for it, too.

If you are interested or would like more information, please come to the meeting. If you cannot make the meeting, please contact Michael Kantner at 395-4882 or e-mail cycling@cco.caltech.edu.

continued from page 1

## Lu Valle

team," recalled Lu Valle. "The first race I entered was two days later. They put me in the quarter mile, and I asked the coach, 'How do you run this race?' The coach was a bit of a joker, and he replied, 'Run as fast as you can as far as you can—then sprint!' Being rather gullible, I did. I nearly died, but I won."

In 1932, while an undergraduate at UCLA, he attended the Inter-Collegiate Amateur Athletic Association of America (AAA) meet in Boston. He won the quarter mile in 46.9 seconds; after that, he was established in collegiate athletics. In fact, by 1935, Lu Valle was the captain of the track team.

His academic career at UCLA was equally impressive. Besides being a straight "A" student, he was inducted into both the Phi Beta Kappa and Sigma Xi honor societies, and had a short story published in the *Atlantic Monthly* after winning a writing competition. By 1936, he had graduated with bachelor's degrees in both chemistry and mathematics.

Lu Valle's exciting life was off to a grand start, but his career was just beginning. He qualified for the Summer Olympics to be held in Berlin, Germany, less than six months after he was graduated. That year, at least two Negroes would confront the Nazi regime; Jesse Owens was a teammate.

## TONIGHT'S ASCIT MOVIE

*A Fish Called Wanda*

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---

Friday, January 7  
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\$1.50 for ASCIT members  
\$2.00 for all others

Next Week: Mystery feature

## Free Tickets for Caltech Students

The Borodin String Quartet will give a Coleman Chamber Music Concert on Sunday, January 16 at 3:30 P.M. in Beckman Auditorium.

Included in their program will be Brahms's Quartet in A minor, op. 51, no. 2; Schubert's Quartetsatz in C minor, op. posth., D. 703; and Tchaikovsky's Quartet in F Major, op. 22, no. 2.

Fifty free tickets to this concert are available to Caltech students with I.D. (limit two free tickets per I.D.). These tickets are available at the Caltech Ticket Office, located just north of the Beckman Auditorium parking lot, beginning on Monday, January 10 (subject to availability). Tickets are regularly priced at \$22.50, \$19.00, \$15.50, and \$12.00. Call campus extension 4652 for more information.



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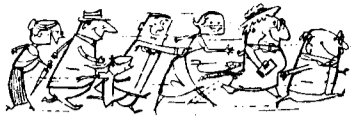
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# entertainment



## The Chairman shines through

by Michael Benedetti

When I first popped a copy of Frank Sinatra's *Duets* into my tape deck, I was worried. I'd always enjoyed Sinatra's work in the past, but I was concerned that he'd lost his touch. Frank had performed miserably in a recent TV special, and I had little hope for his new album.

Thankfully, my fears were unfounded. On *Duets*, Sinatra shines. Although his voice is not as strong as it was, and nowhere as smooth, his phrasing is better than ever. The album is full of classic songs, songs Sinatra has performed thou-

sands of times, and his familiarity with them really shows.

*Duets* is, of course, an album of duets with various pop singers, people like Barbra Streisand, Luther Vandross, and Julio Iglesias. Unfortunately, the skills of Sinatra's accomplices are not always up to his own. Charles Aznavour (on "You Make Me Feel So Young") has some trouble getting into the duet, and Aretha Franklin (on "What Now My Love") lets her towering talent collapse all over the song, getting in the way of the band and of Sinatra himself.

For the most part, though, the duets are excellent. Sinatra's pair-

ing with Tony Bennett on "New York, New York" is wonderful, and Bono (yes, the U2 guy) turns Cole Porter's "I've Got You Under My Skin" into high camp. The way his breathy moaning contrasts with Sinatra's jazzy vocals is priceless.

The only drawback to this album is that most (perhaps all) of the duets are not really duets. Sinatra first recorded the tracks with the band, then sent the tapes off to his partners for them to record their vocals. This arrangement prevents any real chemistry between the singers, leaving some of the tracks a little dry.

11 wins, 2 ties, no real losses.

## George Thorogood at the Wiltern December 4th

by Julius Yang

George Thorogood brought his own signature style of rock 'n' roll to the Wiltern in Hollywood on Saturday, December 4. Backed by the Delaware Destroyers, Thorogood played his way through more than a dozen high-energy boogies such as "House Rent Blues/One Bourbon, One Scotch, and One Beer," "I Drink Alone," and "Move It On Over," finishing with the encores "You Talk Too Much" and "Johnny B. Goode," the latter a blazing, seven-minute jam as the last song of the last night of his tour. Except for one period when he vanished offstage for a minute, the intensity of the show never let up, making most of the crowd stand up and boogie.

