

"...It was then that he lost his head, not to mention an arm or two, before he stopped..."

"And he smeared for 400 yards along the hills that lead into Scranton, Pennsylvania."

The California TECH

Volume XCVII, Number 15

Pasadena, California

Friday, February 2, 1996

Astronomers Discover Most Distant Galaxy

submitted by Public Relations

Caltech astronomers have found the most distant known galaxy at a red shift of 4.38, corresponding to a distance of some 14 billion light-years, near the constellation Virgo.

The yet-unnamed galaxy pushes back the earliest known time when galaxies formed to only one billion years after the Big Bang, which created the universe. Studies of this galaxy may tell us something about the early

history of our own Milky Way galaxy. The finding was reported in the January 20 issue of *Astrophysical Journal Letters*.

At a distance of 14 billion light-years, the galaxy is extremely faint and hard to see. The astronomers found it with the help of a quasar that happens to lie almost directly behind it. Quasars are the brightest objects in the universe, shining like celestial spot lights; most astronomers believe they are powered by monstrous black holes at their

centers.

The Caltech scientists were observing a quasar called BR 1202-0725, using the 10-meter-diameter W. M. Keck Telescope, when they made their discovery. This instrument is the world's largest optical telescope, and sits atop Mauna Kea, a 13,796-foot-high dormant volcano in Hawaii.

"We were delighted to see in the quasar's spectrum the signature of this distant galaxy," explained Limin Lu, a Hubble Fellow at Caltech and co-author of

the study. The other astronomers involved are Wallace Sargent, Ira S. Bowen Professor of Astronomy; Donna Womble, also a Hubble Fellow; and Thomas Barlow, a research fellow in astronomy.

The "signature" they saw consists of dark absorption lines in the quasar's spectrum. A quasar shines brightly at most wavelengths, so its spectrum is a nearly continuous rainbow of colors. But when a galaxy lies between the earth and a quasar,

the galaxy's interstellar gas absorbs certain wavelengths of light, leaving dark lines in the quasar's spectrum. This is what the Caltech astronomers found, and it announced the galaxy's presence.

Since it takes light from the quasar 14 billion years to reach the earth after it passes through the galaxy, the spectrum seen today reflects conditions in the galaxy 14 billion years ago. This "lookback" effect allows scientists

SEE GALAXY ON PAGE 3

Tech Loses Alum Nathan Frei to Cancer



PHOTO COURTESY 1993 BIG T

Nathan Frei

submitted by Barbara Green

Nathan Frei, class of 1993, died from cancer in Seattle on Monday night. While an undergraduate at Caltech, Nathan was a member of Page House and a social member of Blacker House. He was Page House representative to the Board of Control for a year and then served as Secretary of the Board of Control. In 1993 he was awarded the Deans Cup for his efforts to improve the quality of undergraduate life at Caltech and to establish lines of communication with the faculty and administration.

Nathan was from Pocatello, Idaho where he attended Pocatello High School. Since graduating with honors from Caltech, he had been a graduate student in Chemistry at the University of Washington. He was married to the former Diana McMahon, also a member of the class of 1993.

Students who wish to send messages of sympathy to Diana or to Nate's parents may contact the Deans' Office for addresses.

math and science and who include Caltech among their college choices.

Over the upcoming months, high schools have been invited to tour the Caltech campus, to have a math or science presentation by a member of the Caltech community, and to participate in a college-planning workshop.

The first school to visit Caltech as part of the Partnership Program was the California Academy of Math and Science ("CAMS") on January 11. Approximately 70 students from

Prof. Roukes Explains Nanotechnology

by Stephen Van Hooser

Last week, Professor Michael Roukes gave an informative presentation on nanotechnology, one of the most exciting branches of condensed-matter physics and perhaps the biggest fad of technocratic journalism.

Roukes quickly went through the subject of fabrication of chips using electron-beam lithography and their construction with scanning electron microscopes. A brief tour of the powers of ten preceded a journey into very small transistors, transmitters, and measuring devices that could experiment with the smallest particles of quantum mechanics.

