



Courtesy of www.pbase.com

Pasadena City Hall, built in 1927, is having base isolation installed to prevent damage in the event of an earthquake.

Aging City Landmark to Undergo Earthquake Protection Renovation

By ZHIYUN GUAN

For many decades, the Pasadena City Hall building has been a beloved local landmark. Now, renovations are under way to secure it against earthquakes, explained Provost Paul Jennings, chair of the City Hall Restoration Oversight Committee. Designed by architect John Bakewell and built in 1927, City Hall was constructed "well before the modern earthquake codes," Jennings said.

Over the years, nearby earthquakes have done some "modest damage" to the building. Eventually, a study determined that a strong earthquake could create a hazard and even destroy the building, and "the decision was made to investigate the possibility of rehabilitating" it, he said.

As the idea of renovation took shape, a small, informal committee that included Jennings advised the city architect on the method of seismic protection for City Hall.

"When the engineering and design study was made of the building, motions were put forward for what the retrofit would be," recalled Jennings. The cost of the project was also considered, "including the cost of the earthquake when it occurs, not just the cost of construction itself," he said. Adequate protection for the building was the most important factor. "The building is an icon of the city, and its expected life is indefinite," Jennings said. After considering all the factors, and "the relatively fragile nature of parts of the building," the committee

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Smell Experiments In Bees Confirm Theories

By DAVID CHEN

Professor Gilles Laurent presented a talk Wednesday night on the sense of smell and how our noses interact with our brains. The talk, part of the Watson Lecture Series, was held in Beckman Auditorium.

He was introduced by Professor Michael Dickinson, who previously presented another talk in the Watson Lecture Series on the research in his lab regarding the motion of flies. Dickinson stated that Professor Laurent "is the Tiger Woods of biology. He can make the impossible seem easy." He explained that Laurent had inspired a generation of experimentalists, including Dickinson himself, to try more daring experiments.

Professor Laurent explained his interest in noses by showing a parallel to his wife's interest in photography. He showed a photo that his wife took, and emphasized the close-up of a mysterious object. Explaining that the object was his nose, the audience laughed merrily.

"Most odors are complex," explained Professor Laurent. Typical perfumes contain only alcohol and water, but the fragrance itself is made of a "complicated mixture of oils." Brown coffee, for example, has more than 200 components for odor.

He also emphasized that odor perception is singular. To explain, he showed a chart explaining an experiment that Livermore and Laing conducted in 1998. Ordinary humans were asked to identify odors, and when there was only 1 odor, the test subjects were correct half the time. With two odors, the success rate was at 18% and with more simultaneous odors, the accuracy dropped to almost zero. Professor Laurent noted that even trained noses have difficulty detecting multiple odors.

An interesting aspect of odor is its invariance with regards to strength or concentration. For example, *Anopheles gambiae*, the mosquito, depends on this property to locate sweat compounds because it needs human blood

Continued on Page 8, Column 1

Secretary, Tech Editor Races Go to Run-Off

By MATTHEW WALKER

After much anticipation, the second round of ASCIT elections took place on Wednesday. After twelve hours of balloting, three of the six decided Board of Directors offices were taken by returning BoD veterans. In a surprising turn of events, two races, for secretary and *Tech* editor, were close enough (within the margin of error of three votes) to qualify as ties. According to the last communication from outgoing President Galen Loram, the tied races will be decided by run-off on Monday.

A protest of the election held up the release of numerical results. Though the exact nature of the protest is unknown, a variety of election irregularities could have thrown a wrench in the works. According to ASCIT bylaws, the election should have happened two weeks before it did, but it is unlikely that the Excomm would consider that a valid protest. Also, online registration violates a bylaw requiring nominations be signed by the nominee. More likely, the lack of a definitive list of candidates before the election, or the fact that the election date was from Tuesday on Tuesday afternoon to Wednesday could be holding up the works. There was also an irregularity in the senior class co-president election, where a candidate was allowed to publish a statement, but wasn't registered as a student.

Interim BoD secretary Meaghan Pacey was surprised by freshman Parvathy Menon in the secretary race. After stepping in to cover for Corinna Zygourakis, Pacey had been untiringly submitting the minutes. She may have undermined her position with a dry statement that bogged down in the details of last year's frosh in Avery decision, though she did voice some enthusiasm for working with clubs instead of just handing out checks. Menon,

on the other hand, ran a somewhat mysterious campaign. Submitting a statement based largely on metaphor, she compared herself to Fresca and the wind, while avoiding references to Secretary duties and upcoming issues that permeated her opponents statement. Both candidates were thought to have strong support in the former BoD stronghold of Fleming, which may have led to the closeness of their race.

In the race for *Tech* Editor, incumbent Matthew Walker and *Tech* reporter Sonia Tikoo tied journalism newcomer Adam Craig. Walker and Tikoo produced a largely generic statement, the staple of which was the addition of new sections and more 12 page issues. On the other hand, in his statement, Craig cited several fictional examples of things that he would abolish from the *Tech* if elected. Despite not having worked for the *Tech* in his three years on campus, Craig garnered support from an ambitious poster campaign and, later in the day, an email campaign espousing his strengths. Supporters cite Craig's publications the *Totem* and on the Ricketts email list as demonstrations of his writing prowess.

Competition for the new position of Stewardship Committee Chairman was surprisingly sparse. Chairman-elect Eddie Truong-Cao seemed to be the only dedicated candidate in the race. The Stewardship Chairman will head biweekly meetings of the Stewardship committee, which meets with members of the Housing staff and the damage representatives from each of the seven houses to address maintenance issues that come up and to decide on charges in disputed instances. Truong-Cao offered his annoyance with common maintenance issues as his motivation for making sure the stewardship process runs smoothly.

Continued on Page 2, Column 1



D. Korta/The California Tech

Professor Gilles Laurent, described as the "Tiger Woods of Biology" draws a parallel between his interest in the sense of smell and his wife's photography hobby.

Numerical Results Delayed by Protest

Continued from Page 1, Column 5

In a closely watched election, Peter Foley ousted challenger Melody Grubbs for the office of Interhouse Committee Chairman. Promising to accurately represent student and house policy to both the BoD and the Institute administration, Foley adopted a stance that many believe helped lead to President-elect Warner Leedy's victory in the first round of elections. Foley also promised to keep undergraduate community, traditions, and autonomy strong as the students enter the disruptive period of renovations. Foley also offered ideas to keep important resources available, including the coffeehouse, the DDR machine and the screening room.

Board of Directors newcomer Dima Kernasovskiy triumphed in the Social Director race. There was little differentiation between the platforms of the two candidates. Kernasovskiy promised to improve on the number of ASCIT Social events both on and off campus, noting in particular that there is a huge surplus due to the recent dues increase that could be used for social events.

In an election of relative unknowns, Todd Gingrich was victorious in the race for Freshman Director at Large. Gingrich may have had appeal as the organizer of a prank on MIT, though the prank never ended up being carried out. He produced a generally uncreative statement, offering the usual promises to increase com-

munication between students, and especially freshman, and the BoD, as well as suggestions of ways to use the budget surplus like more social events.

Current Freshman Director at Large Kelly Lin swept the Treasurer election, largely riding on her experience on the BoD as her main qualification. She also parlayed her experience working on the *Big T* as an asset given the recommended retasking of the officers by the current BoD. Under the proposed changes, the Treasurer will take over oversight of publications from the Upperclass Director at Large.

In the race for Director of Academic Affairs, former Interim Director Meng-Meng Fu successfully regained her seat on the BoD. With another Student-Faculty Conference coming up, students voiced their confidence in Fu's past service as an ARC rep and as interim director. Fu also pledged to hold ARC reps accountable for getting more feedback from their constituencies.

