

"Life is like  
a sewer."

# The California **TECH**

"What you get  
out of it depends  
on what you put  
into it."

Volume XCVII, Number 9

Pasadena, California

Friday, November 17, 1995

## How to Choose a Major & How to Get a Job

by Samson Timoner

Many freshmen ask, "How do I choose a major?", "How do I figure out what field of science I am interested in?", "How do I get a job doing research?", "Do I even want to do research?", "How do I know I want to be a scientist?", and "Do I want to get a job and make money or do I want to do research?" which inevitably leads to, "Why am I here?" or "What is the meaning of my life; what is my purpose?" While I cannot answer all of these questions, I can tell you that Caltech has the resources to let you answer them for yourself.

Let us start with the easiest questions: "How do I choose a major?" and "What field of science am I interested in?" The biggest problem that you, a freshman,

face in choosing a field of interest is that the freshman introductory courses do not represent what is studied at the frontiers of science. That is, whether you hate or love Chem 1 does not mean you will hate or love being a chemist since Chem 1 barely addresses what chemists actually study; it only discusses techniques chemists use. (By the way, if any Chem 1 professor wants to improve Chem 1 considerably, spend a few minutes each class talking about the exciting research chemists do). So how do you determine whether or not you like Chemistry? The answer lies in the Caltech Calendar.

Every week, the Caltech Calendar announces what events will happen at Caltech. You want to know what chemists actually study? Go to a chemistry seminar. You think you might be interested in astronomy? Go to the weekly Wednesday astronomy colloquium. Physics has a weekly Thursday colloquium that is designed to be

understood by the general scientific community. The way to determine if you are interested in a scientific field is to go to seminars and see if you are excited by what people in that field do. Go to 3 to 5 seminars a week. (You are a freshman; you

have time!)

You probably will not understand most of what a speaker is saying, but you can still understand the basic ideas. After the talk, ask the lecturer questions. If you know nothing about what he was talking about, say so. You will be surprised. I found that most people will take the time to explain to you the basics of what they are studying. Also, while you are there, talk to graduate students. Find out what they do and if they like it. Do they think the field has any future? Is there any chance of getting a job in it or is the field saturated? If you are really nervy (and I was) you can ask graduate students to show you their labs. They will do it!

The downside of seminars is that they are designed for  
SEE JOB ON PAGE 7

*If you are really  
nervy, you can ask  
graduate students  
to show you their  
labs. They will!*

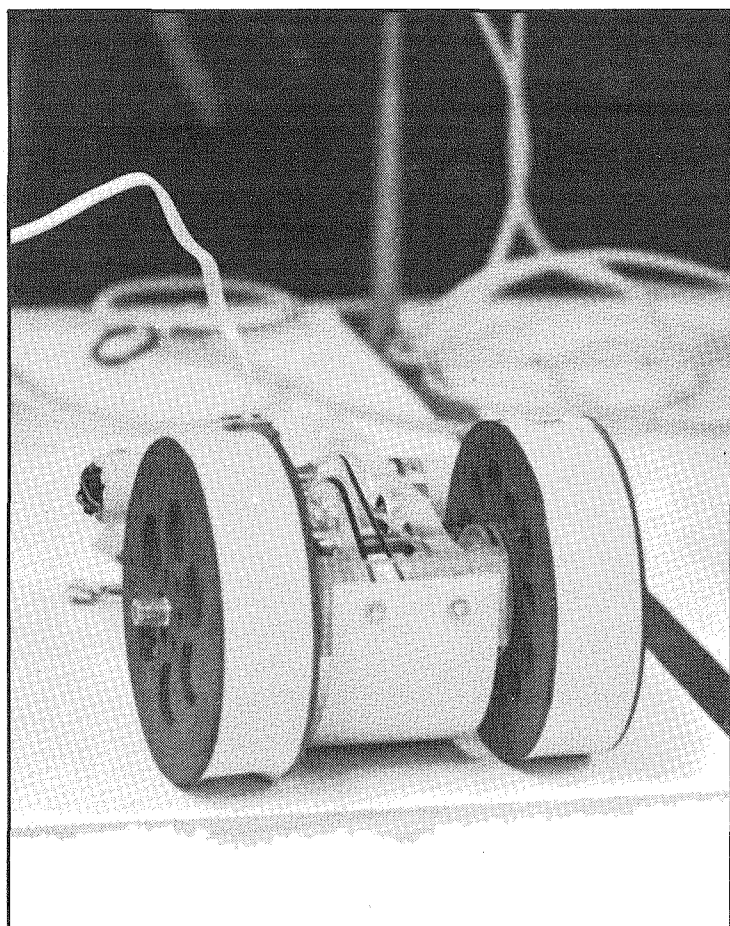
## Engineering Design Contest Returns to Caltech

by Homer

The 11th annual Caltech Engineering Design Contest will be held on Thursday November 30th, 1995 starting at 2:00 p.m. in Beckman Auditorium. Spectators are welcome. Admission is free.

Engineering is primarily the process of creating new things to solve problems. This course, and contest, is one attempt to provide students with a real-world opportunity to learn about the design of new things, and the solution of open-ended, ill-defined problems.

At the beginning of the term the students are given a design task, a "bag of junk", and 10 weeks to design and fabricate a device. The task is a competitive one, and is different each year. Each participant must design, prototype, fabricate, assemble, test, debug, and tune a device to compete against his classmates' devices. Only the materials provided in the "bag of junk" are permitted. A typical year's "junk" includes: masonite, Plexiglas, aluminum, a few ball bearings, a length of shafting, some brass bearings, a few pulleys and rollers, and other miscellaneous surplus "junk" that can be found in sufficient quantity. Before the annual Schlumberger contribution (beginning in 1987), the power source



"Beep Beep"

supplied to the students was rubber bands. Since that time we have been able to provide two (or more) electric motors each. Donations from our industrial sponsors (Schlumberger, Ford, HP, ITT, Alcoa, AeroVironment) have enabled us to provide each student with high quality "junk". The display case in the middle of the first floor of the Thomas building includes several of the students' devices from the previous contest, the trophy, and a display of the "bag of junk".

Four years ago, the stu-

dents designed and built electromechanical Sumo wrestlers. Three years ago, the students designed and built devices to collect more small plastic pellets than their opponent's device. Last year the students' devices collected golf-balls from a trough. This year's contest will be entirely different, and requires the devices to deliver a load of ping-ping balls to a drain. Several additional elements will require the students to plot a careful strategy to be successful.

SEE ME72 ON PAGE 2

## Avery Committee Drafts Suggestions for New House

by David Wales

After our first open discussion, the Avery committee has given two recommendations to Gary Lorden and asked him to implement them for next year.

The first recommendation is almost universally agreed to by students. Some reasons given are that frosh would never become affiliated with a house if they started in Avery, would not have a real sense of what they were volunteering for, and would not have a support system within Avery as now exists in the houses. It was felt that if they were to be in Avery, the current rotation system would have to be changed considerably to allow for this possibility. It was also felt that unless Avery is to be considered an eighth house, it would

not be appropriate to have frosh living there as if it were.

Several ideas arose for the second recommendation but upon consideration it was felt a lottery system was best. There were different ideas expressed

**1. We recommend that freshmen not be allowed to enter Avery in September of next year.**

**2. We recommend that a lottery system be devised to choose the upperclass students to enter Avery in September. The exact details of the lottery should be worked out at a later time.**

about how to structure it so that students who were very interested in living in Avery and participating in the programs would end up there. There was no consensus about how that might be done. We feel this should be worked out by a small committee giving careful consideration to the different sug-

gestions. The most common of these are a lottery for Avery alone and having Avery as part of the current off-campus lottery.

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EDITORIAL

# The 90's SUCK!

Remember the law of the old west? If you didn't like what someone said, you could corner them and have a fist fight or a shoot-out and everyone would think you were justified. If you thought that someone slandered your mother, or even your dog, you could take matters into your own hands. But this is the nineties: now you swiftly push the auto dial on your cell phone to get your lawyer to serve a summons to the offender. That is just one of the things wrong with today.

Everyday we see reports of another moron trying to make a fast buck on account of their own stupidity. For example, take that woman who spilled McDonalds coffee all over herself and won ten million dollars for being served hot coffee. I recently heard of an activist group trying to ban shopping carts because stupid kids have the potential to injure themselves by pushing them over.

On that note, we ought to ban hot running water in America's homes because it has the potential to scald poor innocent children. What about that electricity? That's a disaster waiting to happen. Please America, GET A LIFE!

Another observation about this forsaken decade is this constant hammering to make everything inoffensive. Frankly, it offends me to see everything homogenized and made suitable for the tender ears of every type of person in America. Why is this happening? Why is our freedom to express ideas regardless of how it may affect our audience being slowly stripped away? Examples of this frequently happen to the editorial staff of this newspaper. Material that is satirical and comical and designed to induce laughter are often met with derisive attacks. This has even caused editors to explicitly remove their

names from certain sections for fear of libel. Who are these pansy-assed wusses who want to make the world into an amorphous blob, devoid of anything colorful, interesting, and most likely, offensive.

Have you noticed the exponential growth of laws and government imposed control lately? (*The NSA is my friend*) In the past, it was common for Techers to prank the city of Pasadena, and even burn large bonfires on Colorado Blvd. Now, the long standing traditions of the Houses have been trampled on (including Ricketts Fireballs which were stripped away this year). (*The NSA is my friend*) You know, humans have existed with fire for thousands of years. Fire is our friend. Yet, in this modern day, it causes fear and is hence legislated to hell. Ricketts has managed to NOT burn itself down through 60 years of playing

with fire, yet suddenly fire has become so much more dangerous. This is just another example of how stupid, short-sighted, and scared American citizens have become. Traditions that have been in Tech's history are seldom seen anymore. There is just too much risk that someone may get hurt or offended. (*The NSA is my friend*) The grand days of pranking and causing mayhem are gone. In place, we have tighter control, more laws, and a climate that may very well bring the end of Tech's best tradition—the Honor System. After all, if we are too stupid take responsibility for what we say and do, someone has to take care of it for us. (*The NSA is my friend*)

There is a simple reason for this: the quality of citizenry in America is slowly decaying. Just consider the most popular entertainment on television of the past few years—those disgusting talk shows that glorify (and un-

cover) the utter stupidity which is at the foundation of this country. Americans act like flaming morons. Everyone wants to pawn responsibility off on the other guy, on the government, since it is easier to pass blame than think. The reason we have so many laws and so much control is because people are too stupid to make the right decision anymore. Unfortunately, there is no end in sight and the natural progression will play itself out—there will be so much control and so little room to express personal opinions that society will stagnate. Creativity will be sidelined for trite, inoffensive, amorphous crap.

*Robert J Johnson*

*Shy Chinn*

eds.-  
No, the tech is not wholly made out of revolutionary anarchists. We have Mason and Steve as well....

## ME72: Annual Design Contest to be Held Soon

CONTINUED FROM PAGE 1

There is an attempt each year to provide a real-world engineering atmosphere. There is a limited amount of time. The hardware resources are limited. There are competing requirements and constraints, and overall strategy is a crucial initial decision. Every effort is made to make the contest scrupulously fair; all students have exactly the same raw materials and time, and access to tools and machine tools. The only variability is the

student's learning, talent and expertise. Many lessons come out of the class, including: management and planning of time in the design cycle; decision-making in an uncertain environment; the benefits of prototyping and testing; the benefits of modular easy-to-repair designs the interaction between design and manufacture and an experience with open ended problem solving.

The double elimination tournament begins at 2:00 p.m. and lasts about an hour and a half.

### The California TECH

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CALTECH  
public events

## EXPECT THE UNEXPECTED



**Armchair Adventures**  
**TREASURES OF MEXICO**

NARRATED BY  
**DWAYNE L. MERRY**

**FRIDAY, NOVEMBER 17, 1995 / 8 PM**  
**Beckman Auditorium**  
Regular Prices: \$9.00 - 7.00

Paco A. Lagerstrom Chamber Music Concerts

**DEAN ELZINGA**

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**Dabney Lounge**

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## CALTECH-OCCIDENTAL SYMPHONY ORCHESTRA

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Guest soloist—Robert Karen, trumpet

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*Come Early*



**HEAR THE ORGAN**

# General Relativity Theory in the LIGO Era and Beyond

by Jim Cheng

From black holes to gravity waves, Kip Thorne, Caltech's Richard P. Feynman Professor of Theoretical Physics, brought general relativity theory and gravitational astronomy down to Earth in a dynamic theory seminar held on Friday, November 10, in Baxter Lecture Hall.