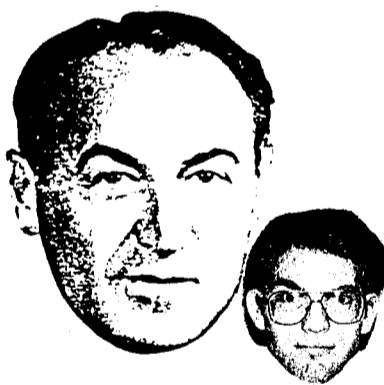
Though they've been around for more than fifteen years now,

Thorogood and his band still think, as he said during the show, "It sucks to be adult, huh?" His music reflects that attitude, being by turns raunchy, rude, fast, loud, and low-brow. But these are not flaws by any means—Thorogood demonstrated that a straightforward three-chord blues boogie could knock your socks off as easily as snappy jazz changes or a technically brilliant guitar solo. In fact, though he performed just as many stage antics as a Vai, he took only thirty seconds to whip through a series of screaming slide licks for his "solo." The rest of the time he was backed to the hilt by the amazing musicianship of the Destroyers.

Virtually every song on his *Live* album was performed at this concert except "Bottom of the Sea" and the then-encore "Reelin' and Rockin'." What I admired was that,

though this tour was ostensibly in support of his new album "Get a Haircut," Thorogood was not afraid to play only one or two tracks from that album, preferring to focus on his tried-and-true covers and bona fide hits like "Bad to the Bone" and "No Particular Place To Go."

Oddly, some of his stage patter was identical to that found on the *Live* album, substituting "L.A." for "Cincinnati." He made up for it by adding measure after measure of fiery slide to every song, doing guitar tricks, slumping in the audience, giving high-fives to the Destroyers—everything you can't get from an album. With the aid of the Wiltern's superb sound system and light show, George Thorogood lived up to his reputation as one of the best live shows ever.



## Bridge Without Sam

by Jeff Goldsmith

Grant

A few years ago I got corralled into playing a midnight Knockout team game when I really wanted to sleep. The bribe was almost sufficient until I found out that if we won, I'd have to do it again the next night. We did win, but fortunately, lost a close match the second night (against the McKenney winner). Happily thinking that this nonsense was over, I found out that the number of teams entered required a playoff for third place in order for a third team to make the overalls. When informed that this match was optional, acceptance was the furthest thing from my mind. It turned out, however, that our opponents-to-be were competing for the McKenney also, and felt strongly about the seven and a half masterpoints available to the winner of our match. I agreed to play under the following conditions: (1) The match was to be held between sessions (right now), (2) It was to be short, say seven boards, and (3) winner pays the entry fees. Their captain readily agreed to these conditions, and since he could only find six boards, shortened the match further. We lost and everyone was happy. The next day, the captain of the opposing team, Grant Baze, came up to one of us and explained that he was so grateful that we were willing to play and that the conditions suited him so well that he had intended to take us out to dinner. Since he was leaving town early that day, he gave one of my teammates \$100 to buy dinner for us instead. We decided to spend the money on pizza and ice cream for about 20 students and called the gift, of course, our Pizza Grant.

This year, Grant came to the Caltech-UCLA pro-am and I was able to play one hand with him. At IMP scoring, we were defending 1NT on the following hand:

♠ Q6		♠ 93
♥ J9765		♥ AK104
♦ A976		♦ 542
♣ A3		♣ J964
♠ J8754	W	♠ AK102
♥ 2	N	♥ Q83
♦ KQ83	E	♦ J10
♣ KQ7	S	♣ 10852

WEST	NORTH	EAST	SOUTH
Dummy	Grant	Declarer	Me
1♠	Pass	1NT	Pass
Pass	Pass		

I found the unimaginative lead of a small club, and the seven held in dummy. Grant won the second club and shifted to hearts. Declarer won this with the Ace and cashed the ♠Q. He exited with a spade to his nine and my ten. Not knowing the location of the ♠Q or ♠9, I continued with the ♥Q, since we needed a seventh trick from somewhere. Declarer happily grabbed this in hand, pitching a diamond from dummy. He then cashed his club trick, pitching the fifth spade, and led a diamond to the Jack, King and Ace. When Grant cashed the ♥J, dummy was squeezed. If he pitched a spade, my spades would be good and I could overtake partner's Queen and run the suit. We would get four spades, one heart, and two minor suit aces. Instead, declarer threw a diamond from dummy, so Grant cashed the ♠Q and continued with a diamond, forcing dummy to give me the last two with my ♠AK. A defensive stepping stone squeeze!

## Circulation Manager Wanted

The *Tech* needs a new Circulation Manager. The Manager is responsible for picking up the finished papers each week, bundling them for mail distribution, and delivering copies to the Houses. A car is required, and an undergraduate or graduate student is preferred. For salary information, etc., call Gavin Claypool at x6153.



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up and down that an *Inside World* will appear next week if we receive enough submissions.

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You are invited to the weekly *California Tech* staff meeting today at 12:15 in the Coffeehouse. Pizza will be served. Anyone interested in being World News editor or Photographer is encouraged to attend.