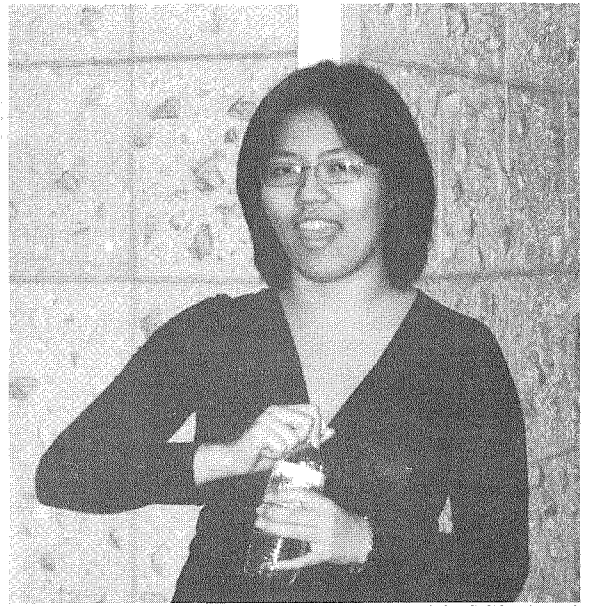
The Senior Class co-Presidents race was won by outgoing Interhouse Committee Chair Kim Popendorf and her running mate Angelina Crans. Offering to make senior year "as carefree as possible," Crans and Popendorf made common senior class co-president promises such as having a super graduation speaker and an impressive class gift.

Your Brand New BoD



L. Tran/The California Tech

ASCIT Social Director Dima Kernasovskiy (left) and Freshman Director at Large Todd Gingrich.



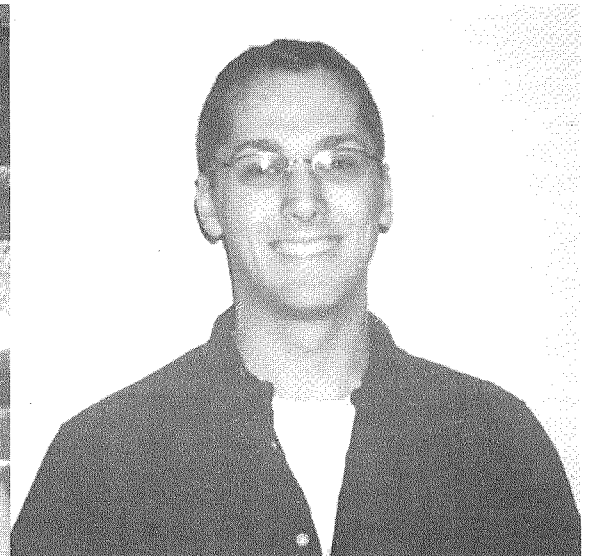
L. Tran/The California Tech

Interhouse Committee Chairman Peter Foley (left) and Director of Academic Affairs Meng-Meng Fu.



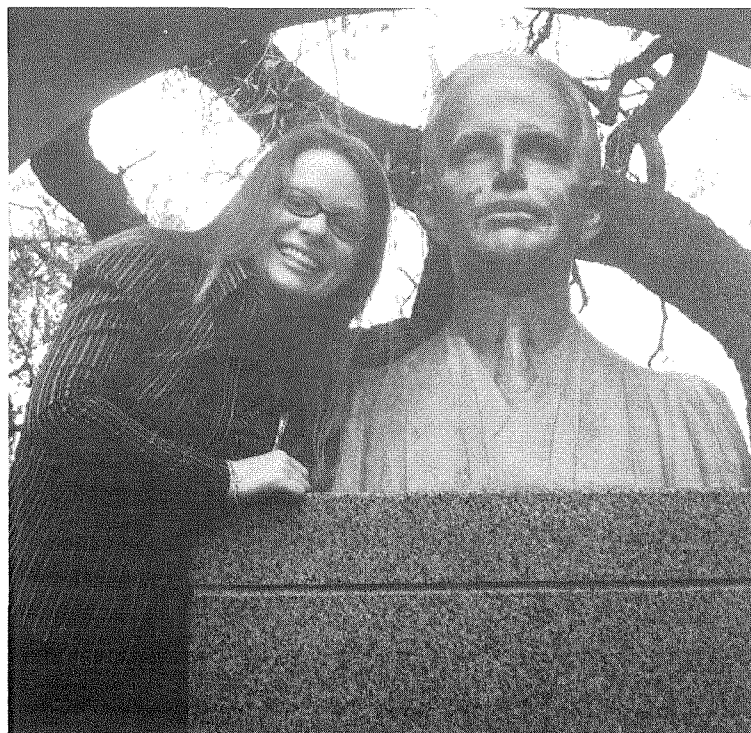
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Freshman Parvathy Menon seeks election to the office of Secretary in Monday's run-off.



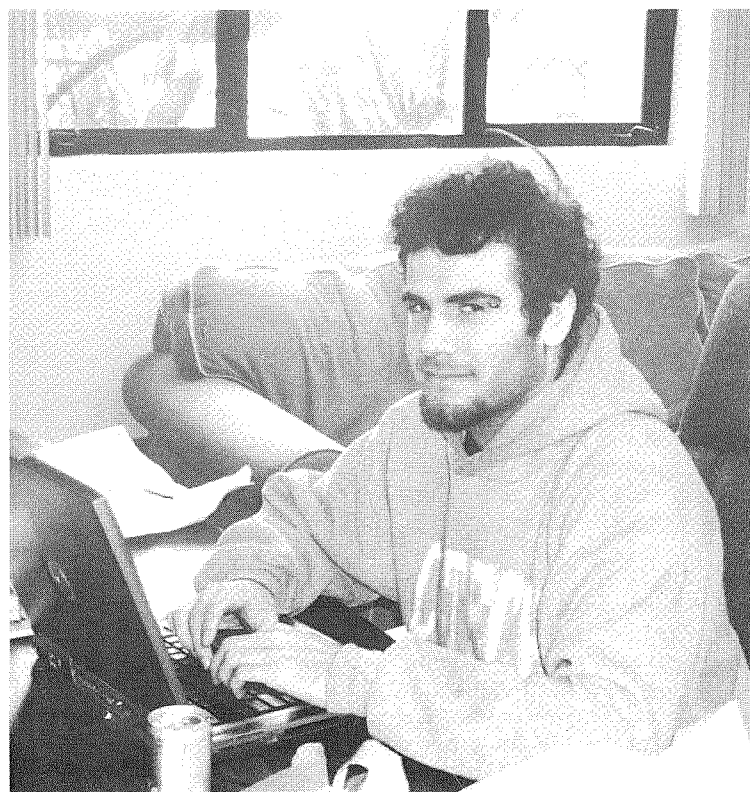
L. Tran/The California Tech

Treasurer Kelly Lin (left) and Upperclass Director at Large Ryan Farmer.



L. Tran/The California Tech

Interim ASCIT secretary Meaghan Pacey tied in last Wednesday's election for the next ASCIT secretary.



L. Tran/The California Tech

After being nominated by a friend, Junior Jeremy Leibs won the CRC Co-Chair election from a pretty wide field of candidates.

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Aquatics Produces Final Splash with Broken Records, Basketball Teams Face Losses Despite Improvement

By MIKE RUPP

Caltech Athletics Weekly
Roundup
February 21, 2005

Swimming and Diving closes season with record-breaking finale

The Caltech Swimming & Diving team broke four school records this past weekend as it finished its season at the SCIAC Championships.

On Friday, Freshman Tim Curran broke the school's record in the 100 Yard Backstroke with a time of 53.34, beating the old record of 54.97 by more than 1.5 seconds, and making a "B" qualifying standard for the NCAA Championships. Two days later, Curran also broke the 100 Yard Freestyle record with a time of 47.67. The previous record had been 47.93.

The 400 Yard Medley Relay Caltech record of 3:46.9 that had stood at since 1969 was shattered when on Thursday, a team including Curran, Senior Team Captain Jason Lee and Sophomores Tom Jurczak and Dan Oliver obliterated it by more than seven seconds with a time of 3:39.96. Each member of the relay team dropped nearly two seconds apiece while accomplishing the feat. The previous record had remained the only one not set during Head Coach Clinton Dodd's tenure at Caltech.

On Friday, the same team broke the 200 Yard Medley Relay record with a time of 1:40.23, surpassing the 1989-established record of 1:42.07 in that event.

On the women's side, Junior Bekah Eason came in third overall in the three-meter diving competition with a score of 343.10. Eason also placed fourth in the 1-meter diving competition with a score of 303.30.