For an educated adult who has had a college physics course, the lecture would have been understandable and informative. Perhaps most importantly, Roukes showed how journalists can sometimes go crazy with scientific concepts that they do not fully understand.

In an unusual twist, Roukes decided to incorporate several videos into his presentation. He began

with some video of the late Richard Feynman speaking on the subject in 1983, and, by the time he was finished, he had shown video from two IBM labs, some Caltech labs, a simulation by then-sophomore Egon Pasztor, and many more. He also switched from slides to overhead to show more technical findings, joking that the scientific community doesn't really accept slides yet.

Unfortunately, the multimedia program really didn't flow. Transitions from video projections to slides seemed unrehearsed. There were frequent pauses at the end of the discussion of a slide.

At the end of the presentation, professor Roukes confessed that the slides had been made the night before by a public relations employee who had stayed up all night finishing the job!

While Roukes spoke extemporaneously, he may have benefited from carrying his notes around with him rather than leaving them at the podium. Still, balancing teaching, cutting-edge research, and lecture giving is no easy task, and Roukes did a good job of incorporating some of the most recent findings from his lab.

In another, perhaps more important error, Roukes suggested that he hadn't thought

of all implications of his research. He mentioned that some had predicted catastrophic effects of nanorobots running wild. Then, instead of either dismissing these seemingly unusual opinions or giving some other insight, Roukes trailed off, mumbling something to the effect that he hadn't formed an opinion about the issue.

Nanotechnology research may not be anywhere near as critical as, say, the Manhattan Project, but it was the failure of many scientists on the Project to think about the consequences of their actions that upset many of them, including Richard Feynman, in later years.

While it was unclear whether Roukes had extemporized the statement about the robots and then had nowhere to go with the thought (thus stumbling over his words) or purposely meant to bring up the subject, he made an blunder of which scientists need to be meticulously aware.

These considerations aside, "The Hopes (Amidst the Hype) of Nanotechnology" was an enjoyable presentation. The next in the Watson Lecture series is entitled "Imaging the Infant Universe" to be presented by Dr. Anthony Readhead on February 21 at 8 p.m. in Beckman Auditorium.

Caltech Reaches Out to Local High Schools

The Office of Admissions, with the help of the Office of Minority Student Affairs, has launched the Partnership Program. The Program has been created to establish a beneficial, working relationship between Caltech and local high schools.

The goals of the Program are to keep students informed about science and technology, about Caltech, and about the college-planning process. Most importantly, the Office of Admissions hopes that the Program will increase the number of students who seriously consider pursuing

CAMS listened to a seismology presentation by Professor Thomas Heaton and were then given a tour of the campus by undergraduates.

The next school scheduled to visit Caltech as part of the Partnership Program is Francisco Bravo Medical Magnet in Los Angeles on February 14.

Members of the Caltech community who have questions about the Partnership Program or who would like to help out are encouraged to call Dina Figueroa, Assistant Director of Admissions, at extension x6341.

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The Outside World

by Myfanwy Callahan

Chicago, IL — A 12-year-old boy will become the youngest child in the U.S. to be locked up in a maximum security juvenile prison. He was convicted of dropping a 5 year old out a 14th-floor window when he was ten. His behavior challenges Americans to find a way to deal with the new rise in child criminals.

Nashville, KY — A navy F-14A fighter pilot crashed into a Nashville suburb Monday, killing himself and four other people. He had crashed a jet into the sea last April, but was given another chance.

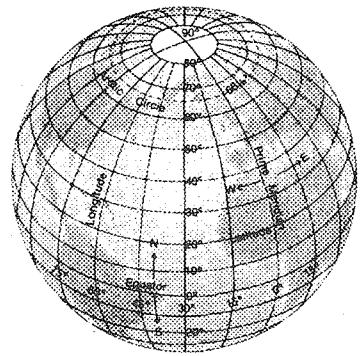
Washington, D.C. — The Clinton Administration is submitting a short outline of a 1997 budget, rather than the usual 2000 page tome, due to the present budget battle. Negotiators say that handling two budgets at once has become overwhelming.