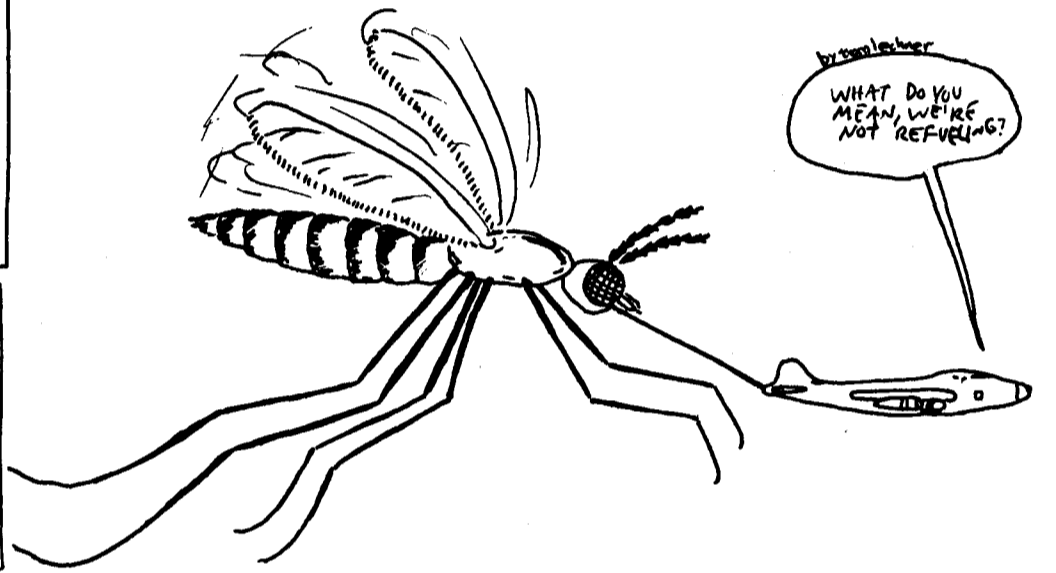
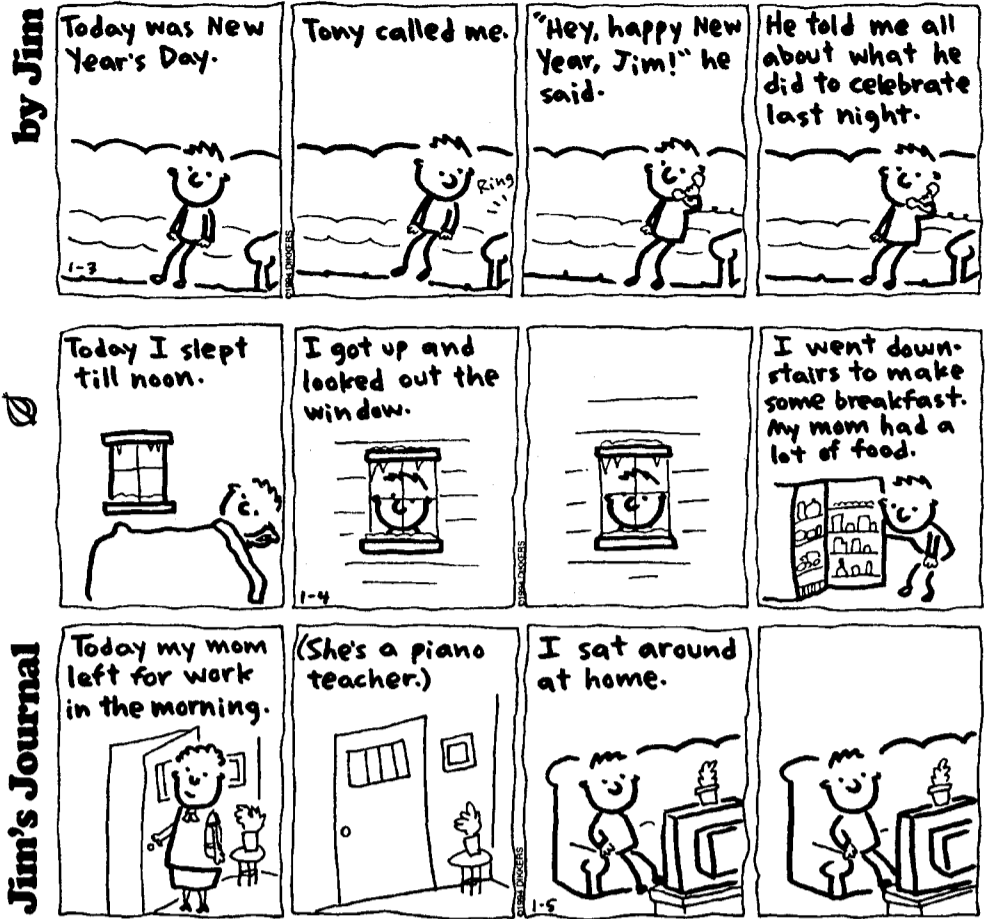
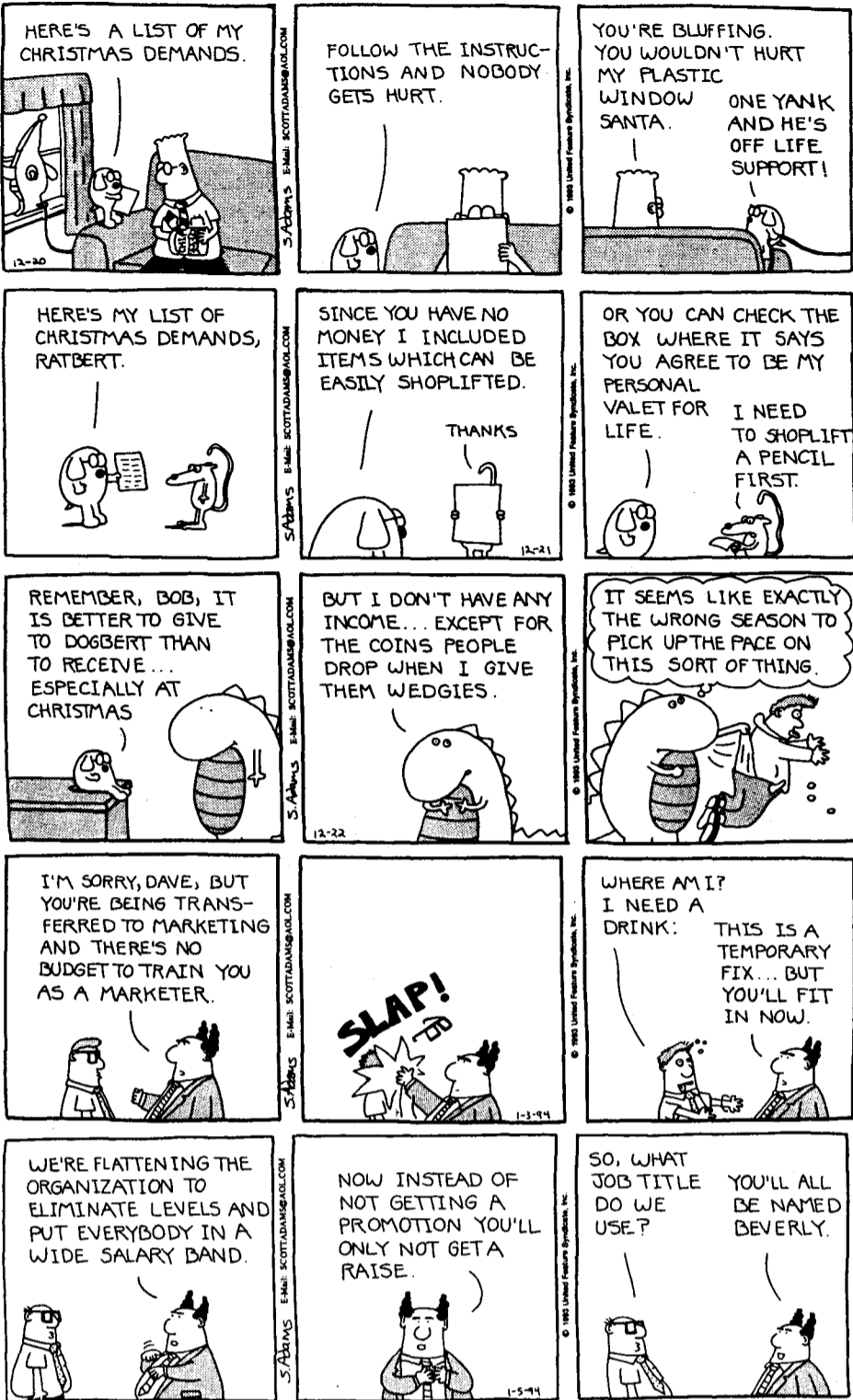
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We look forward to seeing you there!