This year's SCIASC Championships marked a fitting end to another outstanding season for the Caltech Aquatics program. Congratulations to the whole team!



courtesy of www.athletics.caltech.edu

Athlete Spotlight: Men's Swimming: Freshman Tim Curran

Tim Curran, a freshman from Phoenix, Arizona pulled off an



courtesy of www.athletics.caltech.edu

Swimming & Diving (from left to right) Senior Jason Lee, Sophomores Tom Jurczak and Daniel Oliver.

incredible conclusion to his first season with the Caltech Swimming & Diving program. Curran set two school records in individual events with the 100 Yard Backstroke (53.34) and 100 Yard Freestyle (46.67) and was part of two record-breaking medley relay teams: the 200 Yard Medley (1:40.23) and the 400 Yard Medley (3:39.96).

Curran was also a major contributor to the Men's Water Polo team, participating in 70 quarters this season.

Nevertheless, Curran's season may not be over yet. His record-setting time in the 100 Yard Backstroke met the class "B" qualifying mark for the NCAA standards, and could potentially lead to an invitation to this year's National Championships, hosted by Hope College in Holland, Michigan, March 17-19.

Track & Field: Leibs takes 9th at Springco Invitational

Though most of the of their teammates were relatively idle this past weekend due to the weather-related

cancellation of the Pomona-Pitzer All-Comers meet, Juniors Jeremy

Leibs and Tim Tirrell were active and competing in the 2005 Springco Invitational hosted by Northern Arizona University.



courtesy of www.athletics.caltech.edu

Track and Field: Junior Jeremy Leibs

Leibs, who hopes to qualify for the NCAA National Championships for Indoor Track & Field, came in 13th place in the 60 meter hurdles prelims. He improved to the ninth position during the event itself, coming in with a time of 8.62. Both Leibs and Tirrell also participated in the preliminaries for the 60 meter dash. Tirrell came in with a 7.42 and Leibs had a 7.60.

Leibs currently represents Caltech's best chance to send a representative to national competition. The Track and Field team will next compete on Saturday, February 26th at the Whittier All-Comers.

Men's Basketball loses another close one against Whittier

The Men's Basketball team showed further signs of closing the gap against their SCIAC opponents during their 56-65 loss to Whittier College this past week.

Despite trailing most of the game and at one

point falling behind by as great a margin as 22 points, the team responded with grit and determination to rally back, cutting the lead down to six with 2:46 left in the game due to a field goal by Junior Jordan Carlson.

Carlson finished the game with a team-high scoring of 15 points and nine rebounds. Freshman Paxon Frady also established a personal career-high of 14 points.

Later in the week, the team lost to Occidental, 45-87. Freshman Bryan Hires lead the team in that game with 12 points. Carlson added 11.

The team will play its next game Monday night at Redlands, and will finish off the season this Thursday at home against Cal Lutheran. Graduating Seniors Xiao Wang, Christian Guitierrez and Jeff Lamb will be honored during a pre-game ceremony. Tip-off will be at 7:30 PM.

Roberts leads Women's Basketball against Whittier

Freshman Jessica Roberts led the Caltech Women's Basketball team to one of its best games ever on Tuesday night, with a 52-69 loss to Whittier.

Caltech stayed with Whittier the entire first half, leading by four early on and going into half-time tied 33-33. It was the first time in the program's history they have been tied with a SCIAC op-



courtesy of www.athletics.caltech.edu

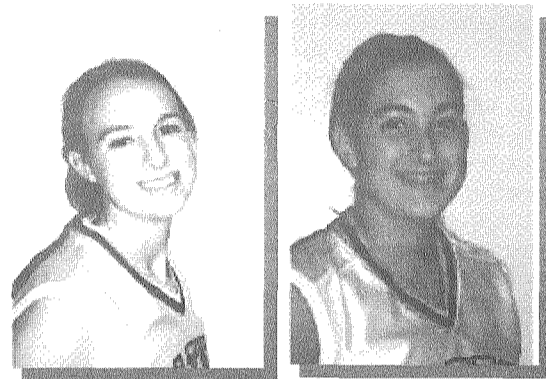
Men's Basketball: Junior Jordan Carlson (left) and Freshman Paxon Frady.

ponent at halftime.

Roberts lead the team with 20 points and six rebounds. Freshman Lindsay King also contributed 11 points, 12 rebounds and three blocks. Freshman Rene Davis had eight points, a career-high 14 rebounds, five assists and four steals.

On Saturday the team also faced loss against Occidental, with a final score of 36-86. Davis led Caltech with 14 points; Roberts added 11.

The team will play its next game Monday night at Redlands. They'll finish the season this Wednesday at home against Cal Lutheran. Graduating Seniors Penny Gunterman, Sue Ann Hong, Andrea Kung and Joanne Yim will be honored during a pre-game ceremony. Tip-off will be at



courtesy of www.athletics.caltech.edu

Women's Basketball: Freshmen Jessica Roberts and Rene Davis.

7:30 PM.

This Week in Caltech Athletics:

Women's Basketball
Wednesday, February 23
vs. Cal Lutheran
7:30 PM @ Caltech

Men's Basketball
Thursday, February 24
vs. Cal Lutheran
7:30 PM @ Caltech

Men's Tennis
Friday, February 25
vs. La Sierra University
2:00 PM @ Caltech

Men's Tennis
Saturday, February 26
vs. Pomona-Pitzer
9:30 AM @ Caltech

Women's Water Polo
Saturday - Sunday
February 26-27
Chapman Tournament
All Day - @ Chapman

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A Little Bit of Inflation Wouldn't Hurt A Fly

By TAMMY MA

It's a queasy time of year for us seniors who are trying to figure out what we're doing next year. Acceptances (and rejections) to grad schools, medical schools, law schools, business schools, clown schools, jobs are starting to trickle in. Interviews are being conducted, school visits are being made. Life decisions are contemplated as Caltech prepares to kick us out on our butts into the real world (or in the case of those of us who are choosing to continue school, we search for another classroom where we can hide from the world outside for another couple of years.)

Today I got my first rejection letter (or more accurately, email)-it came from MIT. No hard feelings, didn't really want to go there anyway (jerks). However, I have to admit the letter I got from them was quite amusing:

"If you want to re-apply for admission into the Aeronautics and Astronautics Department, you can submit a new application online...Please note that unless circumstances have dramatically changed, it is highly unlikely that you would be accepted on a second try. Items that would be considered dramatic changes include but are not limited to:

* GPA"

Dramatic changes in my GPA, huh? Harsh. This got me and a couple of my friends to reflecting (as we seniors are wont to do) on how Caltech functions as a school.

There's no doubt that we're smart people, so how does an institute that is designed to help us flourish as intellectuals make us hate school so much? How do we work and work to end up with such dismal GPAs? And when compared to our peers from other schools, we seem so inferior in terms of academic ability. What's

w r o n g with a little grade inflation, anyway? If other schools are doing it, doesn't it put us at a disadvantage when it comes to writing down our GPAs on our applications or resumes? Grade inflation would be a win-win situation for the school and the students. The school looks like

"What's wrong with a little grade inflation, anyway? If other schools are doing it, doesn't it put us at a disadvantage when it comes to writing down our GPAs [...] Grade inflation would be a win-win situation..."

it's producing smarter students; students are happier. How would we differentiate the smarter students to the more mediocre ones, you say? Give the super smart geniuses A++'s, and hey, I'd settle for A-'s.

It's true I came into Caltech expecting it to be a difficult ride. And I'm proud of my GPA, because though it's true it could probably use a dramatic change, it's a testament to how hard I've worked to make it to graduation. However, I can say that this hasn't been the case with many of my classmates. Over four years, my class has lost

a good number of people. Not just people that transferred to other schools, but people who quit college completely. How does it happen that people who are obviously intelligent and have a general passion for math and science simply decide to leave school?

Caltech does everything it can to make our lives outside of academics as easy as possible. We have one of the best financial aid programs, the house system immediately envelopes us into a caring family, they cater to our food needs, our rooms are cleaned bi-weekly, and friends, deans, and professors constantly watch out for our academic progress. And still, many people are very unhappy with the life that Caltech offers. Why? When this is supposed to be the best time of our lives? Part of the reason is not just the difficulty of the courses, but the feeling that we just can't do as well as we'd like to.