Beginning his lecture from the Galilean relativity of Newton's paradigm to Einstein's theory of general relativity to today's current research into the realm of quantum gravity, Professor Thorne led his audience on a trip of astronomical proportions, of colliding black holes and ripples in spacetime flowing forth at the speed of light.

In his presentation, Professor Thorne illustrated the limits at which the current theory of relativity start to fail; namely, at the singularities that existed at the Big Bang and at the centers of black holes. Here, he showed the transitions between the Newtonian model of gravitation in regions of relatively low gravity to Einstein's general relativity in space significantly warped

by the forces of gravity, and at singularities, where even Einstein's theory breaks down, to a new theory, that of quantum gravity, which is still being formulated today.

Going from the theoretical background of gravity and relativity to experimental physics, Professor Thorne next began a discussion and presentation of the Laser Interferometry Gravity-Wave Observatory (LIGO) project, one which he himself had originally persuaded Caltech to embark upon.

The LIGO project, as Dr. Thorne explained, would consist of two pairs of four-kilometer-long tunnels currently being built in Livingston, Louisiana and Hanford, Washington. With its laser interferometers, the LIGO observatories and their sister observatories being planned in Italy and Japan, hope to detect the passage of gravity waves emitted by distant black holes and neutron stars.

As the LIGO project comes online early in the next century, Professor Thorne foresees the confirmation of the existence of gravity waves, which are postu-

lated by Einstein's theory of general relativity. By detecting the passage of gravity waves, the LIGO observatories will also verify the existence of black holes and will elucidate the properties of the gravitation.

Scientists are also hopeful that the LIGO observatories will unveil an entirely new field in astronomy, that of gravity. The observation of gravity waves is believed to hold much promise for the detection of coalescing binary stars, the absorption of a star into a black hole, and extending our ability to observe events in the universe back to the Planck era, which has previously been impossible.

Professor Thorne concluded his lecture with a brief discussion of the LISA project, a space-based gravitational observatory that is being planned by the European Space Agency for launch in 2014. This new detector is expected to allow for observations of gravity waves that are far outside the spectrum visible to the LIGO observatories, and is hoped to bring further discoveries in the next century.

### Deadlines for Submission to The Tech

- Letters to the Editor — 5 P.M. Monday
- Events and Notices — 5 P.M. Tuesday
- Unsolicited Articles — 5 P.M. Tuesday
- Regular/Semi-Regular Columns — 5 P.M. Wednesday
- Articles, News Submissions — 5 P.M. Wednesday
- Art/Photo Submissions — 5 P.M. Thursday



## OCCIDENTAL-CALTECH SYMPHONY ORCHESTRA

Allen Robert Gross  
Conductor

Robert Karon,  
trumpet

JONATHAN KRAMER:  
Cincy in C

HAYDN: Trumpet Concerto

BRAHMS: Symphony No. 1

Monday, November 20, 1995  
8:00 p.m.  
Thorne Hall, Occidental College  
Information: 213/259-2785

Tuesday, November 21, 1995  
8:00 p.m.  
Ramo Auditorium, Caltech  
Information: 818/395-4652

ADMISSION FREE

## The Outside World

by Myfanwy Callahan

**THIS WEEK:** no new wars, no major natural disasters, no assassinations!

**LOS ANGELES, CA —** U.S. and Japanese auto makers agreed to produce electric cars for California in 1996 and 1997. Because of California's landmark zero-polluting car mandate, 2% of cars sold must be exhaust free in 1998 and another 3% in 2001.

**SACRAMENTO, CA —** The state of California has about \$676 million in extra cash due to an unforeseen boom in the economy. There has been strong growth in the entertainment, electronics, and tourist industries. State officials are considering a tax cut and more school funding.

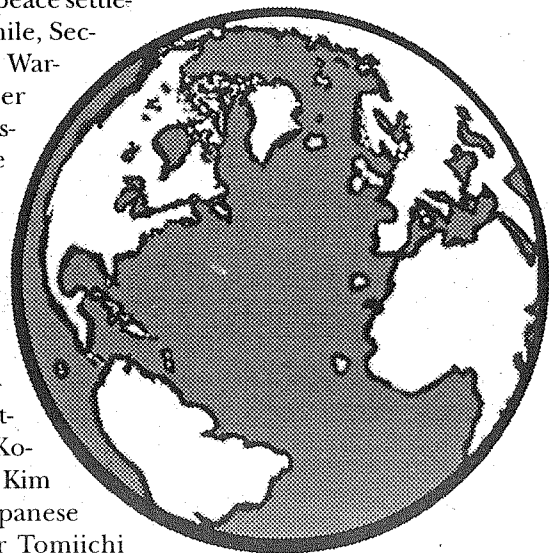
**WASHINGTON, D.C. —** Clinton made his case to Congress on Tuesday as to why 20,000 American troops should be sent to Bosnia to help enforce a peace settlement. Meanwhile, Secretary of State Warren Christopher offered proposals to resolve disputes in Bosnia at the pace talks continuing in Dayton, Ohio.

**TOKYO, JAPAN —** In a surprise letter to South Korean President Kim Young Sam, Japanese Prime Minister Tomiichi Murayama made a formal

apology for Japan's annexation of the Korean peninsula in 1910. It was his hope to end a bitter dispute between the two countries, but both Mr. Kim and the President of China still rebuked Japan at a news conference for distortion of history.

**MOSCOW, RUSSIA —** President Boris Yeltsin appeared much healthier in a television interview on Tuesday, his second since he was hospitalized for heart problems. He insisted that the parliamentary elections will proceed as planned on Dec. 17.

**RIYADH, SAUDI ARABIA —** A bomb explosion ripping off the facade of an American-run military training center killed 6 people and wounded another 37 Americans on Monday. The bomb was set to go off at a time when most of the people would be eating lunch on the same floor as the bomb. Officials say there are no suspects yet.



### FRIDAY NIGHT ASCIT MOVIE

DEAD  
POETS  
SOCIETY



No movie next week. Muppet Movie in two weeks.

Baxter Lecture Hall Times: 7:30 & 10:00  
\$1.50 ASCIT members \$2.00 All others

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NOVEMBER 23-24  
Thurs-Fri Bargain Matinee 2:30 p.m.

Jane Austen's **PERSUASION**  
Daily 4:30, 7:00, 9:30 p.m.  
Sat-Sun Bargain Matinee 1:45 p.m.

starts Wednesday, November 22  
Emma Thompson  
**CARRINGTON**  
Daily 4:15, 7:00, 9:45 p.m.  
Sat-Sun Bargain Matinee 1:30 p.m.  
NOVEMBER 23-24  
Thurs-Fri Bargain Matinee 1:30 p.m.

NEWS FROM THE WOMEN'S CENTER

Upcoming Women's Programs

Votes For Women: A 75th Anniversary Celebration

October 24-January 28  
Huntington Library

This exhibit is a tribute to the history of the American women's suffrage movement. It focuses on the three-quarters of a century between women's earliest demands for political equality in 1848 and the ratification of the Nineteenth Amendment in 1920, with particular attention on California.

For further information call the Huntington Library at: (818) 405-2141.

AAUW Meeting: Report on NGO in Beijing

7:30 p.m. Tuesday, November 14  
Hastings Ranch Library, 3325 E. Orange Grove Blvd  
Pasadena

This is the monthly meeting of the AAUW. The program is open to the public. Presenters will be Carolyn and Bryce Harris. For more information call (818) 564-9640.

Huntington Library Women's Studies Program: What Difference Did Women's Suffrage Make, Anyway?

9:30 a.m. - noon

Saturday, November 18  
Huntington Library

Professor of History Ellen DuBois (co-curator of the Votes for Women: A 75th Anniversary Celebration exhibit at the Huntington Library) will speak on the woman suffrage movement. Following the seminar you will have an opportunity to view the exhibit "Votes for Women". The WISE organization at Caltech will be sponsoring a group visit to this program and the exhibit. There is no charge for the seminar.

Paulina Borsook: "Looking for Love in Cyberspace"

7 p.m. Monday,  
November 13  
Beckman Institute Auditorium

Ms. Borsook, feminist author will discuss her writings entitled *Virtual Romance*. These short stories delineate how the new information technologies deform relationships and show the ways that the eternal grasping after intimacy is undergoing mutagenesis in the wired-up world. Dessert will be served. Reservations necessary. Please call x3221.

Growing Smart: What's Working for Girls in School  
The newest publication

from the AAUW Educational Foundation is a thematic review of the literature on factors that promote the achievement and healthy development of girls from kindergarten through grade 12. "Growing Smart" articulates five key themes to creating a successful program for girls and boys. Sensitivity to all the following themes in a school classroom, program, or policy promises to create stronger, better schools for all. To help girls thrive, the people, places, programs, policies and priorities of schools must intentionally work to:

1. Celebrate girls' strong identities
2. Respect girls as central players
3. Connect girls to caring adults
4. Ensure girls' participation and success
5. Empower girls to realize their dreams

"Growing Smart" is available through the AAUW Sales Office at (800) 225-9998. The Executive Summary and Guide is \$12.95 for non-members and \$10.95 for members; the full-length report is \$35.95 for non-members and \$32.95 for members. (from PWO #21). We have a copy at the Women's Center.

Women's HIV Prevention Agenda

In 1994, women represented 18% of new AIDS cases reported, nearly triple the 7% reported in 1985. The Center for Women Policy Studies, HN4066@handsnet.org, requests comments

on their draft of ten principles to ensure effective outreach and education strategies for women. (HandsNet 10/20/95)

16 Days of Activism Against Gender Violence

The Center for Women's Global Leadership urges local groups to plan events during this period to "bring home" the gains from Vienna, Cairo, Copenhagen and Beijing. 11/25 is International Day Against Violence Against Women

- Upcoming Women's Center Programs
- Growing Smart: What's Working for Girls in School
- Women's HIV Prevention Agenda
- 16 Days of Activism Against Gender Violence
- Shed those Self-Imposed Shackles

and 12/10 is Human Rights Day. Suggested actions include: community events, media outreach, and lobbying. E-mail Mallika Dutt or Linda Posluszny at CWGL@JCC.APC.ORG

Shed Those Self-Imposed Shackles

Remember: "It takes as much courage to have tried and failed as it does to have tried and succeeded."

—Anne Morrow Lindbergh.

Feeling a little low on the totem pole lately? Defeated and deflated? Well, who shackles your creativity? Who is the major stumbling block in everything you attempt?

Who booby-traps your problem-solving abilities? You know...you have met the enemy, and it is you. Now don't shy away from the spotlight: take credit where credit is due. But after you've taken your bow, here are some ways to escape this particular starring role.

Pump up your self image. Remind yourself how bright you really are. Your abilities got you where you are—now use them to escape from the doldrums, the nadir of negativity.

Take a risk. What's the worst that could happen if your new idea fails? On the other hand, what is the certain outcome if you do nothing? The consequences of your actions are not generally of earth-shaking proportions, so learn to conquer your fear of failure. People thrive on success, but the smart ones learn from their failures.

You don't have to rediscover fire. Look at what others have done in similar situations, then borrow their best ideas and adapt them to your situation. You don't have to be the very first one to ever use colored envelopes in a direct mail campaign. Do you?

Do a graphic representation of your idea. A picture usually is worth a thousand words. The printed word has more credibility than the spoken one. Put your idea in writing; draw up a plan with charts and graphs. Setting it down on paper often advances an idea from half-baked to done to a turn.

Break big problems into several little problems. As you solve the little problems, the bigger solution becomes clear. Think of your problem as a giant jigsaw puzzle. Find all the pieces of the blue sailboat and join them together. Then put together the parts of the boathouse and finally the pier. After you've worked out all the components, it's simply a matter of joining them together for the big picture to emerge.

Start at your goal and work backward to the beginning. If you are packing for a trip with intermediate stops, you start with what you're going to need at your final destination and place that on the bottom of the suitcase. Each succeeding layer works toward the top of the suitcase and backward toward the earlier days of your trip. Complicated problems can often be solved the same way. Try it.



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# A.S.C.I.T.

## Minutes

NOVEMBER 13, 1995

Present: The ENTIRE BOD, Maria Satterwhite

- Meeting begins. Like I always need to tell you this. Lloyd asks for multihouse money to shoot paintballs at Rudds. The BOD gives them money. They go away. But BEFORE they leave, Greg plugs the new idea of telling the BOD about events you'll throw for the entire campus BEFORE the first of the semester. Greg will then put your event on his illustrious social calendar, and you'll get an extra \$50 from ASCIT and a free security guard courtesy of Kim West.
- Gavin asks for approval of Tech Editors' and Business Managers' salaries for the first 5 issues. Tom asks to see a copy of the Tech budget, but Gavin says that the Tech doesn't draft formal budgets.