McKinsey & Company, Inc., is an international strategic management consulting firm with 58 offices in 28 countries around the world. We serve mostly Fortune and International 500 company top executives on issues of strategic importance. Our mission is twofold: to help clients make substantial and lasting improvements in their performance, and to build a firm that is able to attract, develop, excite, and retain exceptional people.

Interviews will be held on February 15, 1994.  
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by Gypsy Achong

11/30 9:00 A.M.-1:30 P.M. \$80 was removed from a workstation in 287 S. Hill. The purse was located under a desk.  
 11/30 12:00 P.M.-12/2 2:00 A.M. \$70 was removed from a student's wallet in an unlocked desk drawer in Steele. The office is unlocked except at lunch time and after work.  
 12/1 4:10-5:45 P.M. A bicycle was removed from a stair railing in Blacker. The bike was secured with a chain and lock. \$175  
 12/5 11:30 A.M.-4:00 P.M. A bike was removed from the north side of Sloan. The bike was locked with a cable. \$200  
 12/6 9:00 P.M.-12/15 3:30 P.M. The rear tire of a bike parked on the east side of Ricketts house was removed. The bike was locked by the frame and the tire was of the quick release type. \$60  
 12/7 8:33-10:05 P.M. The right side passenger and rear side window of a car parked on Wilson in front of the Polytechnic tennis courts were shattered and some personal belongings stolen. \$509 (including cost of damages)  
 12/7 7:50-10:15 P.M. The passenger side window of a car parked on