Most Caltech students here live for the challenge. We enjoy pushing our mental abilities to their limit. But on the top of the almost impossible problem sets, do you really need to penalize us with depressing grades too?

I'm not trying to whine about my grades. I can certainly say I definitely deserved some of them since I had no clue whatsoever what was going on for most of the class. What I am trying to say is that, it might be good for the Caltech reputation itself if the Institute cut us a little slack. The graduation and retention rates would be greater and student morale would be higher. What does the school have to lose in making us happy college students? My friends who go to Stanford, Harvard, even MIT seem to love their schools. I would readily argue that Caltech is on par with those institutions on practically every

level. And yet, talk to any Caltech undergrad, and you'll almost always find an underlying resentment towards Caltech.

It may be time for Caltech to reexamine its culture. Student bitterness is no small matter. It scares away the prime pre-frosh who come to visit during pre-frosh weekend, it breeds criticism against the administration, and ferments among the students, a self-perpetuating cynical approach to life.

Maybe it's something we students need to take upon ourselves--we chose to come here, we choose to stay. We have no one to blame but ourselves if we're truly unhappy. But maybe, it's also something the school could begin thinking about--What better way to project a good image of Caltech (and to garner alumni donations) than to send away graduates who had a good, fulfilling college experience? If MIT can do it, why can't we?

The Pledge of Allegiance, Education, and the Sign of False Issues

By SIMON QUE

Michael Newdow came to national attention a few years back when he brought forth a legal challenge to the public school in which his daughter was enrolled, over her saying the Pledge of Allegiance with the words "under God" in it. The main argument of his challenge was that the recitation of the pledge violated the separation of church and state, that it constituted a state-promoted religion, and so forth. In response, many criticized him for it.

The debate over the Pledge of Allegiance strikes me as almost comically ridiculous. Both sides are arguing over two words in the pledge while ignoring the bigger picture.

In bringing forth his case, Newdow protested the "daily indoctrination of religious dogma" that his daughter was receiving from school. He has a good point. If his daughter saying "under God" in school is "daily indoctrination," then so is everything else his daughter is learning.

That includes the pledge itself, which teaches this young girl to love her country. Look at the pledge itself: "I pledge allegiance to the flag of the United States of America." With or without the words "under God" in it, it smacks of state worship. In fact, this is not fundamentally different from the way a Pacific island tribesman might pledge absolute loyalty to an idol. Both the students and the tribesman are engaged in worship, differing only in the object of their worship. If a man from a remote island in the Pacific who has never been exposed to Western culture observed some American schoolchildren saying this in unison while facing the flag, it's likely that he would describe this as children engaged in the worship of an idol that consists of a piece of cloth with stars and stripes mounted on a pole. Thus, when kids are told to recite

the pledge, it is a form of indoctrination.

Much of it is subtle indoctrination, taught indirectly by non-didactic methods. Enforcement of the rules is one way about it. Strict adherence to rules in the virtual absence of any notion of right and wrong teaches legalism over morality. Rules against bringing pocketknives and water pistols to school teach that students need to be protected from "bad influences" more than they need to be taught personal responsibility and self-control. You get the idea. (Yet despite all sorts of Draconian zero-tolerance policies, many public schools remain dens of violence and bullying).

"The point of this argument is not to dictate what sort of education students should receive, but that there is no such thing as a purely objective education..."

Some might disagree on the teaching in schools of math, science, and language, claiming that they are objective and don't really contain any elements of indoctrination. They don't in and of themselves. Nevertheless, over time, the collective learning experience will inevitably shape the way students think and view the world. For instance, an emphasis on basic skills and knowledge that will be necessary in the workplace, coupled with a lack of emphasis on good character and good values, teaches students that one's professional life is more important than one's personal life, and that having a good résumé and

a good salary is more important than having good character and good values. And when students are taught that people came from single-celled organisms through spontaneous processes, regardless of whether it is true, it greatly restricts the available options for justifying, say, a moral criticism of the Holocaust. How about telling kids to not apply the implications of their scientific studies to morality? That teaches them that they should compartmentalize their thinking, ignoring any intellectual connections between various areas of learning (such as science, philosophy, history, etc).

Then there are laws regarding where minors have to be. Truancy and compulsory education laws compel kids to be in school; if they are not in school, then legal action needs to be taken. Such legal restraints teach students that they aren't expected to be as responsible as adults are. It also fails to address the problem of kids not wanting to be in school in the first place, for compelling them to be in school won't change their desires.

The point of this argument is not to dictate what sort of education students should receive, but that there is no such thing as a purely objective, value-free education. When students graduate from high school, they will have picked up a certain set of values and views, whether intended or not. Now that is the real issue at stake here--or at least it should be, not countless hours of arguing futilely over the trivial matter of "under God." The real issue is that since any type of education will impart a certain worldview on students; in actuality, it's a question of what to teach them, who should teach them, and how they should be taught. Until these issues are addressed, both sides are simply wasting their time fighting over the Pledge of Allegiance.

Seniors: Define Your Legacy - A Letter from the Gift Co-Chairs

By ANDREA VASCONCELLOS AND ALICE LIN

As spring approaches, time at Caltech is dwindling for the Class of 2005. It seems everything we do is "for the last time"- the last first day of classes, the last Midnight Donuts and the last Ditch Day. Soon, our Thursday nights will no longer be spent on grueling problem sets and midnight will no longer seem early. When members of the Class of 2005 cast their votes for the senior class gift two weeks ago, they participated in another tradition that marks the culmination of four years at Caltech.

Many classes before us have left their mark on campus by which to be remembered. Specifically, 32 percent of the Class of 2004 raised nearly \$900 to assist with funding a walkway near Chandler. The class gift is intended for the benefit of future students and Caltech community members. For four months, from February to May, the senior class unites in selecting an appropriate gift and raising the necessary funds from the class to give back to Caltech.

Now it is our turn. The Class

of 2005 has overwhelmingly voted in favor of classy dinnerware for future Techers to enjoy. This dinnerware idea is unique: to be shared among the houses, the set's attractive décor will be used to embellish the presentation of formal dinners. Like past senior gifts to Caltech, this elegant gift will provide a physical reminder to future Techers of our great class.

Our class target is 75 percent participation. That would be a new school record (doubling any previous senior gift campaign) and place us near the top of all graduating classes around the country. The Senior Class Committee, consisting of representatives from each House listed below, will collect Senior gifts until the May 27th deadline. The suggested donation is just \$20.05, in honor of our class year. However, this campaign is about participation and therefore any amount you are willing to donate is greatly appreciated. Remember, it's the act of giving that matters and every gift counts!

The class of 2005 has made its mark at Caltech in many ways, through academic and athletic excellence, through service projects and through the embodiment of the Caltech spirit. By giving to the Senior Class Gift, students can take one more step to leaving a lasting legacy of their time here at Caltech.

Despite the fact that though some of you may not have voted for the dinnerware, we want to emphasize that the Senior Gift campaign is not about the type of gift we give, but instead, its true meaning is rooted in our effort as a class. Give in appreciation of all the great memories that Caltech has made possible. Give to make Caltech a better place for the next generation of Techers.

Twenty dollars for enhancing student life and defining a legacy is not such a bad deal.

Andrea Vasconcellos '05, Senior Gift Co-Chair

Alice Lin '05, Senior Gift Co-Chair

The Art of Becoming a Man: A Guide Toward Achieving Greater Masculinity for the Inexperienced Caltech Male

By HAMILTONY FALK

When females, or perhaps males who prefer an "alternative" lifestyle (1), view the male populace of Caltech, the first thing they seem to think is "gosh, where are they?" This is because they tend to be around during the daylight hours, when most male Techers are either sleeping or taking a nap. If they were to discover the Tech boys though, it is likely that their thoughts would not be those of someone impressed by the masculinity of most men here. I've decided to try to do something about this my way (2).

I'll offer a few suggestions for the guys so they can try to make themselves a little more manly (if they so desire), as well as a few ways for all the gals out there to make themselves believe there is a little bit more macho in the local fellas.