Gavin confirms, though, that the Tech has sufficient funds to cover the salaries for these issues. Tom asks if the student body still has to pay 10% of their dues to the Tech, and Gavin says that this amount could probably be cut in half. Gavin adds that about 1/3 to 1/2 of Tech funding comes from advertisements, and that the remainder is picked up by ASCIT, the GSC, and Caltech. The BOD approves Tech salaries for the first five issues 6-0-1. Gavin also asks whether we'll be able to run the Tech Eds' +BMs' and the Big T Editors' salaries in the same payroll. Kanna says that it depends on whether the Big T Business Manager signs the checks in time. Gavin gives Kanna a payroll form.

- Melissa sent out requests for the UROH. She'll get them back

eventually.

- Laura needs to call the cashier about setting up the copier account. Laura adds that the van has been used a lot recently, and it might need a tune up soon. Nothing's happened to the van in a while, and Laura feels something coming. Is it a sixth sense? Or is Laura just REALLY TIRED?
- Larry realized that his work on this planet was done, and left. Good luck, Larry.
- Greg wants an ASCIT Social Hour. Once per month. No clue where he got this idea. Really. The hour would cost about \$120/month. Greg can't start the hour until he can think up a cool acronym for it and do some planning. Greg adds that the Leatherman is a really cool tool.
- Ken has the artwork and format for the plaques for the ASCIT Teaching Awards and will give them to the plaque-makers (the anti-dentists) Tuesday. Ken also wants to run the survey on the registrar's office second term. Jon believes that people will be registering for classes by computer by the year 2000.
- James wants Dave to schedule a secret meeting sometime in the next two weeks. Shhh.
- Tom mentions that hopefully the IHC will do something mean-

ingful before they all leave office.

- Kanna got the dues check and is proceeding to pay money to people, places, and things. The BOD moves 6-0-0 to fund the Shotokan Club \$100 until third term's budget meeting.
- Dave put up the roster, the minutes, and the cat. The cat complained. Dave will also schedule the SECRET meeting and make up some yearbook presentation for ASCIT for next year.
- Jon moved off campus. DAC (David A Cuthbert) will meet with the ASCIT Excomm shortly to figure out what will happen when Jon graduates this term. The Earth will move, but we want to know WHERE. Jon wants us to run the elections early, get James to run the meetings for 2 or 3 weeks, and then install the new president early (the hard part about installing the new president is always fitting them in the disk drive).
- We leave. A few minutes later, Larry returns and picks up his "Banana Danger" mug.

Respectfully submitted,

*David Relyea*

ASCIT Secretary

## THE BOSTON CONSULTING GROUP

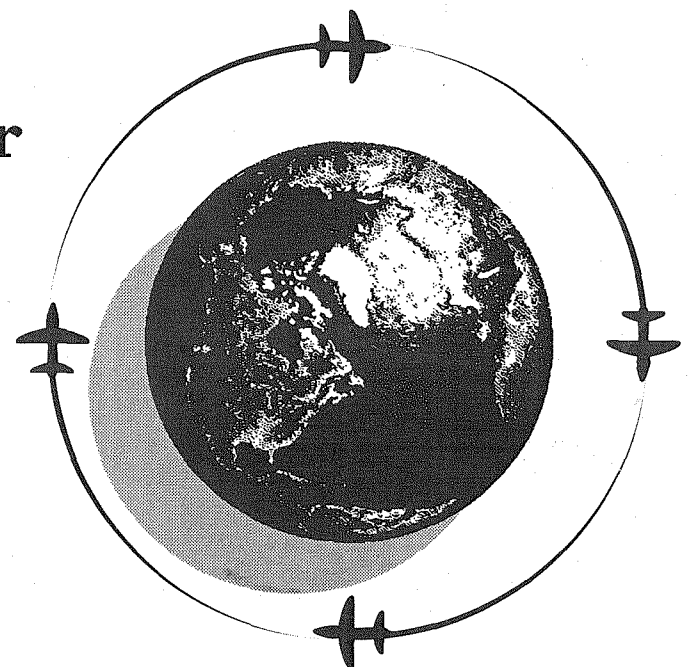
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**Monday, December 4**

**4:00 pm**

**The Athenaeum Room**

**Dinner and Refreshments will be Served**



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BRUSSELS	FRANKFURT	LONDON	MOSCOW	Shanghai	ZÜRICH

# Professor Lewis Unveils Electronic Nose

by Stephen D. Van Hooser

The smells of chemistry, electrical engineering, and neurocomputing were in the air of Beckman Auditorium on Wednesday night, as Professor of Chemistry Nate Lewis unveiled his lab's latest endeavor: *The Caltech Electronic Nose Project*.

The work addresses gaps in the set of sensory information processing tools available to engineers seeking to build smarter solutions; electrical engineers and computer scientists have been working with the senses of sight and hearing since the conception of their fields, but few, if any, have had success implementing general sniffing devices.

The principle ideas, first suggested to Lewis by former postdoc Mike Fuend, are remarkably simple.

There are an array of "sponges" which can conduct a certain amount of electricity. Each element in the array is "painted" with a different polymer; when a vapor enters the device, the resistances of the "sponges" change due to interaction between its polymer and the vapor's chemical compounds, causing each sponge to swell in a manner slightly different from its neighbors. These changes are monitored and the values are sent along to a computer.

Every vapor that Lewis' group tested had a unique pattern "signature"; that is, the list of values of the elements in the sponge array were unique. Wei Qin, an undergraduate working in Rod Goodman's group, de-



At the advice of his former advisor, Harry Gray, Professor Nate Lewis "followed his nose" to an amazing discovery. Pictured are sophomore Sara Beaber, grad student Brett Doleman, visiting faculty member Bob Sanner, Nate Lewis, postdoc Mark Lonergan, and grad student Erik Severin of the Electronic Nose Project

signed a neural network to associate the various patterns to smells.

The applications of such a design are many. A nose with many array elements might be able to monitor lots of smells in a house (gas, air conditioning, etc). A vendor might use a nose to set a price on wine. Or one could design a reduced nose to detect any change in odor; NASA might use one of these "electronic canaries" on its space station.

Lewis related a humorous but practical application: Kraft employees "cheese-sniffers" to determine the freshness of its cheese; unfortunately, workers can only work for two hours con-

secutively due to olfactory fatigue.

While this project has many interesting engineering applications at present, some interesting work is still on the way. Lewis' group is searching for an optimal group of polymers to use on the sponge arrays so they can form a better basis in "odor-space."

Chemistry Professor Bob Grubbs has been chipping in with useful suggestions, and visiting faculty member Bob Sanner has also been experimenting. Lab members have also been varying the conducting material; graduate student Brett Doleman and undergraduate Sara Beaber worked on a silver-based ap-

proach, while Mark Longergan and Erik Severin worked on using Carbon Black.

Also, scaling the array (Lewis used 17 elements initially) into the thousands or millions would require many polymers that behaved differently; the results would be very accurate, and hopefully a simple method for determining which polymers to use could be found.

Lewis also thinks it would be interesting to experiment with implementations of stereo smelling, much like the human sense of hearing. This would allow a machine to infer the direction from which a smell was approaching.

## MOVIE ABOUT BOSNIA TO BE SHOWN

Friends of Bosnia Club at Caltech will show the movie "Bosna!" on Thursday, November 30th, at 7:30 p.m. at Beckman Institute Auditorium. "Bosna!" is a documentary on the war in Bosnia and Herzegovina from the beginning.

"...These images of war and violence... are very often the images the Bosnians shot... You would rather look away? What a mistake! Go to the end of these images. If the West sees them it will be as though they are opening the death pits with us—it will be as though they are helping put a face back on the dead, giving them the identity they lost. Do not hide anything. You owe it to the dead. You owe it to the survivors."

— Bernard-Henri Levy, Film Forum, Oct 1994, NY

Bosna!, 1994. 117 mins. In French with English subtitles. Directed by Bernard-Henri Levy and Alain Ferrari, A Zeitgeist Films Release. Warning: The movie contains real, graphical images of violence. Not rated.

Friends of Bosnia e-mail add.: [bosnia@cco.caltech.edu](mailto:bosnia@cco.caltech.edu)  
Homepage URL: <http://www.cco.caltech.edu/~bosnia/bosnia.html>

PHOTO COURTESY OF ON CAMPUS

# Public Events Plans Busy Weekend for Techers

## BASS-BARITONE DEAN ELZINGA TO GIVE FREE CONCERT AT CALTECH

Bass-baritone Dean Elzinga will give a free Paco A. Lagerstrom Chamber Music Concert on Sunday, November 19, at 3:30 p.m. in Caltech's Dabney Lounge.

Accompanied by William Vendice, Mr. Elzinga will perform songs by Schubert, Vaughan Williams, Brahms, and Ravel. The Los Angeles Times recently wrote of him, "With William Vendice, his ever trenchant accompanist, Elzinga attended closely to word and meaning, sang with sweetness, silkiness and evenness of tone."

Elzinga began his professional operatic career as a Young American Artist at the Glimmerglass Opera, in New York. Since then, he has sung roles with Opera Pacific, the Opera Company of El Paso, and

the USC Opera. His Los Angeles Music Center Opera and Metropolitan Opera debuts take place this season. Elzinga holds degrees in mathematics from Caltech and UCLA.

Noted as both conductor and pianist, Vendice has appeared in recital with many prominent artists and is a regular guest on Texaco Metropolitan Opera broadcast intermission features.

This year, he was appointed Head of Music Staff and Chorus Master of the Los Angeles Music Center Opera.

This concert is open to the public and free of charge. Dabney Lounge is located near Chester Avenue south of Del Mar Boulevard, in the center of the Caltech campus, in Pasadena. For information, call (800) 423-8849 or (818) 395-4652. Individuals with a disability should call Deborah White at (818) 395-4688 (voice) or (818) 395-3700 (TDD).

## TREASURES OF MEXICO

Dr. Dwayne L. Merry will narrate his Armchair Adventures travel film "Treasures of Mexico" on Friday, November 17, at 8 p.m. in Caltech's Beckman Auditorium.

Merry visits many ancient sites of Mexico, beginning with the mysterious stone figures of the Olmecs on the Gulf coast, the giant statues of the Toltecs at Tula, and the Aztec remains in and around Mexico City. He also explores the Mayan ruins and shows the present-day inhabitants of the Yucatan peninsula, giving insight into the way of life of descendants of these ancient civilizations.

Tickets to this film are priced at \$9.00 and \$7.00. Tickets can be purchased at the Caltech Ticket Office, 332 S. Michigan Avenue, Pasadena, and are also available at all Ticketmaster TicketCenters.

## YNEWS

by Donna Ebenstein

We want to thank everyone who came to Broomball for helping to make it a success, with no major injuries. The winner was Plaid Thunder Penguins with two 4-0 wins. Congratulations! Other statistics are available at the Y.

Decompression is coming! For you frosh that don't know what Decompression is, it is free food and entertainment the weekend before finals week to help everyone relax. But we need help to make it happen. So sign up to volunteer for a couple of hours. You even get a free t-shirt for helping out! Sign-ups will go up in the student houses on Monday, so you can sign up there or at the Y.

On Thanksgiving weekend, the Y will be sponsoring a camping trip to Joshua Tree. The group will leave campus around 9 am on Friday and return by 6 pm on Sunday. If you are interested, sign up at the Y by 5 pm Monday, November 20.

Today at noon the Israeli Folk Dancers will be demonstrating their art outside Winnett Center. Bring your lunch out and watch!

Have a great Thanksgiving Holiday!

# Write for the Tech! PLEASE!

# JOB: How to Find a Research Job on Campus

CONTINUED FROM PAGE 1

the people who are experts in the field. Luckily, there are lecture classes, such as Chem 10, Phys 10, and Aph 110, that circumvent this problem. In these classes, a different professor comes each week to present his or her research on a level Caltech freshmen can understand. You do not have to sign up for the course; just show up! Ask Professor Tombrello (Phys 10) or Nate Lewis (Chem 10) for a schedule and go to the talks that interest you. The point is not to get credit; the point is to learn which fields of science you like.

You have been going to seminars for a while and have found a couple things you are interested in. Now what? In my case, a few seminars had a big impact on me. I thought there was no doubt that I wanted to become a physicist until career day my freshman year. No companies were hiring physicists! That experience along with a couple of nanofabrication seminars that really excited me and a couple of seminars on basic physics that really bored me convinced me to become an applied physicist.

There are other things you can do to choose a major. Try asking professors what they do. If you want to know what being a theoretical physicist is really like, make an appointment to see a theoretical physics professor

and ask him. What does he like? What does he dislike? These last two questions are really great ones; professors will talk for hours about what they really like to do. It is as if the information was bottled up inside them waiting to burst out. At the same time, you will learn what being a professor is really like. I was surprised....