Wilson in front of Polytechnic tennis courts was shattered. Some personal items were stolen. \$30  
 12/9 4:00-9:05 P.M. A motorcycle was removed from the north side of Braun lab. The bike was not secured with any security device other than the standard ignition switch. \$2000  
 12/10 3:00 P.M.-12/13 5:00 P.M. \$5 was removed from an unlocked desk in a locked office in Keck. There was no sign of a forced entry.  
 12/13 7:35 A.M.-12/15 11:30 A.M. Some electronic equipment was stolen from the Newman center in Winnett basement. There were no signs of a forced entry. \$975  
 12/15 2:45 P.M.-12/16 7:00 A.M. Some tools and personal belongings were stolen from the EE and APh Division machine room in Steele lab. \$528  
 12/17 1:00-4:40 P.M. A bike was stolen from the bike rack in front of Church. The bike was locked with a heavy chain and lock. \$180  
 12/27 7:05 A.M.-12:20 P.M. A Caltech security magnet was removed from a rented truck. \$70  
 12/30 7:25 A.M.-2:00 P.M. \$10 was removed from a purse in an unlocked cabinet in an office in Baxter.  
 12/30 7:50 A.M.-12:45 P.M. \$35 was removed from a purse under a desk in Baxter. The office was open and empty at the time of the theft.  
 12/19-1/2 Some jewelry was stolen from an apartment in 188 S. Catalina while the owners were away. A TV, VCR and stereo were left untouched. \$5000  
 1/3 5:30-6:15 P.M. Items were stolen from the trunk of a car parked on Wilson near the cooling towers. \$410  
 1/3 9:00 A.M.-1/4 10:00 A.M. A bike was stolen from a closet in Page. The closet was unlocked. \$450  
**Six week total: \$10,787**

## Stewart's A Christmas Carol returns to Caltech

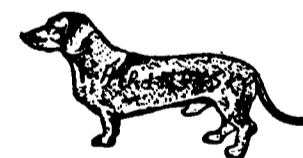
by Michael Kantner

After most students had left for winter vacation, Patrick Stewart, also known as Captain Picard on *Star Trek: The Next Generation*, gave two performances of Dickens's *A Christmas Carol*. This one-man show was previously performed on Broadway, where he won the Drama Desk Award for Best Solo Performance (1992). As expected, the performance at Caltech was entertaining.

With a small assortment of stage furniture, he created just enough visual clues to differentiate scenes. By changing his voice and body language, he changed characters. Sound effects were accomplished with a foot stomp or two. Within minutes, he created a little world in the audience's imagination.

He seemed equally comfortable on a bare stage as when travelling warp 9 through to the edges of the universe. It was a refreshing change from shows that dazzle with technology or dangerous stunts. He entertained with his talent, the ability to make one believe, for a short time, that they are not in a theater, but somewhere else.

Caltech Public Events puts on many shows and concerts at Beckman Auditorium. Students, with valid Caltech ID, can purchase tickets (one per I.D.) for half price on the day of the show, or on Friday for weekend shows, from the ticket office, located north of the Beckman Auditorium parking lot. Upcoming events include Masters of the Banjo on Saturday, January 8th. Call campus extension 4652 for more information.



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continued from page 8

### Events and Notices

agency, and show evidence of need. For an application and detailed instructions, send a self-addressed envelope to: The American Women's Club in Sweden; Scholarship Foundation; P.O. Box 12054; S-102 22 Stockholm, Sweden. The deadline for requesting the application is March 15, 1994. Completed applications and supporting documents must be received by April 15, 1994.

Applications for the following fellowships are available from Lauren Stolper, Fellowship Advisor. Please drop by her office in Lloyd House in the International Student Programs Office or call x2150 to have an application sent to you or to ask a question.

The Department of Defense National Defense Science and Engineering Graduate Fellowship Program (NDSEG) supports those who will be entering or are at the beginning of doctoral level study in one of the following fields: aeronautical/astronautical engineering, biosciences, chemical engineering, cognitive/neural/behavioral sciences, computer science, electrical engineering, geosciences, industrial engineering, materials sciences/engineering, math, mechanical engineering, naval architecture and ocean engineering, oceanography, physics. Applicants must be U.S. citizens. Awards are made for up to 36 months of study. January 19 deadline.

The Office of Naval Research Fellowship is part of the DOD packet described above. ONR fellowships are limited to U.S. citizens who have not yet started graduate school. Doctoral study in the following areas will be supported: electrical engineering, math, physics, chemistry, computer science, materials science, engineering mechanics, biological & biomedical sciences, cognitive & neural sciences, naval architecture & ocean engineering, and oceanography. January 19 deadline.

The U.S. Air Force Laboratory Graduate Fellowship Program is also included in the DOD packet or a separate application form can be used. Applicants must be U.S. citizens who will have earned a B.A./B.S. by September of 1994 and have not as yet begun graduate school. Up to 36 months of doctoral study within up to 5 consecutive years may be supported. Study in the following disciplines will be supported: aeronautical/astronautical engineering, behavioral sciences, biomedical engineering, chemistry and chemical engineering, computer science & modeling, electrical engineering, geophysics and meteorology, industrial & civil engineering, life sciences, biology & biophysics, materials science, ceramic engineering & metallurgy, math, mechanical engineering, and physics. January 19 deadline.