My first suggestion to guys is to show off your muscles. This can mean wearing tight clothing (make sure it's the right type though. Under armor is manly, Hello Kitty T-shirts are not). My second suggestion would be to either lift heavy-looking things, or flex. Since the first requires actual muscle tone and/or strength, flexing is often your best choice. Try pointing to things using both arms while tensing all the muscles in your upper body, or yawning while making a fist to show off your rippling upper body. If this quickly exhausts you, don't worry, there are other options. While flexing biceps and pecs may tra-

ditionally be considered the manliest things to flex (and they are) you can also stun the ladies with a particularly powerful thumb flex or an intense frowning of brow muscles. Notice frowning is not always a good thing to do to ladies (sometimes it can even land you in prison!) so be careful to make sure girls are prepared if you're going to offer these examples of your masculinity.

My first suggestion for the girls is to pretend you agree when a male friend claims that the knowledge of how to build something more powerful than human muscle is a much more attractive than actually being able to move things with one's body alone.

Another thing that guys should do to transform themselves from scrawny, pale nerds into scrawny, pale hunk-studs is to pretend to hate anything sensitive, quiet, or gentle. This means you need to listen to nothing but either heavy metal or rap, avoid watching TV or movies that don't have both explosions and attractive women, (with the exception of pot-based comedies and any show that pits Man vs. Beast) and bear an intense interest in Ultimate Fighting Championships and sports cars. Don't read, don't own a pet, don't eat salad and no matter what, DO NOT listen to a capella. Remember, nothing is manlier than an insensitive jerk.

Girls, try to think of the male tendency to make dirty jokes and have very little respect for women as masculine.

If you really want to show how

much of a big manly guy you are, remember: nothing is less manly than a fulfilling long term relationship with a woman. You should try to restrict yourself to party hook-ups and one night stands. If you really want to show off, ignore women completely except to degrade them when in all-male company. Wanting a girlfriend makes you a wuss too, although not as much as having one. If you find yourself spending time with people who aren't men, start making crude advances. Usually this will drive the women off, but if they seem interested, start mentioning how you only like women for physical pleasure. Any real man will be sure to accuse you of being a homosexual if you spend too much time with women, so avoiding them can be key.

Women, I recommend avoiding any man who takes humor columns in the Tech seriously.

For my final piece of advice for the boys out there on being a "Real Man," I'd like to suggest taking an almost religious interest/obsession with the National Football League. There's Nothing like watching large men in tight clothing touch each other. Ok, let me rephrase that. There's nothing like being involved (3) in a fast hard-hitting sport to make you feel as if you, too, are big, strong, and making millions of dollars.

Ladies, my final piece of advice on finding a real manly man is to look up any member of the RPS club. Most of them are obviously going to have a girl or two already

clinging to them, but you might get lucky and find a single member. Male RPS members just reek of masculinity. At least, that's what I'm assuming that smell is.

(1) Vegetarians

(2) By writing a column that will be read by few and taken seriously by none. I like to think I make a difference.

(3) Sort of. As a passive viewer.

ASCIT Minutes

February 22, 2005 Meeting:

Present: Ann Bendfeldt, Ryan Farmer, Jenny Fisher, Shaun Lee, Kelly Lin, Galen Loram, Meaghan Pacey

Absent: Kim Pependorf, Claire Walton

Guests: David Gutschick, Warner Leedy, Michelle Wyatt

Introduction:

1. Call to order, 12:10 pm

Money requests:

2. David Gutschick requests \$500 on behalf of Ruddock House for OPI, motion passes 5-0-0.

3. Motion to grant \$100 each to Lloyd and Blacker for multihouse funding; motion carries 5-0-0.

4. Galen requests \$350 for massage tables on behalf of the Massage Club; motion carries 3-1-1.

Other business:

5. Jenny asks if we would be receptive towards funding an ARC

installment dinner (expected cost: \$300-400). Reactions are favorable, so she plans to do more research and probably bring this to a vote next meeting.

6. Midnight donuts are tentatively scheduled for this Thursday.

7. Next Wednesday, once the new BoD is elected, the BoD will have lunch with Margo Marshak.

8. Jenny tells us that a faculty committee still needs to vote on making Study Abroad a standing committee. Recall that Study Abroad becoming a standing committee would allow ASCIT to appoint students to it.

9. Reminder: VOTE IN THE ARC SURVEYS! They will be up for one more week or so.

10. There will be no ASCIT barbecue this term. Sorry kids.

Meeting adjourned 12:32 pm.

Respectfully submitted,
Meaghan Pacey
Interim ASCIT Secretary



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In advance of our March 14 on-campus interviews, we invite you to meet a team of our employees for an information session on our exciting career opportunities.

Please join us for an

Information Session

Thursday, March 3 from 3:30 p.m. to 5:00 p.m.

Brennan Conference Room

To sign up for an interview

Submit resume, transcript, writing sample, and three- to six-page cover letter through InterviewTRAK or to careers@bateswhite.com by **Friday, March 11**.

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Caltech Ballroom Dance Club
Come to our upcoming Caltech Ballroom Dance Club end-of-term party (all are invited, free admission):

When: Sat. Feb 26, 8:30pm-late

Where: Winnett Lounge
Mini-lesson on American Rumba from 8:30-9 pm

General dancing from 9 pm onward

Our hustle class is continuing for the rest of the term due to popular demand... no partner is required but some previous knowledge of hustle is helpful. Dance professional Gary Ulaner will be instructing. Class will be held Monday evenings in Winnett Lounge from 8 - 9:30 on 2/7, 2/14, 2/28, and 3/7. The cost is \$6/class or \$20/series for Caltech students and \$8/class, \$28/series for non-students.

Scholarships
Free Tickets to see William Shakespeare's Measure for Measure

The first 16 Caltech students who apply for tickets at the box office for each February performance will get in FREE thanks to the Hallett Smith Fund.

The Beckman Political Internship

The Beckman Political Internship will be available again this summer. The internship, supported by friends of Arnold O. Beckman, will pay a stipend of \$5,000. It allows a selected intern to spend the summer working in the office of a politician or a government agency and to see from the inside the process of government. The applicant is expected to make arrangements with the appropriate political persons or organizations. The internship is open to any Caltech undergraduate who intends to be a student next year.

If interested, submit a proposal describing where and how you would use the stipend along with one faculty recommendation, to the Deans' Office, 210-87, or email machang@caltech.edu, by MONDAY, MARCH 28, 2005

2004-2005 Everhart Lecture

The first 2004-2005 Everhart Lecture, "Were Microbes the Architects of Ancient Shorelines?" will be given by Tanja Bosak, a Caltech graduate student in Geological and Planetary Sciences. The lecture will be held in 101 Guggenheim Lab (Lees-Kubota Lecture Hall) on Thursday, March 3 at 4 p.m. Refreshments will be served at 3:45 p.m. For more information on the lectures, see www.its.caltech.edu/~els. Sponsored by the Graduate Student Council, the Graduate Office, Campus Life, and Graduate Housing.

Caltech Idol Contest/Spring Fling Luau

The Tech Express is holding their second annual Caltech Idol Contest and Spring Fling/Luau! The extravaganza will be held on March 9th, 2005. The Caltech Idol contest will be held from noon-1:30 pm, and the Spring Fling with food and festivities will be from 11 am to 3 pm, outside of the Tech Express. The contest is open to all undergrads, but the entire campus is invited to come watch and help themselves to the free food and great prizes. Last year's winner will be participating again this year, and the Hawaiian Club Hula girls will also perform.

Caltech Public Events:
Coming Soon ...

Measure for Measure
Feb 18 - Mar 5

Biglittlethings
Fri, Feb 25, 8:00pm
\$25, 21, 17

Space - Boldly Go
Sat, Feb 26, 2:00pm
\$5 (unreserved)

Cavani Quartet
Sun, Feb 27, 3:30pm
\$29, 25, 21, 17

Walter Mosley
The Literary Life
Fri, Mar 4, 8:00pm

For more information on events see <http://events.caltech.edu>

Events at the Caltech Women's Center

Slim Hopes
Special showing as part of Body Image Awareness Week. Date: Thursday, February 23, 2005; Time: 12-1pm; The average woman in the United States today is 5'4", 140 pounds. The average model is 5'11", 117 pounds. In Slim Hopes, Jean Kilbourne explores the nature and implications of this striking disconnect between fantasy and reality.