Bangalore, India — 100 farmers ransacked a Kentucky Fried Chicken outlet, breaking glass and smashing furni-

ture Tuesday. They demanded that the chain leave India, charging that the food is unhealthy.

Port-au-Prince, Haiti — A UN officer from Benin became the first casualty of the UN peacekeeping mission in Haiti. He was shot Monday night while driving another officer into the capital.

Venice, Italy — A fire Monday night destroyed Venice's opera house, La Fenice (the Phoenix). The 204-year-old building was considered the most beautiful opera house in Italy. Luciano Pavarotti said, Venice without La Fenice is like "a body without a soul."



CALTECH
public events

EXPECT THE UNEXPECTED

Family Fairie JOHN McCUTCHEON

SATURDAY, FEBRUARY 3, 1996 / 2 PM

Beckman Auditorium

Regular Prices: \$9.00 Adults — \$5.00 Children

Paco A. Lagerstrom Chamber Music Concerts

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RANDALL WONG, Soprano

ELAINE THORNBURGH, Harpsichord

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DOC
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GALAXY:Glimpse of Early Universe

CONTINUED FROM PAGE 1

to look backward in time, and is one of the most powerful methods for studying how galaxies formed in the early universe and how they have evolved since.

While the absorption lines show up clearly, seeing the galaxy in its own light has proved difficult. Other research groups, at Caltech and at other sites around the world, have taken images of the sky around the quasar and detected a very faint blob near it. This blob could be the galaxy noted by Lu and his colleagues. Astronomers are working hard to obtain a spectrum of the faint blob to determine its identity, a difficult task given the faintness of the blob, and glare from the nearby quasar.

The Caltech team also examined the wavelengths and strengths of the absorption lines, which can tell a lot about the gas that caused them. Different elements in a gas absorb different wavelengths of light, and the more of an element there is, the stronger the absorption line it creates. By examining the absorption lines in the quasar's spectrum, the astronomers were able to detect several different "heavy elements," including carbon, oxygen, silicon, aluminum, and iron.

After the Big Bang, only light elements existed, mostly hydrogen and helium. The heavy elements formed later inside stars by nuclear fusion reactions, and were released into interstellar space when the stars exploded or blew off their outer

amounts, but also in differing proportions. By examining the relative amounts of heavy elements in the distant galaxy, the astronomers inferred that the elements were probably formed in stars with masses greater than 10 times that of the sun. That is,

only the most massive stars had died and poured their heavy elements into the interstellar gas.

Massive stars burn out quickly, while less massive ones shine longer, and astronomers know fairly well the life spans of stars of different masses. The fact that only the most massive stars in this distant galaxy, those at

least 10 times more massive than the sun, have died and contributed elements to the interstellar gas is significant. It implies that the first generation of stars in the galaxy was born only a few tens of millions of years before it left the signature seen today.

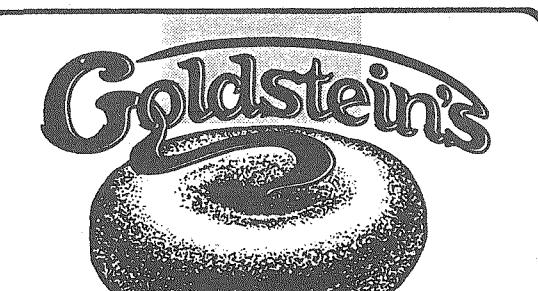
The galaxy itself is likely not much older. A few tens of millions of years, in astronomical terms, is a very short time. Our own planet earth is 4,600 million years old, so this distant galaxy is very young indeed. It may even resemble our own galaxy during its early history, when the first generation of stars in the Milky Way had just recently been born.

The low levels of heavy elements provide direct evidence for their gradual buildup in galaxies as they get older. That's why we see greater amounts of heavy elements in our own, much older Milky Way.

layers and became white dwarfs.