The Nuclear Regulatory Commission Graduate Fellowship Program supports advanced study and practical work experience in health physics, nuclear engineering, instrumentation/control systems, materials science/engineering, metallurgy, and artificial intelligence and expert systems for use in human factors. Participants must work at NRC for at least 9 months prior to beginning their fellowship and must for 4 years following the completion of a 2 year Master's program. The application deadline is January 21.

The Rotary Scholarship funds one year of graduate or undergraduate study abroad. Applicants must be at least juniors to apply. (Juniors would go

abroad the fall following their senior year or spring if applying to a Southern Hemisphere country.) International students may apply but may not study in the U.S. if applying through the Pasadena Club or in their own country of citizenship. Applicants may apply to any country having a Rotary Club in it. This covers most countries. Some notable exceptions are Cuba, Bosnia, and Mainland China. Applicants most come from a country that has a Rotary Club. Applicants may not be Rotary members or employees or immediate relatives of such. Awards for the 1995-96 year will be worth over \$20,000 plus round-trip travel. Applicants must be able to speak at the intermediate level at least the language of their proposed

host country. The application deadline is February 1 and all materials should be submitted to Lauren Stolper, Rotary Scholarship Advisor.

**Work Abroad**—The Council on International Educational Exchange (CIEE) can help students attending college full time in the U.S. to set up work permits in Ireland, France, Britain, Germany, New Zealand, Canada or Costa Rica. A fee of \$160 is charged to set up your permit. You can prearrange a job in advance, for example go through faculty contacts to get a research position abroad, or use the job listings when you reach your destination. You must speak the host country's language at the intermediate level for France,


Germany, and Costa Rica. Depending on the country you may work for the summer or for up to six months. All countries allow the summer work option.

**International Work Camps**—The Council on International Educational Exchange can help you locate one or more work camp experiences in one or more of 22 countries throughout the world and including the U.S. You'll receive room and board in exchange for 30 to 40 hours of work per week. Work camps usually bring 10 to 20 volunteers together to work for 2 to 4 weeks on a community or environmental project.



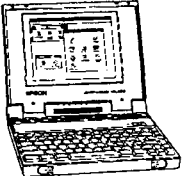

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**RATES** . . . . . \$4.00 for first 30 words; . . . . . 10¢ for each additional word. Send written ad with payment to 40-58. Deadline is 6 p.m., Monday before issue. No charge for on-campus lost & found.

\* Note: asterisks denote new announcements.

## Notices

**\* PA 30b Choral Music**—Though this course was inadvertently omitted from the second term schedule, choral music is alive and well and there is still opportunity to perform this term, and sign up for PA 30 credit. The Men's and Women's Glee Clubs will be presenting the Fauré "Requiem," one of the most beautiful settings of this expressive text. Any member of the Caltech community interested in performing this work is invited to a rehearsal this weekend to be held at the home of ME professor Fred Culick. The rehearsals for women are on Friday night, January 7, from 7-9 P.M., and Saturday, January 8, from 9 A.M. to 4 P.M. Men are invited to join us at noon on Saturday for lunch and for the afternoon rehearsal. Lunch, scores, and directions to the rehearsal will be provided for all who RSVP TODAY to Monica Hubbard at 797-5912. Be sure to leave the phone number(s) where you can be reached! Subsequent rehearsals are on Monday evenings from 7:30-9:30 P.M. and Wednesday afternoons from 5-6 P.M. New singers will be accepted in both groups through January 12. Just show up (women in SAC 1, men in Beckman Basement) if interested. The performances will take place on Friday, March 4 on campus and on Saturday, March 5 at Loyola Marymount University. For more information, call x6260.

**\* Guitar Classes at Caltech**—Guitar classes for the winter quarter will meet on Tuesdays starting on January 11 in Room 1 of the Student Activities Center (SAC) as follows:

Beginning Guitar Class 4:30-5:30 P.M.  
Intermediate Guitar Class 3:00-4:00 P.M.  
Advanced Guitar Class 5:30-6:30 P.M.

Classical and Flamenco repertoires are explored but techniques transfer to other styles of guitar. The Beginning Class includes a jazz/folk chord system. Classes are free to Caltech students and other members of the Caltech community (space permitting). Undergraduates can receive 3 units of credit if they choose. Private instruction on any level can also be arranged. The instructor, Classical Guitarist Darryl Denning, has an international background in performance, teaching, and recording and can be reached at (213) 465-0881.

## Events &amp; Services

**\* Building Self Esteem**—A group focusing on building Self Esteem will be offered to undergraduate students beginning January 26, 1994. The purpose of this 8-week-long group is to help students examine the nature and development of self esteem. What prevents a person from feeling "good enough" and strategies for developing stable and enduring self esteem will be explored. The group will meet on Wednesdays from 3:30-5:00 P.M. Group membership is limited. Those who would like to participate in the group's first session

**\* Gay, Lesbian & Bisexual Support Group**—Meets the first and third Tuesdays at 7:30 P.M. 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 (818) 395-8331.