March is Women's History Month at the Women's Center
Keynote Lunch

Rita Arditti: Searching for Life; March 2, 12:00-1:00 p.m.; Athenaeum; RSVP required to wcenter@studaff.caltech.edu. Dr. Arditti, author and biologist, will trace the courageous plight of the Grandmothers of the Plaza de Mayo, a group of women acting as detectives and human rights advocates in an effort to find their grandchildren. These women helped create the Argentinean National Genetic Data Bank and identified 57 of an estimated 500 children who had been kidnapped or born in detention centers during the dictatorship that ruled Argentina from 1976-1983.

International Women's Day Film

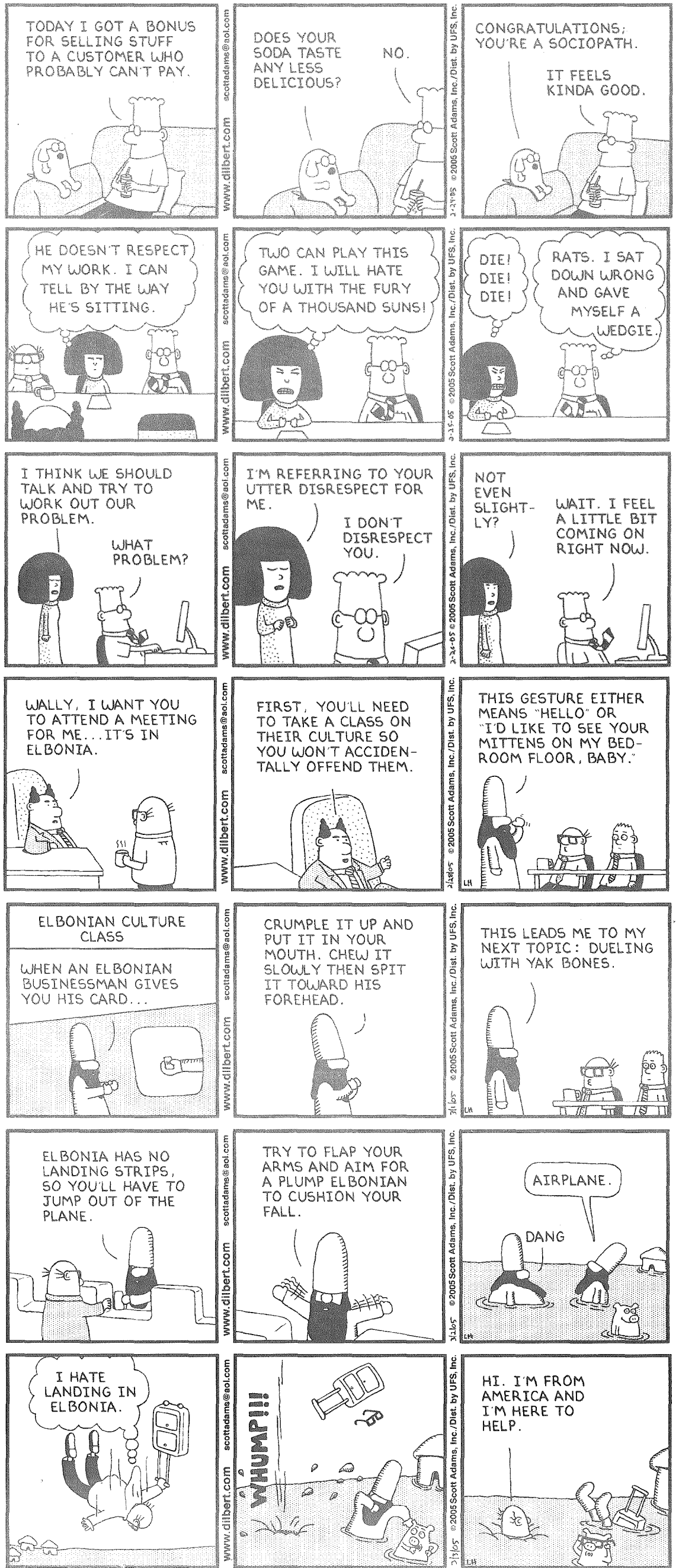
Rosa Luxemburg; March 8, 7:00-9:00 p.m.; Beckman Institute Auditorium; The International Film Club and the Women Center will host a showing of Rosa Luxemburg, a film that details the life of the woman who led both the German and Polish Socialist parties and whose anti-colonialist and pacifist stance on the issues of her day lead to her assignation. No RSVP needed.

Reel Women Film Series

Tupperware! March 10, 12:00-1:00 p.m.; 2nd floor of the Center for Student Services; This film reveals the secret behind Tupperware's success: the women of all shape's, sizes, and backgrounds who discovered they could move up in the world without leaving their house. Free pizza! No RSVP needed.

International Women of Hope Poster Series

The month of March; Lobby of the Center for Student Services; From Ella Bhatt of India and Peace Bikunda of Rwanda, these posters highlight the remarkable achievements of internationally-renowned women, their courage, compassion, and contributions to their respective countries.



Base Isolation Picked To Protect City Hall

Continued from Page 1, Column 3

decided to use the technique of base isolation.

Base isolation, Jennings explained, is analogous to the shock absorbers of a car, and works by reducing the impact of high-frequency motion. There are two schemes of base isolation, one of which will be selected for the City Hall building. In one scheme, base isolators take the form of large, alternating steel and rubber pads of four feet in diameter. "They can take a large amount of shear horizontally and retain their vertical strength," Jennings said. As a result, base isolation "reduces the natural period of the building significantly, so the high-frequency motions are much reduced." Hundreds of base isolators are placed under the building in this plan. The second type of base isolation uses a stainless steel dish with an angle, and the structure rests on a Teflon pad. During an earthquake, "the building slides, and it goes up, and slides back" due to the restoring force of gravity, Jennings explained. The base isolation technique works on buildings "up to a moderate height," he said.

Some people have favored an alternate method: shear wall construction. "There are two problems with that," Jennings

pointed out. It does not provide the same earthquake resistance as base isolation did, and it also places the historical components of the building in jeopardy. "People are concerned that the building gets through all this and still looks nice," he said. In spite of its higher initial cost, base isolation proved to be the most appropriate and economical choice.

As the committee became more formal, Jennings was appointed chair, and others with experience in construction joined. They included Allan Porush, a Caltech graduate, and a local engineer. "These were people who strengthened the committee," Jennings said. Still, the project was not without complications. "Things were going quite well until a couple of years ago, when the [economic] boom in China changed the price of construction materials," he said. The cost of large construction projects went up about 20 to 30%. In the meantime, new specifications meant more construction to help buildings meet code requirements. As a result, "there's a lot more business for contractors now, so the bidding environment isn't as competitive as you might hope." Ultimately, there were two bids for the project, one of which was too high. The chosen bid was from Clark Construction, which had experience with base isolation. "They had done the LA City Hall," Jennings said. In fact, the city hall buildings of many cities in California, including San Francisco and Oakland, have undergone base isolation projects. As Jennings explained, "It indicates that for buildings of this type, base isolation often turns out to be the preferred method

of protection, because it does the least damage to the historical fabric of the building itself." By now, the City Hall renovation project has begun. Pre-construction and site preparation are



Courtesy of pr.caltech.edu

Provost Paul Jennings heads the committee overseeing the City Hall Renovation.

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Sally Ride Science Festival Helps Encourage Girls to Pursue Science

By MARK WHEELER

PASADENA, Calif. - Girls, let's do launch! That's the way one waggish Florida newspaper headlined a story on the Sally Ride Science Festival, which comes to Caltech on Saturday, March 19. As you might guess, the festival is the brainchild of Ride, America's first female astronaut, and is primarily intended for girls in grades five through eight, their parents, and educators. That age group is a critical time for girls and science, since it's the time when they begin to drift away from their natural interests in science and math. That's a situation that Ride, the Ingrid and Joseph Hibben Professor of Space Science and professor of physics at UC San Diego, has devoted a large part of her life to reversing.

Over the last few years Ride has organized these festivals around the country, attracting hundreds of girls and parents for a day of science, socializing, and fun. Her company, Sally Ride Science, is dedicated to creating events, programs, and activities that support girls' interest in science, math, and technology.