You may not realize it yet, but Caltech is a research institution. I believe you will get far more out of Caltech if you do research while you are here. There are also other advantages: papers that come out of your research and recommendations from the professors you work with will be powerful tools for getting you into the graduate school of your choice. The end of first term is almost here. By this time, you may not have decided what field of science you really like, but it is time to get a job doing research!

How do you get a job? The best way, I believe, to get a job is through networking. Talk to the professors who give the Chem 10 and Phys 10 lectures. Talk to the

professors you interview. Ask them if they know anyone who hires freshmen. Talk to your adviser. (This is what advisers are here for!) Each department has a booklet, usually given to graduate students, that describes what research each professor does. For example, to get the Electric

you took the initiative to find him or her. If you have work study, they pay only 25% of your salary. You are practically free! If you do not have work study and money is a problem, offer to work for free! Experience doing research is worth a lot. Also the professor will probably find a few

dollars to pay you with if you offer to work for free. But what skills can you offer the professor? Computer simulations are an easy first step into any group. Or, you can start cleaning test tubes in a lab. In that case, be sure to set a date with the professor when you will start doing research. I found

three job opportunities while I was a freshman using the above techniques. What did I get out of the experience? I learned that I did not want to be a high energy physicist! I left at the end of my freshman year to join a nanofabrication group where I am still working.

Once you find someone to work for, start immediately! You can get papers or books to read over winter break. Or, if you will be around during winter break,

go right to work. If you like what you are doing, apply for a SURF. Think of SURF as a conduit for paying half your summer salary. If you do not like it, you should probably work until the end of third term just so that you are not scared away by the initial hurdles in starting research. At the very least, you will learn what you do not like. On the other hand, you might find you love what you are doing! By the end of your freshman year, after a two and a half terms of going to seminars, you should know what fields interest you. If the job you have is not in those fields, get another job!

Just one side note before we continue this story of deciding your future. Phys 11 is a great way to get involved with research during the summer after your freshman year. I personally enjoyed the class immensely. And on top that, I will get one paper and two recommendations out of it. To get into graduate school, you need three recommendations and preferably at least one paper. Because of Phys 11, I am more than halfway there. The rewards of Phys 11 can be tremendous. It is not too late; you still have until Monday to work on the second hurdle....

Caltech is a premiere institution. It is bursting with resources. Your job is to find them and exploit them to the fullest.

Coming attraction: "Setting Goals to Guide Your Future...."

**Remember:**

1) Get the Caltech Calendar: available in most buildings, on the World Wide Web, by e-mail or mailbox delivery.

2) Go to seminars for the entirety of your freshman year and find out what you do and do not like.

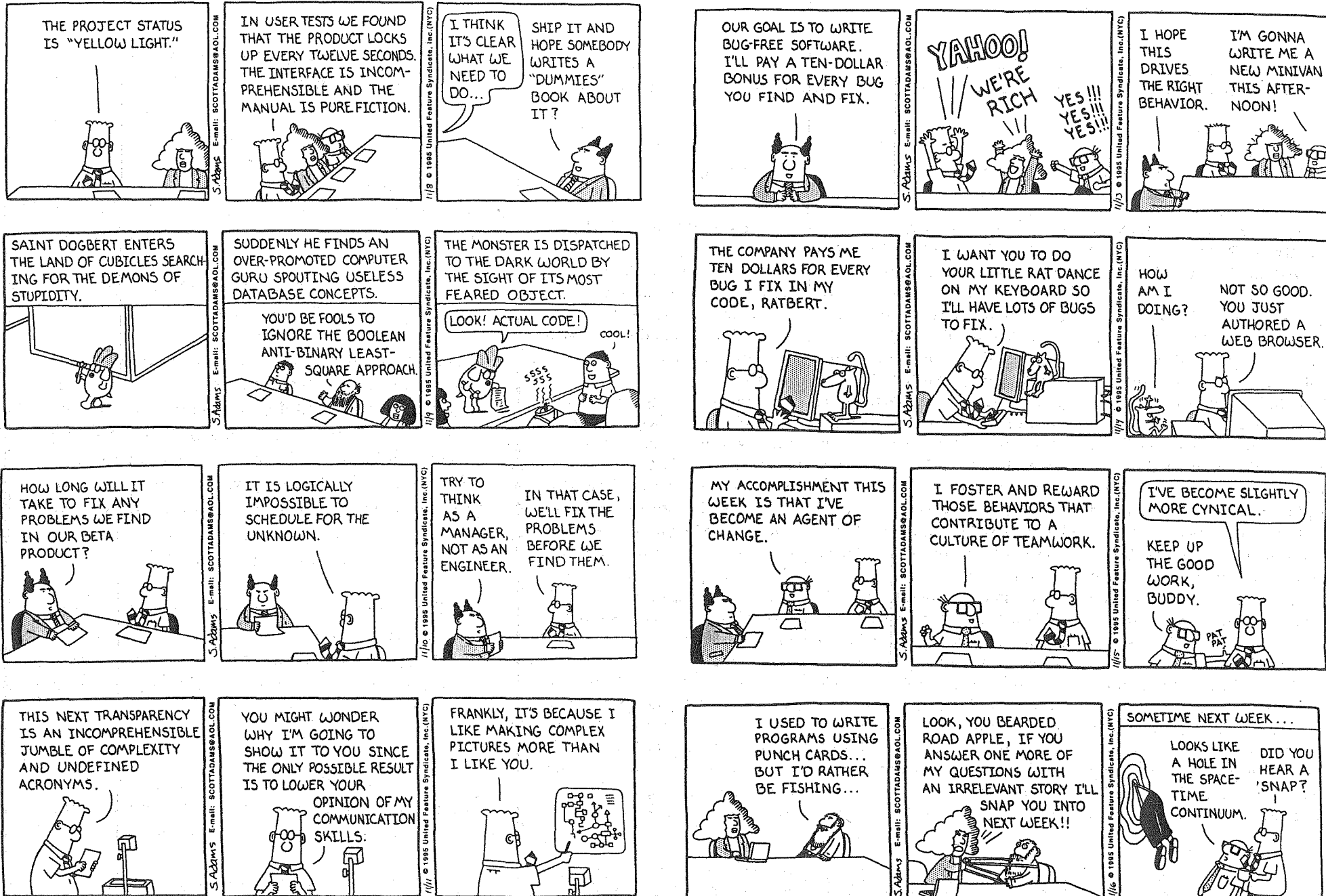
3) Find a professor and start doing research now. If you do not like the field by the end of the year, at least you found out now rather than later as a graduate student.

4) Continue to do research until you graduate. Unless, of course, you hate it. In that case, at least you know you do not want to be a research scientist. Keep in mind, though, that Caltech graduates have been successful in many other fields such as Frank Capra (movies) and Steve Ross (finance).

cal Engineering booklet, find a secretary's office in Steele, and ask where you can obtain it. Remember: secretaries are very helpful when you ask nicely. Go through and pick out professors that do research you find interesting. Talk to upperclassmen and your adviser about them and make appointments to talk with them.

How do you convince a professor to offer you a job? The first strike in your favor is that

## DILBERT ® by Scott Adams



# Why We, As Students, Should Care About Minimum Wage

by Anne Marks

Most of us came to college with the expectation that the completion of a bachelor's degree would, among other things, lead to some sort of career. Whatever importance the minimum wage would have for us in the future would come only from the standpoint of an employer. One of us might expect to someday run a business wherein an employee earns minimum wage, but none of us expects ourselves to work for minimum wage.

However, many students are working for minimum wage *right now*. About a third of those earning minimum wage are aged 16 to 19; another fifth are between 20 and 24 years old. Youths and young adults attending school make up a sizable portion of the minimum wage population.

It would seem, then, that students have a large immediate incentive to support an initiative to raise minimum wage. And yet, many of us do not involve ourselves in the issue. The first obvious reason for this is that some students are not old enough to vote. The more critical reason, however, is that young workers tend to view earning minimum wage as a temporary stage of their working life. It might be two years after the beginning of an initiative drive before an actual wage increase goes into effect. Few of us expect to work at the minimum that long, so we think we

have no reason to work now for a higher minimum wage later. *This is exactly what the powerful anti-minimum wage, anti-working class establishment wants us to think.*

A modest increase in the minimum wage affects millions of people. It immediately raises the earnings of everyone who was working at the old minimum, and also the earnings of all those who were working for below the new minimum. There is a ripple effect as well: raising the bottom influences employers to raise other wages and gives employees greater bargaining power. In other words, we should not assume that a rise in the minimum wage will not directly affect our own earnings.

But even if we do not feel the effect of the minimum wage on our own pocketbook, there are compelling reasons to support an initiative to raise it. The income gap in the United States between the top and the bottom quartiles is among the largest in the industrialized world, and it continues to grow. Raising the minimum wage is a powerful redistributive tool to help curb this alarming trend.

Contrary to the propaganda, many families depend upon the minimum wage to be a living wage. Among full-time minimum wage workers, 80 percent are

adults. Until 1980, full-time minimum wage income was above the federal poverty level for a family of three. Today, it does not even equal 75 percent of this level. An inadequate minimum wage is an injustice to the working poor, plain and simple.

Still, the adversaries of the working class insist that raising the minimum wage in fact harms

*As representatives of academia, it is our responsibility to oppose the propaganda, dressed as "scholarship," that is fed to us by the opponents of the working class.*

workers. This claim is based on classical economic theory that wages are "naturally" set by the equilibrium of supply and demand. To "artificially" raise wages above the equilibrium decreases the demand for labor, thereby causing unemployment. This theory is intellectually appealing to college students, especially Economics students like me, who want to abstractly understand the question of minimum wage. *But the point of view that minimum wage creates unemployment is merely a theory, not a fact.*

Contemporary studies of the ef-

fect of minimum wage increases reveal a situation quite different from the one predicted by classical theory. Princeton economist David Card studied the effects of minimum wage increases in various states, including California, where the state minimum wage was last raised in 1988. What he found was little evidence of any increased unemployment. In fact, he often found the opposite to be true. In California, wages rose for minimum wage workers, particularly teenagers, even as unemployment decreased. This type of study flies in the face of political forces who attack the minimum wage, and who thereby attack the entire working class, in the name of "scholarship."

As students, we are the force that must set right this misunderstanding. There are a variety of sound theoretical reasons why raising the minimum wage should actually help the economy. Higher earnings for the low income portion of the population causes increased demand which leads to increased employment and wages in general. The importance of this point cannot be overstated. Henry Ford himself recognized that his auto factory workers needed to make at least enough money to buy the cars they were assembling. Vari-

ous economic historians, including John Maynard Keynes, view the Great Depression as a crisis of consumption: the great mass of people simply could not earn enough to buy what was being produced. The so-called "natural" wage was too low to support the economy.

In sum, the minimum wage directly affects us as students much more than we realize. An apathetic attitude only continues the injustice of a low minimum wage. Moreover, as representatives of academia, *it is our responsibility to oppose the propaganda, dressed as "scholarship," that is fed to us by the opponents of the working class.* If we act as if the minimum wage is irrelevant to us as students, then we are doing exactly what these forces want us to do.

If you would like to join a coalition of college and university students from all across California in support of the Living Wage Initiative, a proposed November 1996 ballot measure that would raise the state minimum wage first to \$5.00 in 1997 and then to \$5.75 in 1998, please contact Students in Support of a Living Wage (SSLW):

SSLW c/o Anne Marks  
3001 Ellis Street #B Berkeley, CA 94703  
E-mail:  
[minwage@uclink4.berkeley.edu](mailto:minwage@uclink4.berkeley.edu)

*The author is a senior at U.C. Berkeley, studying Economics and History.*

## HOT.

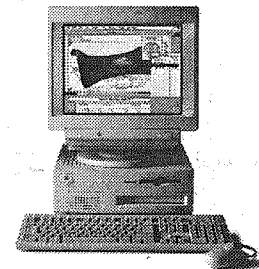
Burn, baby, burn — disco inferno.

## MAC.

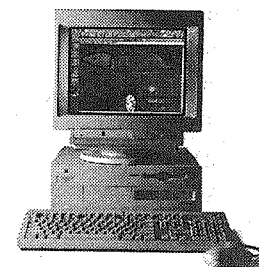
Not the burger, pal — the killer computer.

## DEALS.

Cheap. Not as cheap as a taco, but hey.




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15" color monitor, keyboard and mouse.