**\* Adults Molested as Children Group**—This is an ongoing group for undergraduate and graduate women at CIT who were molested as children. The group is designed for women who experienced any form of incest which could include family members or other caregivers physically, emotionally and/or verbally sexualizing the

relationship with them in childhood or adolescence. The group will provide a safe and confidential setting in which to explore the issues of trust, self-esteem and intimacy. Each group member needs to meet with the group leaders for pre-group interview in January; the group will begin in February and will meet at noon on Tuesdays from noon to 1:30 P.M., in the Health Center Lounge. For more information or to schedule a pre-group interview, please contact Aimee Ellicot, Ph.D. or Jenny Butler, Ph.D., at (818) 395-8331.

**\* The German Film Series** continues for the Winter term with an "Introduction to Silent Films" on January 13, 1994. Featured will be numerous movie samples representing the era of silent films. This will be presented in Baxter Lecture Hall at 7:30 P.M. and is free of charge. For more information, please call 395-3610.

**Caltech Alpine Club "Sit and Chat"**—Bring a sack lunch to the patio outside the north end of Keck Laboratory on Wednesdays from 12 to 1. Talk about mountains, the weather, and outings, past and future.

**Caltech Velo**—The Caltech Bicycle Club will meet Wednesday, December 8 at noon in room Winnett Lounge. The club organizes all types of rides, both road and off-road rides, for all skill levels, from novice to advanced, including collegiate racing. All cyclists are welcome. We lead the following weekly rides, all meet in front of Winnett Lounge:

Tuesday, 11:30 A.M.: 10 to 15 easy miles  
Wednesday, P.M.: off-road ride, times vary  
Friday, 8:00 A.M.: women only road ride  
Saturday, 10:00 A.M.: off-road ride

Rides leave at the time listed, so please arrive a few minutes early. For more information, contact Michael Kantner at x4882 or e-mail to cycling@cco.caltech.edu

**Friday Prayer**—Prayers organized by Caltech Muslim Students are held in the Caltech Y lounge at 12:15 P.M. every Friday.

**Mass**—Catholic campus life includes Mass on Sunday at 10 A.M. (Winnett Lounge) and on Thursday at 8:15 A.M. (Y Lounge), Rosary at 11:15 A.M. daily in Winnett 1A, and various spiritual development groups and study circles. For more information contact Fr. Brian Wilson at x6212.

**Bible Study and Discussion**—Every Wednesday at noon in the Y lounge. Bring your own lunch. For more information call Mike Gerfen at x4886.

**OpenLine**—A group made up of students, staff, and faculty from many different departments on campus, and from a variety of ethnic and cultural backgrounds. We are both an action group and a discussion group. Our agenda is very flexible and is solely determined by what people in the group suggest. Drop by any meeting and say hello! We meet from noon to 1 P.M. on Tuesdays in the Y Lounge (2nd floor Winnett, feel free to bring your lunch!). Remember, we always welcome new people, at any time of the year. Hope to see sometime! For more information contact Gary Mines at x6542 (gam@xhmeia.caltech.edu).

**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 A.M. For more information call 952-1631.

**Israeli Folk Dancing**—Sundays in Winnett lounge. Beginning instruction starts at 7:30 P.M., 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 P.M. 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 P.M. in Dabney Lounge. The performance is open to the public and free of charge. Feel free to come late or just skulk. For more information call x6353.

**Open House**—The office of International Student Programs (ISP) would like to invite international students, scholars, and the Caltech community to coffee, tea, and conversation every Wednesday from 4-6 P.M. Take a break and relax with friends at ISP (Lloyd House on the Olive Walk).

## Lectures &amp; Seminars

**James Michelin Seminar Series**—Morton Subotnick of the California Institute of the Arts, will lecture on "The Challenge of Non-Linear Interactive Media in Creating Music". Subotnick is one of this country's premier composers of electronic music and an innovator in works involving instruments combined with other media, including interactive computer music systems. Most of his music calls for a computer part, or live electronic processing; his work utilizes many of the important technological breakthroughs in the history of the genre.

This lecture, the first in an on-going series, augments the James Michelin Distinguished Visitor's Lecture series. Both are designed to foster a creative interaction between the arts and sciences.

**Science, Ethics, and Public Policy Seminar**—Dr. James Patterson, Professor of History, will lecture on "Cancer Phobia in Modern American Culture" on Monday, January 10, 1994 at 4:00 P.M. in the Judy Library (110 Baxter). Refreshments will be served.

## Scholarships, Internships, &amp; Competitions

The National Research Council will award **Ford Foundation Postdoctoral Fellowships for Minorities**. There will be about 25 awards sponsored by The Ford Foundation. The competition is open to scientists, engineers, and scholars in the humanities who are citizens of the United States, members of a designated minority group, and are preparing for or already engaged in college or university teaching, and who hold the Ph.D. or Sc.D. degree. Fellowships will be of one year duration, and will be made in the behavioral and social sciences, humanities, engineering, mathematics, physical sciences, and biological sciences, or for interdisciplinary programs composed of two or more of the above disciplines. Awards will not be made in professions or areas such as fine arts, education and similar fields. The fellowship provides postdoctoral research experience at a non-profit research or higher educational institution of the Fellow's choice. **Deadline for submission is January 7, 1994.** Info: Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, D.C. 20418.