This is the third year the festival has taken place on the Caltech campus. This year, registration begins at 11:00 a.m. The festival runs from 11 a.m. to 4 p.m. The \$18 advance registration fee (\$25 the day of the event) includes full festival participation, souvenirs, and lunch. Girls attending the festival also can join the Sally Ride Science Club for a sponsored rate of \$5 for the first year.

Highlights will include:

- A keynote address by Ride describing her experiences in space
- A "Sour Power" electrochemical engineering workshop
- A biological science workshop called "CSI Los Angeles: A Science 'Who-Dun-It?'" that lets kids become crime scene investigators for the afternoon

currently occurring, and construction will follow. In the meantime, the Oversight Committee will meet monthly to review its progress. The predicted time span for construction is 27 months, and the project will finish in 2007. At that time, the renovated and safer City Hall building will reopen.

--Hands-on, creative science, math, and technology-related workshops such as "Mystery of Booming Sand," and "A Tumble Through Time: How You Developed From a Single Cell," presented by Caltech faculty

--A street fair with science demonstrations, entertainment, free stuff, a drawing for prizes, and the chance to meet the former astronaut.

--An opportunity for parents and teachers to participate in workshops on ways to support girls' interests in science and math.

Ride, a member of the Caltech Board of Trustees, became the first American woman to orbit Earth when she flew aboard the space shuttle Challenger in 1983. Her second flight was also aboard Challenger in 1984, and she was training for a third mission when the spaceship exploded shortly after liftoff in 1986. She is the only person to serve on the accident investigation boards for both space shuttles Columbia and Challenger. Ride founded Sally Ride Science to support the large numbers

of girls and young women who are, or might become, interested in science, math, and technology. The company organizes events, programs, and activities for girls that empower them, engage them, and encourage their interests. In addition to the festivals, current programs include Sally Ride Science Camps, TOYchallenge, and the Sally Ride Science Club--a national club created to keep middle school girls engaged in science adventures by connecting them to people, information, and attitudes that will nurture their relationship with science. For more information on Sally Ride Science programs, please visit: www.SallyRideScience.com, or call (800) 561-5161.

The Office of Government and Community Relations is looking for volunteers from campus to help staff the Sally Ride Science Festival. Volunteers are needed to setup exhibits, registration, distribute lunches, assist with street fair booths, and assist with any first aid services. Those interested should contact bears@usc.edu.

Ethnic Visions Class To Bring Filmmakers

By ROBERT ROSENSTONE

Ethnic Visions, a program of nine dramatic feature films directed by members of minority communities, will be offered to students as an advanced Hum course (Hum 119) in the spring 2005 term, and to the larger Caltech community as an evening series of films. As a special feature, Ethnic Visions will bring a number of filmmakers to campus to meet with students and take part in post-film discussions.

Hosting the series, which will screen in Baxter Lecture Hall on Thursday evenings, and teaching the course, will be history professor Robert Rosenstone. He explains the reasons for creating the course and series as follows: "In recent decades filmmakers from ethnic minorities which are often un or misrepresented in mainstream Hollywood films have been making very interesting films that deal with the history, problems and future of their own communities. Viewing such films is a way of understanding our multicultural society, as well as learning something about the similarities and differences in the processes of immigration, acculturation, and Americanization."

Rosenstone has taught a similar class a few years back to what he calls "an enthusiastic group of students. But this time it should be especially exciting because the filmmakers will be here to answer questions and comment upon their work. It is always fascinating to listen to creative people explain what they do and why."

Ethnic Visions will include works made by Latino-, African-, Asian-, and Muslim-American filmmakers. "A couple of our films will be classics, but many of the works will be in-

dependent, or first-time filmmakers," says Rosenstone. "Even so, they are already extremely skilled and I'm certain we will be hearing a lot from them in the future." One filmmaker who has already accepted Caltech's invitation is Justin Lin, director of "Better Luck Tomorrow." Lin has just finished shooting his Hollywood feature. Among others who have already agreed to be part of the series are Ramin Serry ("Maryam") and Timothy Bui ("Green Dragon"). Currently Rosenstone is negotiating with several others. "It can be difficult to pin filmmakers down," he says, "because they are always flying off somewhere to do a job or pitch a new film. But I'm certain we'll have at least five as part of the course - perhaps even more."

Ethnic Visions has been endorsed by the Administrative Committee on Diversity and Minority Affairs, chaired by Professor Joann Stock. This means that the visits of the filmmakers to campus is supported by the President's Diversity Fund.

A full schedule of films will be available in the middle of March.

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Courtesy of www.streetlightfilms.com
Maryam, one of the scheduled films, is about an Iranian-American teenager.

Huntington Opens New Newton Exhibit with Feingold as Curator

By TRAUDE GOMEZ

SAN MARINO, Calif. — The brilliant and controversial life of one of the foremost scientific minds of all time — Sir Isaac Newton (1642 – 1727) — will be explored in a major new exhibition at The Huntington Library, Art Collections, and Botanical Gardens, opening March 5 and continuing through June 12 in the Library's West Hall. By showcasing a range of Newton artifacts, including his manuscripts as well as his personal interleaved copy of his groundbreaking *Principia Mathematica*, the exhibition will examine the formation of the mind of a genius, says noted Newton scholar Mordechai Feingold, the show's curator and a professor of history at the California Institute of Technology in Pasadena.

This is an exhibition in two parts: a follow-up exhibition entitled *The Newtonian Moment: Isaac Newton and the Making of Modern Culture* will examine his work and its influence on all aspects of modern culture. It runs from Saturday, July 23, 2005 through Sunday, Jan. 1, 2006.

A mathematician and physi-

cist, Newton's innovations transformed not only the realm of scientific thought and inquiry, but the wider intellectual world as well. After Newton, the search for universal (and rational) principles shaped the development of ideas in virtually all fields, including religion, history, art, and literature. "Everyone wanted to be the Newton of their field," says Feingold.

The Huntington show follows on the heels of the recent exhibition *The Newtonian Moment: Science and the Making of Modern Culture* at the New York Public Library, curated by Feingold as well. While the Huntington show will also include key manuscripts from the Cambridge University Library in England (where the largest collection of original Newton materials reside), it will mainly draw from The Huntington's Newtonian artifacts, none of which traveled to the East Coast. "The Huntington has an extraordinary collection of scientific materials," says Feingold. The show will also feature items from UCLA's Clark Library and from Caltech, showcasing a trove of Newton items that are housed in Southern California institutions.

Through approximately 70 Newton manuscripts, objects and related materials, the exhibition will explore the many facets of Newton's interests that also delved deeply into alchemy and theology — and delineate how his daring accomplishments evolved. Visitors to the exhibition will see personal letters and books, as well as his copious writings and exacting drawings. A centerpiece will be Newton's own copy of the first edition of his *Principia Mathematica* (London, 1687), which Feingold calls "the monumental treatise that unified celestial and terrestrial mechanics under a single law — universal gravitation — and charted the course of physics for some two centuries." Once the book was published, Newton took a copy and interleaved it with blank pages facing the original pages, handwriting corrections and additions on the blank sheets and in the margins. Also on display will be *The Opticks*, published 17 years after the *Principia* and containing Newton's revolutionary theories regarding light and colors.