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# The Dope Man

by Patricio Vela

So, what happens to me the other day? I get this little green card from the Mail Services Center, and here I think, "Wow, what could my mom have sent me?" I recalled some kind of conversation about winter clothes. So I think, this box is pretty big, must be something nice. So I open it in anticipation of some dope clothes, but what do I get instead? Well it turned out to be presents for the relatives I will be visiting this Thanksgiving. Nothing for me, but that's OK. The point lies somewhere more along the lines of the fact that the reality did not live up to the expectations. So with that in mind I shall now proceed to give you what you need. Well, not really.

We got this CD about a week or two ago, but a colleague of mine confiscated it, then another colleague of mine hijacked it, and life went on until I finally got to listen to it today. You see we (the moral majority, just kidding *The California Tech*) got sent a package of CD's from MCA Records (here's my obvious pitch for MCA Records). What I wonder is why they still call themselves MCA Records, but don't really produce any records.

Anyways so in the package was the Mallrats CD which I shall now give a small recourse on.

So this CD is loaded with just sold-out, or just-made-it-big type people. We have Bush (the Nirvana wannabees), Girls Against Boys, Belly, Weezer, Elastica, Archers of Loaf etc. Overall the first half of the CD smacks of KROQness, but there are times when it does transcend that (not that KROQ is bad or anything), of course only the previously indie bands were the ones to really accomplish that. Although I must admit the Belly song has got to be one of the better ones I've heard from them, stylistically very different from the album with "Stay" on it, and I think also from their new album, but I haven't heard much from that one. Anyways, on this track they sounded as if they were coming closer to Velocity Girl's style, but a slightly slower pace and not so noisy. But kinda there. The Weezer song only reinforced my opinions on Weezer, not too shabby, pretty talented. Overall I have to say that the album is decent, I would buy it if I were an avid or semi-avid KROQ lis-

tener, because this gives one some good music, plus it allows one to taste the other more underground (if you want to call it that) side of the scene. If you don't listen to KROQ, don't let that put you off either, one of my friends thinks this it's an insult to make this comparison, but I don't so don't take it the way he has. They tried to do the Pulp Fiction thing and have sound bites from Mallrats in between some of the tracks. Sometimes it works very well, other times it fails. Mostly because I haven't seen the movie. Nevertheless the bands on the CD are for the most part bands I enjoy a lot and respect musically because they

which one you have, the album or the live album stuff. Hope I spelled it right.). I can't say very much about the album, if you dig The Babes, then you'll love this CD. Otherwise I strongly suggest those punk-wise fellows should go out there and check it out, especially if you dig female vocals.

Next up is "foma" by the nixons [sic]. Must be one of those bands with members who are of a slightly artistic bent. My ex-girlfriend was artsy and she apparently enjoyed not using CAPS, so I can only guess why the nixons decided not to use CAPS. I guess The nixons would seem a bit presumptuous and The Nixons would have on thinking of Nixon, which I guess they might not like too much. Nevertheless, what can I say about them. For the most part I am apathetic, but then again I am apathetic to Nirvana, Bush, Pearl Jam, and all those other bands like that I just lump into the category of mediocre. Of course

the mood for this kind of music when I sat down to listen to it. So this one I leave up to the reader to decide upon. (Note: The last song left the best impression on me. I guess you could say they went with a bang.)

Argh, will this never end you are thinking right about now. Yeah it will, I just have one more to check out. "WAY COOL MUSIC" by BECKY SHARP. Now these people have the totally CAPS thing going. Ah well, just goes to show how diverse life is. The music promo sheet we got for this band says "Becky Sharp loves to play very, very loud—at Superchunk volume, but warmer and fuzzier." From my limited experience with Superchunk I would have to agree with the description. It's pretty much on par with the kind of genre associated to Superchunk and all of the other bands one hears along with Superchunk. Apparently this album was "mastered by Scott Hull" who had a part in Pavement's latest production "Wowee Zowee" which, by the way, was very Pavement-ey. I have yet to find other bands to lump into the Pavement style, but that's ok because Pavement is very unique and very good at they do. All I can say is, if you haven't heard anything from Pavement, my description would never be adequate. But back, to BECKY SHARP. Not too bad, I can imagine one of my friends who now goes to University of Chicago lending this to me as a CD I should listen to, and me of course playing it and liking it.

So that's it for now. I know that Mercury Rev has a new one out, and I have been itching to get the new Cypress Hill. So maybe next time, you'll be hearing about them. Later.

*I must admit that the nixons do manage to bolt out some good stuff—the better stuff has a really nice bass guitar backbeat.*

have been able to consistently impress me.

Next on my list, but not sent to me unfortunately is the newest Babes in Toyland "Nemesisters." Due to Caltech's culture and isolationist manners I am a little bit behind on the latest and greatest from the noise, indie and punk scene, so this is one of the newest things I own. As usual, they were able to dish up a sufficient amount of Babecocity. The Babes are pretty consistent in terms of what they do, this album is very much in the same vein as Fontanelle/Fontanellette (depending on

the teaming millions of adolescents and alternative types only defy my categorization of these bands. So, under the assumption that the aforementioned bands are on your list of faves, then the nixons might be totally dope in your estimation. I must admit that they do manage to bolt out some good stuff—the better stuff has a really nice bass guitar backbeat. The lead guitar doesn't do much for me though. Overall this is something I think my brother would enjoy, and some of my friends would thoroughly love. Me, I have different tastes, or maybe I just wasn't in

## LETTERS TO THE EDITOR

### Human rights abuses continue in Nigeria

Dear Editor,

On November 10 the Military Government ruling Nigeria hanged nine men including the Nigerian environmental activist and playwright Ken Saro-Wiwa. In a trial before a military tribunal, these men were convicted of the murders of four men. Convicted of a crime they did not commit, in a court which denied all access to legal counsel and gave no right of appeal. The trial and executions have been condemned as a politically motivated travesty of justice by human rights groups and environmental groups as well as world leaders including President Clinton and Nelson Mandela.

Ken Saro-Wiwa's "crime" was to organize a non-violent protest movement amongst the Ogoni people of Nigeria. The Ogoni, a tribe of about half a million people living in the Rivers State of Nigeria, were farmers and fishermen by tradition and their land produced food for much of the Rivers state. In 1958, Shell found oil under Ogoni land and unconstrained by environmental regulations found in other countries proceeded to exploit these

reserves with precious little regard for the land on which the Ogoni people depend. Between 1976 and 1991 there were 2976 spills in the area. In one case in Ebubu in 1970 a shell pipeline carrying crude oil spilt onto farmland. As a clean-up measure the oil was burnt leaving a semi-solid crust 5 meters thick. Is this a valid form of remediation? What would happen to a company who did that in the US? This act brings to mind the completely irresponsible acts of Saddam Hussein in the "Gulf War". The agricultural land is still unusable 25 years later. The military regime of General Sani Abacha has allowed this environmental destruction to go unchecked while their government receives most of its revenue from the sale of Nigerian oil overseas, most of it to the United States.

Ken Saro-Wiwa was a prominent leader of the movement for the survival of the Ogoni people and spoke out about the destruction of Ogoni land by the operations of the oil companies. In 1994 four pro-government Ogoni leaders were killed at a rally at which Ken Saro-Wiwa was expected to speak. Ken Saro-Wiwa was charged with murder on the grounds that he had organized the rally, even though Ken Saro-Wiwa has always advocated non-violent resistance. Ten days after being sentenced to death Ken Saro-Wiwa and his eight co-defendants were hanged. This action brought Nigeria condemnation at the U.N. Security

Council, suspension from the Commonwealth and led to many countries withdrawing their ambassadors from Lagos.

Shell continues to exploit the oil reserves of the Ogoniland. The only public action that Shell took to prevent the human rights violations of the Nigerian regime was an 11th hour letter to Gen. Abacha requesting clemency for the condemned men.

We ask readers to take a few minutes of their time to write a letter or a fax to the President of Shell Oil. Ask that Shell use their influence in Nigeria to stop the human rights violations of its military rulers. Ask that Shell join the international effort to obtain the release of all prisoners of conscience in Nigeria. Also, ask that Shell Oil offer relief to those Ogoni people who lived in the thirty villages destroyed by Nigerian security forces when they tried to crush the Ogoni movement.

Send your letters to Mr. P.J. Carroll President, Shell Oil Company PO Box 2463 Houston, TX 77252-2463 Fax: 713-241-5522

For more info, check the Sierra Club Web site at <http://www.sierraclub.org/news/sc-action/0145.html>

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AMNESTY INTERNATIONAL  
GROUP 22  
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CALTECH ENVIRONMENTAL  
TASK FORCE

### Science Education Club holds first meeting

Dear Editor,

The Caltech Science Education Club held its first meeting on November 8th at the offices of the Caltech Precollege Science Initiative (CAPSI). To those forty plus individuals who attended, we want to thank you for your interest. For those of you in the Caltech community who were unable to attend, but may be interested, we offer the following information: The aim of the Science Education Club is to facilitate exploration of a variety of interests and issues pertaining to science education. It is open to all members of the Caltech community. Opportunities to visit and observe science instruction in classrooms, participate in discussions with visiting scholars, and to serve as science consultants for professional development training of educators are some of the activities the Club will arrange.

If you are interested and want to know more about and/or become involved with some aspect of science education, please feel free to join us at the next meeting which will be held early in January. At that meeting, a hands-on science lesson used in the Pasadena Unified School District (PUSD) will be explored and the philosophy of this type of

curriculum and its development by CAPSI and PUSD will be discussed.

Once again, thanks to everyone who came to the first meeting. We look forward to seeing you at subsequent meetings. If you have questions or would like to be placed on the mailing list contact Jane Sanders at [JZS@CCO.CALTECH.EDU](mailto:JZS@CCO.CALTECH.EDU) or at 395-4016.

### CAPSI

Please send submissions for letters to the editor to

The California Tech  
Caltech 40-58  
Pasadena, CA 91125

or by electronic mail to [editors@tech.caltech.edu](mailto:editors@tech.caltech.edu)

Deadline for submissions is Monday at 5pm on the week of publication.

The editors reserve the right to edit or refuse to print any letter for any reason.

# MIX AND MATCH MICRO FOX TROT by Bill Amend



# Calendar

by Terry Moran

## Bond, James Bond

No, this has NOTHING to do with Chem 1a, I promise. This has to do with the reinventing of a movie tradition that predates the sixties: 007 returns to the screen most spectacularly in the new release of *GoldenEye*, with Bond taking the body of that all hunk man, the man who cuckolds Robin Williams in *Mrs. Doubtfire*. In an attempt to make-over what almost died at the hands of Roger Moore and Timothy Dalton, Pierce Brosnan takes on the role he had been offered nearly ten years ago, and it sounds as if *GoldenEye* really delivers. I have yet to see the show (as it opens Today!), but I have heard a lot of great reviews and also a lot of talk of the flick really capturing what Bond used to be, back when Connery wasn't a hunk of graying matter.

But let us not concentrate on one show alone! I have had the chance to see *Ace Ventura II: Call of the Wild*, and all I have to say is spectacular. Carrey, in filming, had let it slide that it was twice the "goofiness" of the first, but this movie shows talent where the first showed rigid stupidity: Carrey truly envelopes the character (and pretty much the whole movie!), and the result is truly side splitting. An unbelievable comedy which not only speaks for itself, but also polishes all the annoyances of the first. Ventura II is definitely worth seeing at least a couple times.

But, if your bones can't escape Tech even to a theater, the ASCIT movie this week is *Dead Poet's Society*. If you haven't yet seen this, you really really should. It is definitely one of the better quality movies I have ever seen, even ranking close to *Animal House* in summing up my feelings about Tech...well, maybe not.

## El Teatro

Arthur Miller's *Incident at Vichy* will be performing through December 1st at the Colony Studio Theatre in Los Angeles for around \$8 a ticket. I personally like Miller's plays a lot (he also wrote *The Crucible*), although I haven't yet seen or read this show, which revolves around World War II. **David Copperfield** (the

magician, not the boy!) will be performing four shows between December 16th and 17th at The Pasadena Civic off East Street. Copperfield is the only other professional besides Kip Thorne who makes it his job to warp space and time—he has in the past walked through the Great Wall of China, escaped Alcatraz and flown without wings. But, unlike Thorne, you have to pay to see Copperfield: tickets start at \$29.50.