**The Dupont 1994 Plunkett Student Awards for Innovation with Teflon**—These awards will go to the best examples of student innovation in fluoropolymer technology, with total prizes and scholarships of more than \$30,000. Winning en-

tries must demonstrate both innovation and potential for commercialization that can open or expand markets for fluoropolymers. Students are required to submit a prototype, or a paper on a reducible-to-practice application, both with supporting information, using either Teflon® or Tefzel® fluoropolymer resins. The first place winner will be offered an option: a summer internship, valued at approximately \$10,000 in DuPont Fluoropolymers, or a \$3,000 cash award. Second and third place awards will be \$2,000 and \$1,000, respectively. Ten honorable mentions will receive cash honorariums. Additional money will also be given to faculty sponsors, schools, and customer fabricator advisors. Teams or students may enter, and faculty sponsorship is required. **The deadline for submitting entries is January 14, 1994.** Info: 1 (800) 432-7536, or write The DuPont Plunkett Student Awards, Suite 550, 400 North Capital Street, N.W., Washington, D.C., 20001.

**Fritz B. Burns Prize in Geology** in the Division of Geological and Planetary Sciences, California Institute of Technology—Undergraduates in the Division of Geological and Planetary Sciences are encouraged to apply for the Fritz B. Burns Prize in Geology. The award(s) will be made for amounts up to \$1,500 for the best proposals for undergraduate research in the fields represented by the Division. If you are interested in this opportunity, please write a short statement (less than one page) describing the research you would like to do. Selections will be made in January 1994. The proposed research can be loosely or closely tied to that of a Division faculty member. **Submission deadline: January 14, 1994.** Send proposals to: PROFESSOR KERRY SIEH, Divisional Academic Officer, Division of Geological and Planetary Sciences, Mail Stop 252-21.

**Visit China**—The Durfee Foundation invites Caltech students, staff, faculty, and recent alumni (those who have earned degrees in the last seven years) to apply for funds to support up to a year of travel, study, or exploration in China. Proposals that reflect a personal interest and vision related to China will be accepted between now and June 1995. The program is looking for projects in the range of \$3,000 to \$20,000 which will run no longer than one year. For further information and a brochure, contact Caltech's Office of Foundation Relations (x3969).

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

**\* The Institute of International Education** is pleased to announce the National Security Education Program for undergraduate scholarships for the 1994-95 academic year. Please contact Barbara Green in the Dean's Office at x6351 for details.

**\* The Chinese-American Faculty Association of Southern California** is awarding several scholarships in the amount of \$500 each. Undergraduate students who are interested in Chinese cul-

ture who are currently enrolled in an institution of higher learning in Southern California, scheduled to graduate after May, 1994, and have completed 12 quarter units or 8 semester units with a GPA of 3.5 or above are encouraged to apply. To receive an application please write to: Professor Otto H. Chang; 6742 N. Chason Way; San Bernardino, CA 92407. **Completed applications must be postmarked no later January 15, 1994.**

The **National Academy for Nuclear Training** is beginning its competition for scholarships for the 1994-95 academic year. Scholarships are available to U.S. citizens who are pursuing a bachelor's degree in nuclear engineering, power generation, health physics, or mechanical, chemical, or electrical engineering with a nuclear or power option, and who are beginning their sophomore year. Preference will be shown to students considering careers in the nuclear power industry. Applicants must be enrolled full-time and a minimum GPA of 3.0 is required.

**\* CELSOC (Consulting Engineers and Land Surveyors of California)** has begun its competition for the Engineering & Land Surveying Scholarships for the 1994-95 academic year. To qualify, a student must be a U.S. citizen pursuing a bachelor's degree in an ABET-approved engineering program or an accredited land surveying program. Students must have entered their junior, senior, or fifth year in the fall of 1994 to qualify. **Applications are due by February 14, 1994.**

The **American Meteorological Society** has eleven (11) undergraduate scholarships available to students who will be entering their junior year in 1994-95. Students who are enrolled, or planning to enroll in a course of study leading to a bachelor's degree in the atmospheric or related oceanic or hydraulic sciences may apply. Also students who enrolled in a science or engineering program who can demonstrate a clear intent of pursue a career in atmospheric or related oceanic or hydraulic sciences may apply. Application forms are available by writing to: American Meteorological Society; 45 Beacon Street; Boston MA 02108-3693; Attn: Industry Undergraduate Scholarship Program. Or call (617) 227-2425 extension 235. Applications are available through January 31, 1994. **Complete applications with all attachments are due February 14, 1994.**

The **Marin Education Fund** is announcing the opening of their 1994-95 grant application process. To qualify for a grant, a student must be a Marin County resident, have low to moderate income, and be enrolled at least half-time in an approved undergraduate degree. Applications are available by calling the Marin Education Fund at (415) 459-4240. **Applications must be postmarked by March 2, 1994.**

The **American Women's Club in Sweden** announces that a travel grant will be awarded for study and research in Sweden. To qualify students must be an American citizen who is female, age 18 or over, accepted for a period of study or research at a Swedish educational institution of

*Because of the large number of announcements this week, the Events and Notices section is continued on page 7.*



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