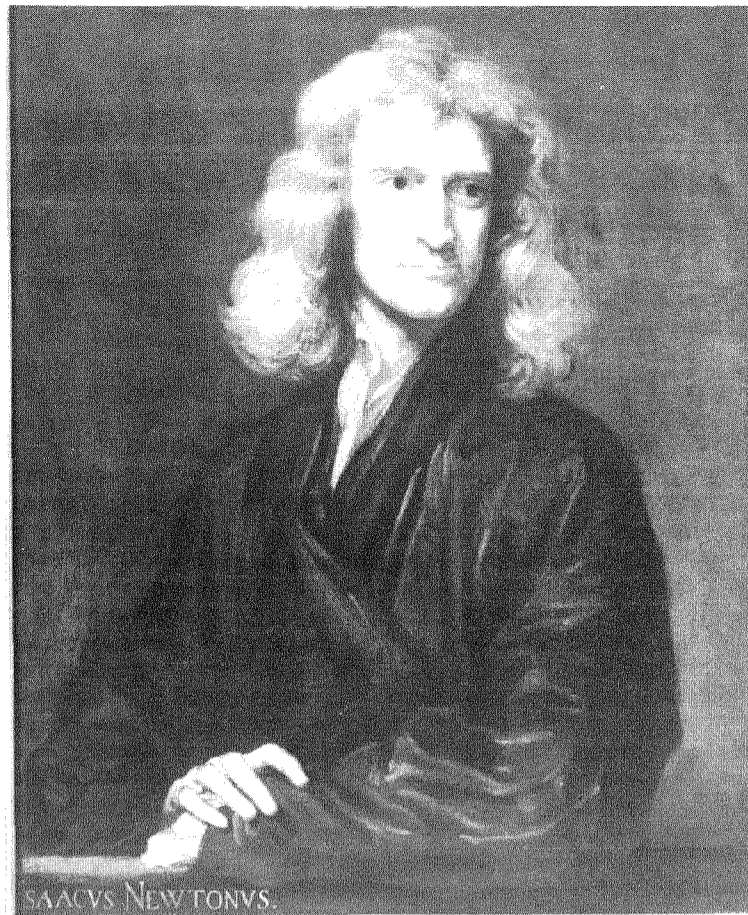
The exhibition also will display works of those who significantly influenced Newton's thinking. Galileo's 1632 treatise, *Dialogo sopra i due massimi sistemi del mondo*, was one of the imposing contemporary works that Newton set out to transform. Newton read the 1663 Latin translation, *Systema cosmicum*, which will be featured. His grasp of René Descartes's *Geometria* (first published in French in 1637 and later translated into Latin) marked his progress in higher mathematics and toward the invention of calculus. The Huntington will display its 1649 edition.

Newton remained pivotal even for those who criticized and revised his work, and certainly as Newton's new concepts were gaining acceptance and becoming the scientific standard, they provoked controversies and even public clashes. "For friends and foes alike, Newton became an icon to be emulated or rejected, revered or excoriated — but always there to contend with," says Feingold. In the end, Newton redefined the study of nature by insisting that it must be based on hard evidence and not on hypotheses — ultimately his ideas and innovations helped to usher in a brave new age of reason. "Hence, the era of Enlightenment and Revolution may be viewed as the Newtonian Moment," Feingold adds.

Indeed, Alexander Pope's celebrated couplet gives voice to the perception of Newton as God's emissary in the discovery of the laws of nature:

Nature, and nature's Laws lay hid in Night.

God said, Let Newton be! and All was Light



Courtesy of The Huntington Library

Isaac Newton is being featured in a new exhibit at the Huntington Library curated by Caltech Professor Mordechai Feingold.

Unexpressed Smelling Genes Hurt Humans

Continued from Page 1, Column 2

to survive. Honeybees also use this property when they release octyl acetate from their nasonov glands. Professor Laurent showed a video clip of a bee shaking its abdomen in order to release this chemical.

Professor Laurent then went over the actual process of odor detection. Air is breathed in and then goes to the nasal cavity, where there are receptors. He explained that one reason for the famous odor-detection abilities of dogs is that their nasal cavity is especially convoluted, increasing the surface area. Cells with cilia line this nasal cavity, and send out electrical signals when triggered. In 1991, Linda Buck and Richard Axel hypothesized what the receptor might look like. There are, indeed, G-coupled receptors containing 7 trans-membrane domains.

The receptors range in specificity. The most specific receptors tend to be associated with pheromones, or other compounds whose smell are used as signals. For example, the fly has a receptor active only to carbon dioxide. The majority of receptors, however, sense a family of chemicals. These receptors then output their results to glomeruli. In addition, one odor can actually trigger multiple families of receptors, leading to a set of activated glomeruli.

Professor Laurent then discussed some of the tools available that allow researchers to monitor the neuron activity. He showed a photo of silicon recording arrays, which are essentially micron-sized circuits, which allow the neurons to be part of the circuit. Thus, these arrays are able to monitor when the neurons are triggered. Researchers are also able to use glass micro-pipettes, which can penetrate individual neurons and stain them, allowing the researchers to record their activity.

With these tools, the next question that researchers wanted to answer was whether odors are recognized. Professor Laurent explained one method they devised to use with honeybees. The bees were placed in a harness and then exposed to a puff of odor. They

recorded the bees' initial response to the mysterious odor. They then puffed the odor while simultaneously delivering a reward, a drop of sucrose in this case, equivalent to the nectar on flower. Later, the bee would predict the delivery of the odor with a reward by moving its antennae toward the odor. This movement of the antenna allowed the team to "quantify the degree of recognition." A videoclip of this process was shown to the audience. A notable event was when the bee stuck its tongue out in anticipation of the reward. In parallel, a graph of the position of the antennae was shown, indicating that the fly's antennae also moved towards the odor.

Professor Laurent then showed a table of boolean entries, with each row representing the state of a neuron and columns representing time frames. As an analogy, he described how a musical conductor would look at the table to see which instruments are playing at any time. "In the end, it's a digital code," said Professor Laurent. They then graphed the activity of the neurons on an n-dimensional space for n neurons. This allowed them to measure the distance between two odors. The main trend was that the distance would increase with time, but the paths would already separate in less than 300 milliseconds.

Once the neurons are turned on, they can actually activate further neurons. To explain this phenomenon, Professor Laurent used the game of billiards as an example. The odor is the cue ball and the neurons are the remaining balls, the targets. With just a slightly different incidence angle, the final layout of the balls is drastically different. He explained, "The difference in the output, the spread of the balls, is large; it's amplified."

He explained that the amplification process increases noise along with the signal. Thus, it is crucial that the noise be reduced before amplification, which the olfaction process accomplishes by using the many identical receptors in the nasal cavity. The average of these randomly distributed receptors reduces the noise.

After the neurons, messages are transferred to the Kenyon cells, which are cells in the brain associated with memory. There are more Kenyon cells than neurons, but there are many more possible sets than Kenyon cells. On average, each Kenyon cell is connected to half the neurons and if there are 800 neurons, then each Kenyon cell has about 800 choose 400 combinations, about 10 raised to the 240th. At the same time, there may only be about 50,000 Kenyon cells. The temporal patterns, however, actually provide more information for the Kenyon cells.

Professor Laurent also noted that the research on dynamical patterns from the neurons and the Kenyon cells has only been done the past 10 years. In contrast, there has already been decades of research on the olfactory receptors and glomeruli.

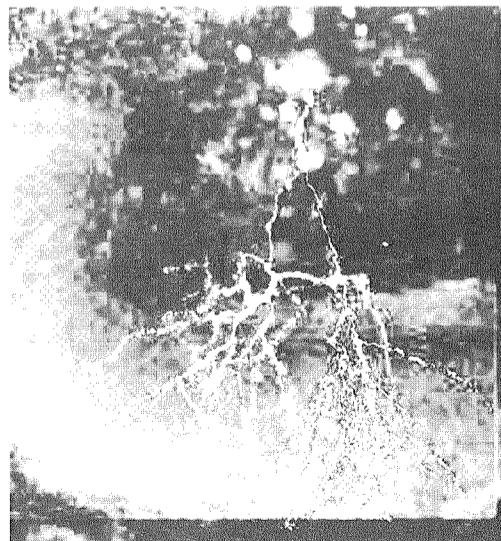
Professor Dickinson then offered the audience the opportunity to ask any questions. The first question asked whether the olfaction process is similar among species, and the answer was that the basic structures are the same, except that some names are changed.

Another question was in regards to the proportion of unexpressed genes. Professor Laurent explained that hu-

mans indeed have a high proportion of olfaction genes that are not expressed. In addition, the high variability of the unexpressed genes partially explains the poor smelling abilities of humans.

Also of interest was the cause of temporal patterning. Professor Laurent explained that the biophysics of the cells and the membrane properties caused this. In particular, the thin membranes act as capacitors. Continuing with his previous analogy, "Like the billiard balls hitting each other, they do bounce against each other but it takes time."

Gilles Laurent is the Lawrence A. Hanson Jr. Professor of Biology and Computation and Neural Systems. The next Watson Lecture, titled "Lifting the Cosmic Veil", will be on March 9th and will discuss the infrared universe.



Courtesy of S. Fariivar

Kenyon cells (above) receive messages from smell receptors in the nose.

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