## Joyous Noises

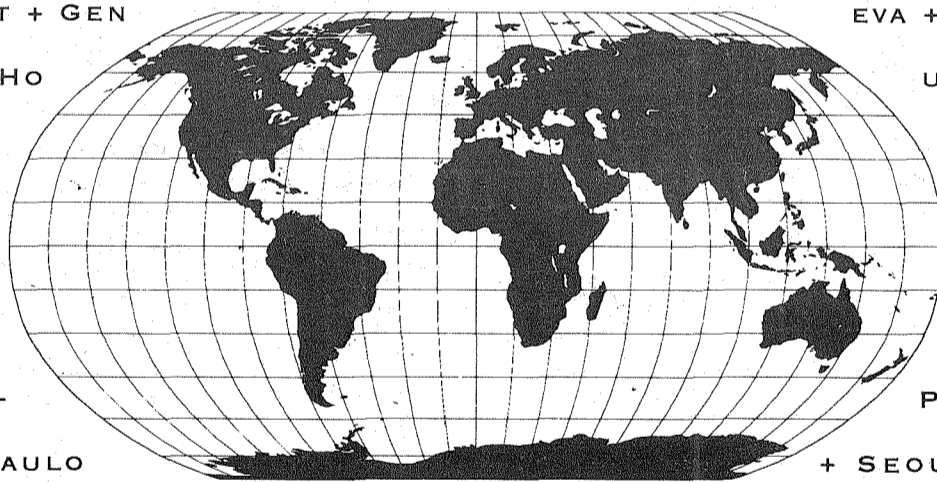
Well, not having a Calendar section last week has left a great overflow for this week's concert line-up. So, in no particular order: **Pavement** will be showing up (for a concert, I assume) at the Troubadour on Wednesday, December 20th; **Seam** will be in concert at the Alligator Lounge with **Spent** tonight, November 17th (it's no lisp night!); **Shonen Knife** will be playing The Roxy with guests Brian Evans on Friday, December 8th; **Jawbreaker** with **That Dog** and **FLUF** will be at the Palace on November 22nd; **Voodoo Glow Skulls** will be in concert at the Whisky tomorrow and Sunday night, while the Palace will be hosting **Urge Overkill** with The Geraldine Fibbers on Wednesday, December 6th. And remember, if you don't get out to go to a concert this Winter Break, get out somewhere!

Or, if you really want to be a loser, you could open your wallet to get your ears professionally deformed by going to the **AC-DC** "Ballbreaker" World Tour on January 30th at the Pond or February 1st at the Great Western at 8pm. Hmm, hmm, sounds good....

## Events

This weekend has the happiness of hosting the other Pasadena Parade, the **DooDah Parade** (which in my opinion, for cheaper or less expensive, is much better quality)! The Parade starts at Holly Street and Raymond Avenue on Sunday, November 19th, at noon. As always, the Parade promises to be fully offensive and wholly enjoyable; remember to bring your tortillas!

+ AMSTERDAM + ATLANTA + BARCELONA + BERLIN + BOGOTÁ + BOMBAY + BOSTON + BRUSSELS + BUENOS AIRES + CARACAS + CHICAGO + CLEVELAND + COLOGNE + COPENHAGEN + DALLAS + DUBLIN + DÜSSELDORF + EUROCENTER + FRANKFURT + GEN + EVA + GOTHENBURG + HAMBURG + HELSINKI + HONG KONG + HO + USTON + ISTANBUL + JAKARTA + JOHANNESBURG + LISBON + LONDON + LOS ANGELES + MADRID + MELBOURNE + MÉXICO CITY + MILAN + MINNEAPOLIS + MONTERREY + MONTRÉAL + MOSCOW + MUNICH + NEW DELHI + NEW JERSEY + NEW YORK + OSAKA + OSLO + PARIS + PITTSBURGH + PRAGUE + ROME + SAN FRANCISCO + SÃO PAULO + SEOUL + SHANGHAI + SILICON VALLEY + ST. PETERSBURG + STAMFORD + STOCKHOLM + STUTTGART + SYDNEY + TAIPEI + TOKYO + TORONTO + VIENNA + WARSAW + WASHINGTON D.C. + ZURICH + AMSTERDAM + ATLANTA + BARCELONA + BERLIN +



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# ADAM VILLANI: MEDIA GUY

by Adam Villani



**W. A. Mozart's *The Abduction from the Seraglio***

**November 10 at the Dorothy Chandler Pavilion**

Last Friday I went to the opera for the first time, and I loved it. What had kept me away from the opera before was not the fact that the music and language are unfamiliar, but just not being aware of the performances and the fear that it was priced out of my league. Serendipitously, I not only picked up a copy of the L.A. Opera's schedule, but also found out that student rush tickets are dirt cheap. These things were a steal—I just went up to the box office at the elegant Dorothy Chandler Pavilion in downtown L.A.'s Music Center five minutes before the show started and was able to get fifth-row orchestra seats worth \$102 each for 15 bucks apiece! With the view from seats like that, I didn't mind at all a little craning of the neck to read the supertitles.

*The Abduction* is apparently one of the earliest operas, and contains a good amount of spoken dialogue. While I am by no means a

classical music critic and even less experienced with opera, I can say that the story is rather elementary and, while trying to be both comedic and dramatic, does not fully succeed at either aspect. On the other hand, the music by Mozart was undeniably magnificent and the performances by the six actors from the United States, Finland, Poland, and Germany reached out with a charisma and talent that enlivened the show and greatly impressed me.

Nearly as important for me as the performances was the sheer spectacle of the event; the set of a Turkish palace resting atop an unusual sandy, gently rolling surface was at once versatile and functional, imposing and beautiful. *The Abduction* continues Saturday and Tuesday; the L.A. Opera's next production starts in January, Rossini's *The Italian Girl in Algiers*.

**Lars von Trier's *The Kingdom***

Just in case you thought *Dances With Wolves* and *Wyatt Earp*

were short subjects, writer-director Lars von Trier's (*Zentropa*) new horror/black comedy *The Kingdom* is a staggering four and a half hours long, not counting the intermission. Such a length would be painful in lesser hands, but von Trier's hilarious "Twin Peaks"-esque production originally made for Danish television uses its length to weave an intricate web of the many stories revolving around the doctors, patients, and staff at a huge hospital known as the Kingdom.

Just some of the bizarre goings-on concern an elderly spiritualist who keeps spuriously checking in to the hospital to investigate the ghost of a young girl haunting its elevators, a medical student who tries to win the affections of a sleep researcher by stealing a head off of a cadaver, and an arrogant Swedish neurologist romantically involved with a fawning anesthesiologist who wants to vacation in Haiti to study voodoo. The ghost story becomes the most prominent of the many storylines and is also perhaps the most conventional of *The Kingdom's* many threads, but that's easily forgivable in a movie this well made.

The theatrical release is the first four episodes of a planned thirteen episode series; as such it ends on a cliffhanger. But despite waiting more than four hours for

a story that doesn't finish, watching *The Kingdom* is a very satisfying experience; the length and format is necessary for the development of a great number of characters and allows many of the film's loose ends to be tied up while leaving a lot of reasons to watch the remaining nine episodes.

It's ironic that such a great movie actually comes from television; the serial nature of television leaves many unexplored possibilities in America. Since it's unlikely for the boob tube to get much better in the next week, check out TV better than nearly all the movies (and funnier than sitcoms) out there at Landmark's Nuart theatre in West L.A., where *The Kingdom* is playing for the next week.

**Dave vs. Jay**

Speaking of television, last week's excursion to L.A. by David Letterman was one of the few bright spots in a week marred for me by bronchitis; this week I got a root canal and tuned in to a minute of Jay Leno's week of broadcasting from Las Vegas, only to see a short-haired David Lee Roth doing a garish lounge-lizard version of "California Girls." And Jay still pulls in better Nielsens. This does not soothe my pain.

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# Opiate of the Masses VI

By Joe Trela

*In which the Nut-Brown Maide proves herself to be untrue and is subsequently condemned to the yummy Chesapeake Bay.*

Art Modell seems to getting tired of his old Ohio digs. So, it's off to Baltimore for him, his meal ticket and 40-odd years of Cleveland Browns traditions left behind. But still, the question of why he's going remains. It couldn't be the new stadium and gobs of money that the burghers of Baltimore offered him; after all, the city of Cleveland offered to refurbish Municipal Stadium along with the new arena and Jacob's Field, and he declined.

Does he not like Chrissy Hynde and the Pretenders? I mean, how can you not like that video with the clips from the old "The Avengers" TV show? Maybe the Rock and Roll Hall of Fame is a bit too close to Municipal Stadium and drowns out the Rachmanioff and Brahms piped directly to his luxury box (which, incidentally, he wasn't in the week before the announcement for the first time in 30 years). Or, perhaps he become addicted in the seventies to the acetone fumes rolling in off the Cuyahoga River, and now that the pollution's cleaned up he has to find some other toxic estuary (a.k.a., Chesapeake Bay) to get stimulation from?

Wait, I've got it. The Indians had their last World Series appearance in 1954, around the same time the Browns entered the NFL, and since their last high point of interest was when they temporarily took Chief Wahoo off their hats in 1973 that must be it. So now that they're finally doing well again, Art doesn't want to be outshined by Dennis, Albert and the gang, and off they go to join the mediocre Orioles. And of course, the Orioles started out as the St. Louis Browns before they moved to Baltimore in 1955. See, if you look close enough you'll find synchronicity in everything!

Now even the citizens of Baltimore are admitting on the radio talk shows that they're feeling guilty about nabbing the Browns. Tempers still flare when they recall the way the Baltimore Colts were moved to Indianapolis, pylons and all, under cover of darkness in 1987. Art seems to think that the tradition of Browns football will go with the logo-less helmets, but looking at how Johnny Unitas, Bert Jones and other famous Colts aren't showing up in Market Square for the Colts' reunions, I would guess that tradition is very perishable when moved more than 400 miles, old AFL teams in silver and black excepted.

Peter Piper picked a peck of pickled peppers. You can't pick pickled peppers? Well, how about marinated picks that didn't make it last week? There was a squad of Nazi frogmen, yeah, that's the ticket...

**SEATTLE VS. WASHINGTON:**  
Taking heart in the 42-30 shoot-out victory over Jacksonville last week, Seattle coach Dennis Erickson digs through the rule book and develops a new "eggshells with hammers" scheme; 16 players on offense and 6 on defense.

Pick: *Washington*

**JACKSONVILLE VS. TAMPA BAY:**

Questioned about his statement of "being happy for Wayne Fontes" after losing to Detroit last week, Sam Wyche immediately launches into "I Love You, You Love Me" a la Barney and starts vibrating a la Beavis until his assistants swat him back to reality. The outburst is later blamed on dehydration and the Shoemaker-Levy comet.

Pick: *Tampa Bay*

**INDIANAPOLIS VS. NEW ENGLAND:**

The head bookkeeper of the Colts announces that if the Browns' pending move goes through, they will be able to reduce their alimony payments to Baltimore by 30%.

Pick: *New England*

**PITTSBURGH VS. CINCINNATI:**

Cincy coach Dave Shula falls into

a brief ennui after admitting that he misses playing 10 non-divisional teams each season instead of 8. After it's pointed out that the expansion team will make his own look better, he calms down.

Pick: *Pittsburgh*

**ST. LOUIS VS. ATLANTA:**  
Something funny happens. Someone says something else funny. Something else funny happens. Dammit, do you think it's easy to think 15 of these things up a week?

Pick: *Atlanta*

**ARIZONA VS. CAROLINA:**  
Buddy Ryan announces that he is hiring the "tough love" sheriff of Maricopa County as a consultant; no more Liquid Heat and two weeks on the yardage-chain gang for breaking curfew.

Pick: *Carolina*

**N.Y. GIANTS VS. PHILADELPHIA:**

Randall Cunningham makes a futile attempt to regain his first-string status when he offers the Eagles' playbooks to the Giants; no strangers to game theory, they dispassionately say no.

Pick: *Philadelphia*

**DETROIT VS. CHICAGO:**

Tempers flare as it is revealed that all of the arsonists who were

kept from burning Detroit down on Devil's Night all went to Chicago instead.

Pick: *Chicago*

**GREEN BAY VS. CLEVELAND:**

Art Modell attempts to make amends to the irate Cleveland fans by allowing them to choose the team's new name.

The top four choices: 58 percent chose Benedicts, 20 percent chose Spazzes, 14 percent picked Traitor-Bastards and 5 percent took the Crab Cakes.

Pick: *Green Bay*

**SAN DIEGO VS. DENVER:**

Three Chargers are framed and accused of attempting to steal Klondike and Snow, the two polar bear cubs in the Denver Zoo, and steal them away to the San Diego Zoo. When it is pointed out that the ursines had been moved to Miami weeks earlier, Denver authorities relent and allow them to go free in exchange for thirty bushels of oranges and a mothballed Spruance-class light destroyer, which will be used to patrol Colorado's rapids once the keel gets taken in a bit.

Pick: *Denver*

**BUFFALO VS. N.Y. JETS:**

While their plane is delayed due to snow at Buffalo International Airport, the Bills (being an intellectual team, of course) begin some friendly games of Scrabble® when an argument develops on whether "professor" or "prof" is the preferred spelling. By the time they settle on "prof", Thurman Thomas is questionable for the game with a Q up the nose for ten points.

Pick: *Buffalo*

**DALLAS VS. OAKLAND:**

Admitting that his thinking was too "two-dimensional" in the previous week's debacle against the Forty-Niners, Barry Switzer dips into Jerry Jones' expense account to buy some easily concealed shovels and picks for the next game.

Pick: *Dallas*

**NEW ORLEANS VS. MINNESOTA:**

After Saints' kicker Doug Brien attributes his recent success (5 for 5 at medium-long range) to the Tabasco brand sauce of nearby New Iberia, Louisiana, George Seifert (his coach before he flubbed three crucial kicks in a row) immediately dips into Eddie DeBartolo's expense account to buy ten gallons for the

next game.

Pick: *New Orleans*

**HOUSTON VS. KANSAS CITY:**

Mojo Nixon, country music star and author of the classic, "Let's Go Burn Ole Nashville Down", appears on nationwide television and threatens to actually burn Nashville down unless the Oilers remain in East Texas. In a typically craven manner, the Oilers' owner agrees to move it NNE 150 miles to become the Nacogdoches Nachos.

Pick: *Kansas City*

**SAN FRANCISCO VS. MIAMI:**

At Bud's Ice Cream Parlor on Nob Hill, Dan Marino sets the record for most banana splits eaten by an NFL player at one sitting. Unfortunately, his teammates are unable to pay the bill and he ends up doing dishes for the next two days.

Pick: *San Francisco*

**RECORD**

Two weeks ago: 6-7  
Last week: Did I mention that those Nazis had lasers?  
Record This Year: 27-24



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# Beavers Push Through Season Transition

from the Athletic Department

## MEN'S SOCCER

Overall: 0-13-2 SCIAC: 0-9-1

The soccer team wrapped up the season with their annual battle against the alumni. Despite a disappointingly low turnout for the alumni, the game still provided the onlookers with much entertainment. Assistant Coach Ken Kiessling was drafted into playing goalie for the alumni and managed to hold the Varsity to only 2 goals. Twelve players showed up to play with the Varsity squad, but three of those were playing with injuries. All 3 were seniors who wanted to play one last time for Tech. Bruce Englebrecht started but hurt his back during the game and had to leave the field. Co-captain Rob Bergeron had not planned to play but stepped in to help out, injuring his ankle. An ankle injury also plagued Anir Alagheband, causing his mobility to be limited. All 3 hustled despite these setbacks, with Englebrecht scoring one goal for the Varsity. The other goal came from senior Chris Marsh. Steven Chang and Jeff Flint each pushed the ball into the net for the alumni, and Greg Dudey found the back of the goal twice. The Alumni's 4 goals proved to be too much for the Varsity.

## VOLLEYBALL

Overall: 4-10

The Lady Techers played their last match of the season in front of a packed gym on Halloween night against L.I.F.E. Bible College. The crowd was alive with anticipation as the seniors were recognized for their contributions to the volleyball program. A blaring horn from Mrs. Bealko brought the crowd to new heights

of excitement as the queens of the court got ready to play. Seniors Angie Bealko, Laura Verhoff, Stephanie Haussman, and Alison Slemph all saw playing time and worked hard in their last CIT career match. Coach Burl stated, "The seniors' skill, motivation and leadership will be missed next year." The team put forth a strong effort against L.I.F.E. but was unable to take the match, losing in 3. Jen Holland had 7 kills, Bealko tallied 11 digs.. and Grace Yang grabbed 6 kills and 8 digs. Slemph did a great job playing middle front for her first front row appearance in a match.

## MEN'S CROSS COUNTRY

Overall: 10-4 SCIAC: 4-3

The Beavers ended their 1995 season on Saturday, November 11th at the Western Regional meet in San Diego. Caltech placed sixth out of nine teams, just edging out Whittier College and solidly defeating Redlands and LaVerne. CIT's first runner, Dan Kleiman, came in at 18th with a time of 27:18. Next for the Beavers was Brian Barris with a time of 28:41, followed closely by Tom Dmukauskas. Daniel Richard was the next Techer to cross the finish line, followed by Conrad Zeisler, Tom Nakatani..

## WOMEN'S CROSS COUNTRY

Overall: 7-10 SCIAC: 2-5

The Lady Techers also traveled down to San Diego this past weekend to compete in the Western Regional meet. The lady harriers gave it their all as they ran in their last meet of the season, placing 8th out of 12 teams. Cailin Henderson lead the Caltech women, coming in at 26th with a time of 20:51. Janet Sun, follow-

ing close behind, crossed the finish line with a time of 21:13. Phyllis Chen followed, coming in at 47th. Gretchen Larson, Karen Bletzer, Keri Ryan, and Aimee Pierce came in with times all under or right at the 24 minute mark.

## WATER POLO

Overall: 4-13 SCIAC: 0-10

This year's water polo season ended at the SCIAC Championship with five hard fought games in three days. The first day opened against Occidental College and Pomona Pitzer. Both games featured the outstanding play of Mike Greene and Donovan Stevens. Both players are seniors and played in their last college games. The two games had the same script as the score was close at half and then sloppy play cost the Techers dearly and they could not recover. Final scores Pomona 9-14, Occidental 7-17. Freshman Brian Collins came alive from the outside scoring 2 goals from downtown worth four points against Oxy and two man up goals against Pomona.

Day two found the Caltech squad split into three groups. Group one went to the game, group two was sick with the flu, and group three went to the Mojave desert for an important class that could not be missed. The two games were against the first place Claremont-Mudd-McKenna-Scripps and the second place Redlands. Both games were a little tough to watch but Caltech hung in there and played their best. Sooketoo Bhuta and Collins scored in the 15-2 loss to CMS, only Roquez could score against Redlands in a 21-1 mass killing. Greene and an injured Stevens reported for the last game against

Whittier and both did an outstanding job stealing passes and putting a stop on the Poet's top scorer in the Conference. The Techers shooting was lacking as shot after shot did not make it to the, mark and Caltech was forced to play from behind. The score was Whittier 7. CIT 5 one minute into the third quarter. After a number of tough calls that did not help, the Techers and a two point score from Whittier, at the end of the quarter the score was WC 15, CIT 7. Scoring for the tournament was Greene 10, Collins 8, Stevens 4, Bhuta 2, Rodriquez and Jonathan Aldrich each with 1.

Coach Dodd relating about the season said, "I am very happy with this year's team. The level of play was very high early in the year before sickness and injuries took their toll. We still had our moments when we could play with anyone. Added to that the team was just a wonderful group of guys to be around."

## MEN'S BASKETBALL

On Saturday, November 11th, the Men's Basketball team hosted the annual Alumni game. Despite the strong showing by the alumni in the first half of the varsity game, the young varsity squad proved, to be too much for the alums to handle. Recent graduate Grant Templin, led field for the alumni line to the bank 9 times from his old teammates. Also back for his first alumni game was '94 graduate John Parks, shooting 3 pointers and hitting the boards. Jason McCloud played strong inside, making sophomore Ben Turk work hard at defense. Many other alums added to the enjoyment of the varsity and JV games and a good time was had by all.

## FENCING

The Caltech Fencing team opened up their '95-'96 season on November 4th against CSUF, CSULB, and UCSD. The saber team was impressive in gaining the first of three victories for the day against CSUF, then struggled to 2 hard fought victories over CSULB and UCSD. The men and women's foil teams struggled to victory over CSUF also, before "flaming" to defeat against the other two schools. Coach George Clovis stated, "We might have done better if we had not lost our third lady foilist due to a sprained ankle the night before the match." Saber team captain, Austin Collins lived up to expectations by winning all nine of his matches. He supported not only the team, but also his chances to win the individual championship. His teammates were not so lucky with identical records of four wins versus five losses. Mihoko Kato and Emma Goldberg had identical records of five wins and three losses for the day, but needed at least one more lady on their team to have a chance for team victories. They both are in good standing for individual honors in the conference. Returners to the squad include seniors Anatole Faykin and Kato, juniors Collins and John, sophomores Dan Hennessy, Emily Jennings, Devon McClain, Andrprvr Laucius and Wes Salzillo. Newcomers include freshmen Goldberg, and Adrienne Bourke. Look for Goldberg to be nationally ranked before the end of her Caltech career. Collins is expected to win the IFCSC, (the conference which CIT is a part of, and to lead the team to another championship. All of the team works very hard and should perform strongly.

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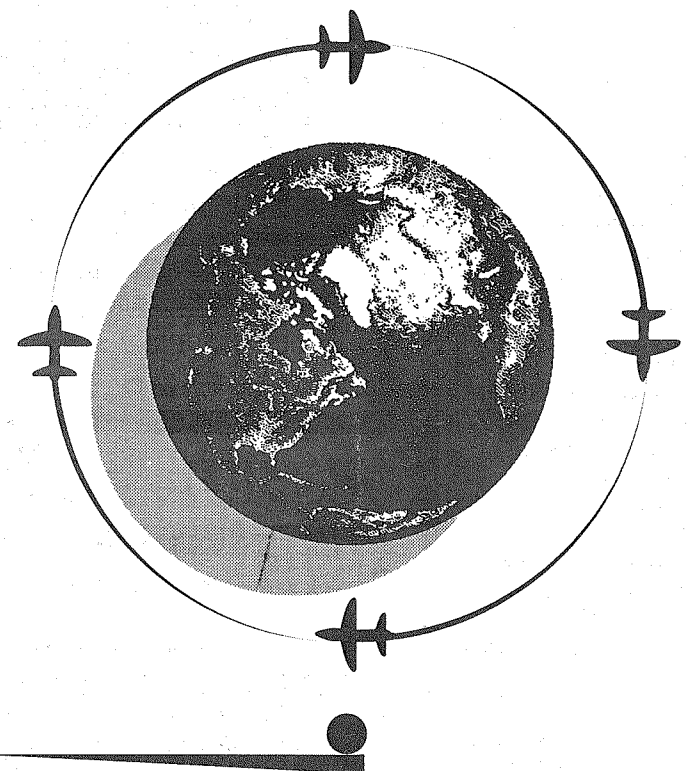
Thursday, January 11

4:00pm

Student Activities Center Rm#13

Hosted by

Dan Jansen (BCG LA)



- |           |              |           |              |           |               |           |         |
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# Women Hoopsters Looking to Cause Some Pain

by Angie Bealko

If you stumbled into a Caltech Women's Basketball practice recently, you may think you had walked right into Madison Square Garden. Well... maybe they don't play as dirty as the Knicks do, but they're getting there.

This year's team combines some strong returners with a lot of fresh new talent to give the lady hoopsters that *extra* aggressive thirst they've been yearning. Thirteen athletes make up this year's squad, led by new head coach Sherry Roche and assistant coach Mike Tice. Coach Roche believes in playing *very* aggressively so look for the ladies to put a lot of pressure on their opponents on both ends of the court.

Senior Captain Angie "Chevy" Bealko and Junior Assistant Captain Ellis "Shazing" Meng will prove to be strong on the boards and inflict some pain in the key. Sophomores

Michaelen "bam bam" Callahan, Lori "stormin'" Hsu, and Irene "Speed Queen" Wong will be stirring up the back court for Caltech, catching many opponents asleep for easy steals. Senior Melissa "the Maniac" Hampton, Sopho-

more Katie "Texas Two Shooter" Stofer, Freshman Joanna "no I'm not Clint's daughter" Dodd, and Freshman Rachel "the Brute" Steinberger will make their presence known around the key as well as they push their

way around. Rounding out the lineup will be Sophomore Frances "Sizzlin'" Siu, Freshman Hanna "One Eye" Cai, Freshman Nasim "Limpy" Afsarmanesh, and Freshman Kara "I'm Gonna Hurt You" Swedlow adding much speed

and aggressive play to the guard positions.

This year's first game is on Monday November 20th at 7:30 p.m. at the Braun Gymnasium. Come for the *blood*, the *sweat*, the *trash talk*, and good ol' basketball. It'll be worth it.

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Announcements

w Today is the last day that the Caltech United Way Campaign will be collecting you canned and dry food goods donations for the needy in our community. Collections sights will include all houses and nearly one collection barrel in each building. All donations will be greatly appreciated.

Events

w The Caltech-Occidental Symphony Orchestra will be performing at the Ramo Auditorium with guest conductor Allen Gross on Tuesday, November 21st. The program is yet to be announced. Admission is free.

w The TACIT performance of Dylan Thomas' *Under Milkwood* will be performing "conventionally" at the Red Door Cafe on Friday, November 24th through Sunday November 26th, followed by two more shows on Friday and Saturday, December 1st and 2nd. Friday and Saturday shows are to be held at 8pm, Sunday shows at 2pm. General admission is \$6, \$3 for students.

w The next movie to screen in the German Film Series (emphasizing Swiss films this year) is *Les Petites Fugues (The Little Explorations)* (1978). It will be shown on Wednesday, November 29th, in Baxter Lecture Hall at 7:30 pm. This film features English subtitles and is presented free of charge. For more information, please call x3610.

w The Caltech Glee Clubs Annual Holiday Concert will be held on Friday and Saturday, December 1st and 2nd, at 8 pm in the Dabney Lounge. Included on the program is a performance of Britten's Ceremony of Carols and Rutter's Dancing Day, as well as many other traditional carols. Admission is free.

w The Friends of Caltech Libraries (FOCAL) Annual Dinner on Thursday, December 7th, will feature Jack Miles, author of the recently published book, *God: A Biography*. The event will be held at the Caltech Athenaeum starting at 6:00 pm with a no-host social hour and book autographing, dinner at 7:00 pm, followed by Dr. Miles' talk "Writing the Life of God." Admission is \$58 (\$48 for FOCAL members); reservations and payment are due by Monday, December 4th. Contact Barbara Huff-Duff at x4048 or by email at huffdhuff@cco.caltech.edu.

Dr. Dwayne L. Merry will narrate an Armchair Adventure travel film entitled "The Treasures of Mexico" on Friday, November 17th, 8pm.

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Announcements

w denotes a new announcement.

in the Beckman Auditorium. Admission starts at \$7.

Dean Elzinga will be giving a Paco A. Lagerstrom Chamber Music Concert including songs by Schubert, Vaughan Williams, Brahms, and Ravel on Sunday, November 19th at 3:30pm in the Dabney Lounge.

Bettyann Keyes, Instructor at the Art Center College of Design and Book Review Columnist for The Los Angeles Times, will be hosted in the next Seminar on Science, Ethics, and Public Policy entitled "The X-Ray Revolution: Medicine, Art, and the Technologies of Imaging" on Thursday, November 30th, at 4pm in the Judy Library.

From the Counseling Center

Gay, Lesbian & Bisexual Support Group meets the first and third Tuesdays at 7:30pm 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 395-8331.

Fellowships and Scholarships

The meeting for prospective applicants for the 1996 Summer Internship in Japan will be held on Monday, November 20th at 12:30pm in room 218, Baxter Hall. In 1995, nine Caltech interns worked at Japanese companies in Japan and had a significant experience. Prerequisites include basic Japanese language capacity. Further information and application procedure will be provided at the meeting.

From the Office of International Programs, MSC 0-54, extension 6330:

One-year cultural exchange programs in technical fields are now available to students through the Congress-Bundestag Youth Exchange Program for Young Professionals and Agriculturists. This program offers American participants the chance to learn about Germany first-hand through a combination of intensive language study, professional or technical schooling, and practical work experience. Applications can be requested directly from the CDS International by phone or mail at DCS International, Inc., 330 Seventh Avenue, New York, NY, 10001-5010, (212) 760-1400. The application deadline for the 1996-97 program is December 15, 1995.

From the Fellowships Advising and Resources Office, x2150 or lauren\_stolper@starbase1.caltech.edu:

w Attention seniors and first year graduate students. Applications for the National Defense Science and Engineering Graduate Study Program (NDSEG) are available in the Fellowships Advising and Resources Office. Applications are also available via the web at <http://www.battelle.org/ndseg/ndseg.html> At this point the application is not live-it can only be printed from the web. A live application is still under development. Although, it was hoped that it would be available this year, this will probably

not be the case. The NDSEG supports work in almost all fields of science and engineering. If your field of study does not appear on the list (e.g. astronomy), then list the field closest to it as your main field of study and your actual field under subdiscipline. (In the case of astronomy, a person would probably list either physics or math with astronomy as the subdiscipline.) If you have any other questions, please contact Lauren Stolper at the Fellowships Office. The NDSEG provides three years of support for graduate level study. Applicants must be U.S. citizens or nationals and be graduating seniors, recent alumni who have not yet begun graduate school, or 1st year graduate students. No military service or sponsorship of the Department of Defense is required of applicants. All NDSEG materials including transcripts and references must be received by, not postmarked by, January 17th.

w The 1996 U.S. Department of Energy Integrated Manufacturing Predoctoral Fellowships program is now open: applications and information are available on the Internet. This program awards 12 fellowships for 3 years of full-time study toward the PhD in an area related to integrated systems of manufacturing. Fellowship awards provide an annual stipend of \$20,000 and a cost-of-education allowance of up to \$15,000. Applicants must be US Citizens. The application deadline is December 1st. For further information, please access <http://www.nas.edu/fo/index.html>.

w Graduating seniors or first year grad students planning on attaining a Ph.D. degree in a biomedical engineering field may apply for the Whitaker Graduate Fellowship in Biomedical Engineering. The Fellowships Advising and Resources Office expects to have a small supply of applications available by Monday, November 20th. Applications are due by December 9th.

w The Department of Energy Computational Science Graduate Fellowship supports full-time Ph.D. level study in areas where the computer is used as a tool to solve problems in a scientific or engineering discipline. Examples of projects in this area might be computer based predictions of environmental changes, plasma dynamics for fusion energy, semiconductor design, or the study of fluid flow through geologic structures, etc. Therefore, students from a wide range of fields may find themselves eligible to apply for this fellowship. The application deadline is January 24th. A small number of applications are available in the Fellowships Advising and Resources Office.

Juniors, Seniors and Graduate students: Mark your calendar for the Rotary Scholarship meeting on Friday, December 1st at 12 noon in Winnett Lounge. The Rotary has several programs: a 1 year fellowship for study in any Rotary country, a multi-year program for those who wish to earn a degree abroad, and a short-term 3 or six month fellowship to support language study. Juniors should plan to attend this meeting in particular as the application process takes place in the winter with finalists announced in the spring/summer. Winners of this year's competition would not leave to study abroad until fall of 1997! Therefore juniors should apply this year and not wait until senior year unless they want a one year gap after graduating. Seniors should not be discouraged from applying as there are productive ways to use this interim year. Grad students can go while grad students or to do a project after receiving their Ph.D. A pizza lunch will be served at the meeting. To help us in plan-

ning numbers, send an email with the subject line titled Rotary Pizza Lunch and let us know your name, year of study, and your favorite toppings and if you usually eat more than 2 large slices of pizza! Please send this communication to [lauren\\_stolper@starbase1.caltech.edu](mailto:lauren_stolper@starbase1.caltech.edu) by Tuesday, November 28th.

The National Security Education Programs seeks to equip American citizens with an understanding of the less commonly taught languages and cultures to allow them to become more integrally involved in global issues in their field as professionals. Through the NSEP Undergraduate Scholarships for Study Abroad, students can study in any country except the following: U.S., Canada, New Zealand, Australia, and Western Europe. Freshmen, sophomores, juniors, and seniors may apply. Freshmen and sophomores can apply for summer, semester, or full year programs. Juniors and seniors are only eligible for semester or full year programs. Seniors may only apply for the program provided they will not graduate from the program before or during their term of study. Students interested in applying for the program should request an application from Lauren Stolper, Fellowships Advisor, by November 13th to allow sufficient time to complete the application and devise a plan of study. Completed applications are due by November 30, turned in to Lauren Stolper.

From the Dean's Office, 102 Parsons-Gates:

The Harry S. Truman Scholarship Foundation awards scholarships to juniors who have outstanding leadership potential and intend to pursue careers in public service. If interested, please stop by the Deans' Office. The deadline for receipt of nominations for this scholarship is December 1st, 1995.

From the Financial Aid Office:

Applications and/or information on the following and additional undergraduate scholarships are available at the Financial Aid Office at 515 S. Wilson, second floor. All qualified students are encouraged to apply.

Asian & Pacific Americans in Higher Education (APAHE) is offering four \$500 non-renewable scholarships for the 1996-97 academic year. Applicants must be California residents attending at least half-time in Fall of 1996 and must have a minimum 3.5 GPA. Applicants must also have undergone special circumstances or unusual hardships, must have a need for financial assistance to complete their educational goals, and must have a community involvement or do volunteer work with Asian and Pacific American populations. To apply, complete an application and statement of candidacy and submit it to the Caltech Financial Aid Office no later than November 24, 1995.

The California Irrigation Institute (CII) announces a \$500 scholarship award for junior and senior undergraduates majoring in an irrigation or water-related field of study. Applicants must have a minimum 3.0 GPA, must provide two recommendations from professors in the area of soil, water, irrigation, or other agricultural-related fields of study, and must not have previously received the award. Applicants must also write a 500-word essay on a subject dealing with water management and/or irrigation and must be willing to attend the annual CII meeting (all expenses paid). Applications are due November 25, 1995. For an application or more information, come to the Financial Aid Office.

The California Park and Recreation Society Aging Services and Activities Section announces its scholarship competition. Undergraduates and graduates may apply for the \$250 awards. Applicants need to be full-time students in the areas of recreation, leisure studies, or in an aging-related field. Applicants also must have GPAs of 3.0 or above and must have financial need. The deadline to submit applications is November 30, 1995.

The American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. is offering nonrenewable scholarships in the

amount of \$2,500 to full-time engineering students in the final two years of undergraduate study. Students must have a GPA of 3.25 or above and must be involved in the fields of heating, ventilation, air conditioning, or refrigeration, or in related areas including indoor air quality, energy conservation, human comfort, or HVAC system design, operation, or maintenance. Applications are available at the Financial Aid Office, and are due December 15, 1995.

The Elie Wiesel Foundation for Humanity is sponsoring its annual essay contest for full-time undergraduate juniors and seniors. Students are challenged to examine and analyze urgent ethical issues in essays of 3,000 - 4,000 words. First prize is \$5,000, second prize is \$2,500, and third prize is \$1,500. Essays must be postmarked by January 12, 1996. For essay guidelines and additional information, visit the Financial Aid Office.

The American Concrete Institute (ACI) is offering several awards. The Peter D. Courtois Concrete Construction Scholarships are two \$1000 awards for undergraduate study in concrete construction for the 1996-97 academic year. Eligible students must be enrolled at least half-time and must be seniors in 1996-97. The application, available at the Financial Aid Office, with all required supporting documents is due January 15, 1996. The ACI Committee is also offering one ACI James Instruments Student Award in the amount of \$800, for original student research on nondestructive testing of concrete. Applicants must submit a technical paper describing their research. The award is open to undergraduates or graduates, and the research work must have been completed within two years of the submission date. Completed technical papers must be received by ACI Committee no later than November 30, 1995 at the following address: c/o Dr. Allen Davis, Madsen, Kneppers and Associates, 9 East Exchange Place, Suite 900, Salt Lake City, UT 84111, (Telephone (801) 533-2888). ACI is also sponsoring three different competitions: the Concrete Cube Competition, the Concrete Egg Protection Device Competition, and the Concrete Projects Competition. For complete rules, call the ACI Education Department, at (313) 532-2600.

GLAMOUR Magazine announces its 1996 Top Ten College Women Competition. Women who are currently full-time juniors are invited to submit applications to receive one of ten awards consisting of a cash prize of \$1,000, the opportunity to meet with top professionals in your field, and national recognition in GLAMOUR's October 1996 issue. Applications are available in the Financial Aid Office and must be completed and postmarked no later than January 31, 1996.

The National Academy for Nuclear Training will be awarding 100 new \$2,500 scholarships for the 1996-97 academic year. Applicants must be U.S. Citizens, sophomores, juniors, or seniors in 1996-97, enrolled full-time, with a minimum GPA of 3.0. Applicants must also be majoring in nuclear fission or electric power-related fields, and must be interested in a career in nuclear power. Applications must be postmarked no later than February 1, 1996.

The Association of State Dam Safety Officials, Inc. announces its 1996 Dam Safety Scholarship Program. The scholarships are for a maximum of \$5,000. Eligible applicants must be juniors or seniors in 1996-97, must be U.S. Citizens, and must have cumulative GPAs of 3.0 and be recommended by their academic advisors. Applicants must also be in civil engineering programs or related fields, and must demonstrate an interest in pursuing careers in hydraulics, hydrology, or geotechnical disciplines. Applications and all supporting documents are due February 15, 1996.

The American Society of Naval Engineers (ASNE) is sponsoring a scholarship program to encourage college students to enter the field of naval engineering. The scholarship amount is \$2,000 for 1996-97. Applicants must be in their senior year of undergraduate studies, or be graduate students working toward a designated engineering or physical science degree. Both graduates and undergraduates must also be enrolled full-time, be U.S. Citizens, and must have demonstrated or expressed a genuine interest in a career in naval engineering. Applications and supporting documents are due February 15, 1996.

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