The astronomers also used the absorption lines to estimate how much of each element is present in the distant galaxy. They found that the amounts of these heavy elements are only one-half of one percent of the levels found in the interstellar gas of our own Milky Way galaxy. The low levels of heavy elements provide direct evidence for their gradual buildup in galaxies as they get older. That's why we see greater amounts of heavy elements in our own, much older Milky Way.

Stars of different masses not only form elements in differing



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I don't know about you, but Wei Hwa would make a great ASCIT Ath Man...

I always feel like someone's watching me. I heard the screams of the vegetables. I close my eyes and I see... blood and roses. Parts full of youth; parts full of truth; six parts gin to one part vermouth. Who can it be knocking at door? Vote for the Tech Editors! I don't want to start any Blasphemous rumors, but I think that [Terry's] got a sick sense of humor.

Wei Hwa Report: Didn't even come near the place....

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A.S.C.I.T.

Minutes

JANUARY 29, 1996

Present: James, Dave, Kanna, Tom, Greg, Laura, Melissa, Maria, Geoff Smith, past and future Big T people

- Meeting begins on the 6555830545th vibration of Cs at 10:03 PM. Geoff asks the BOD for money for the Caltech College Bowl Team (Geoff also presents us with a list of signatures for people currently on the Bowl Team). We postpone deciding how much to give them until we know how much we can spare.
- The Big T Editors give us a budget and ask us to approve the Business Manager's salaries (approved, 5-0-0). The editors then ask us if we knew why \$3500 of their payment was being withheld. We postulate that

the Big T might have some debts from several years ago that remain unpaid, but we actually have no idea why the money is being withheld. The Big T people will talk to administrative people in finance to clear this up.

- Dave mentions that THERE WILL BE AN ELECTION ON MONDAY. VOTE. People from 7 houses are running for various offices. Score.
- James asks that Dave be recognized as the "acting ASCIT President", and as such should say important things, should run the meeting, and shouldn't vote.
- Laura talked to Pat in student accounts about the new ASCIT Copier Account. Laura wants ASCIT to material transfer some money into the account to make sure the account doesn't go into the red for the next

Upperclass Director. However, nobody on the BOD believes that this will be a problem.

- Greg inquires about the cost of installations. We believe it's somewhere around \$300. Greg also wants to hold the ASCIT Social Hour on Fridays directly outside the Movies. Greg mentions that he'll be getting the standard EE Social Hour food.
- The doors close. The debates begin. We decide how to throw the upcoming elections. Eventually, entropy forces us all to leave. Entropy, your soul is mine.

Respectfully submitted,

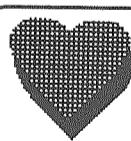
David Relyea
ASCIT President-like Substance

Dr. Rao Varanasi, Unit Chief, Structures Engineering, Boeing Commercial Airplane Group, Seattle, WA, will be recruiting on campus, Thursday, Feb. 1 & Friday, Feb. 2. Areas of interest are engineering, structures, applied mechanics, vibration and design. Interviewing schedule:

Thursday, Feb 1: Room 13, Student Activities Center 2-5 p.m.

Friday, Feb 2: Room 25, Student Activities Center 1-5 p.m.

Interested students should come to the Career Development Center, 08 Parsons-Gates, to leave their resumes, and sign up for a time slot.



Sweets with the MOSH at Steele House

355 S. Holliston

Wednesday, February 14, 1996
9 - 11pm



Come Early

YNEWS

by Donna Ebenstein

It's midterms week again. But if you're stressed, the Y has some events scheduled to help you relax.

On Friday, February 2 (today!) John Sirkis will be providing a noon concert, with some folk music to lighten up your day. So bring your lunch out in front of Winnett and enjoy the show!

Then on Saturday night at 10 p.m. we will be having a **Saturday Night Alternative Movie** in the Y Lounge. The movie for this week is Putney Swope.

Finally, on Thursday, February 8, from 8 p.m. until midnight we will be hosting a **Mini-Decompression** in the Y Lounge. There will be tons of homemade snack food and some movies for entertainment. So stop by for a few minutes or stay the whole time. We look forward to seeing you there.

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DAN AYKROYD

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Baxter Lecture Hall
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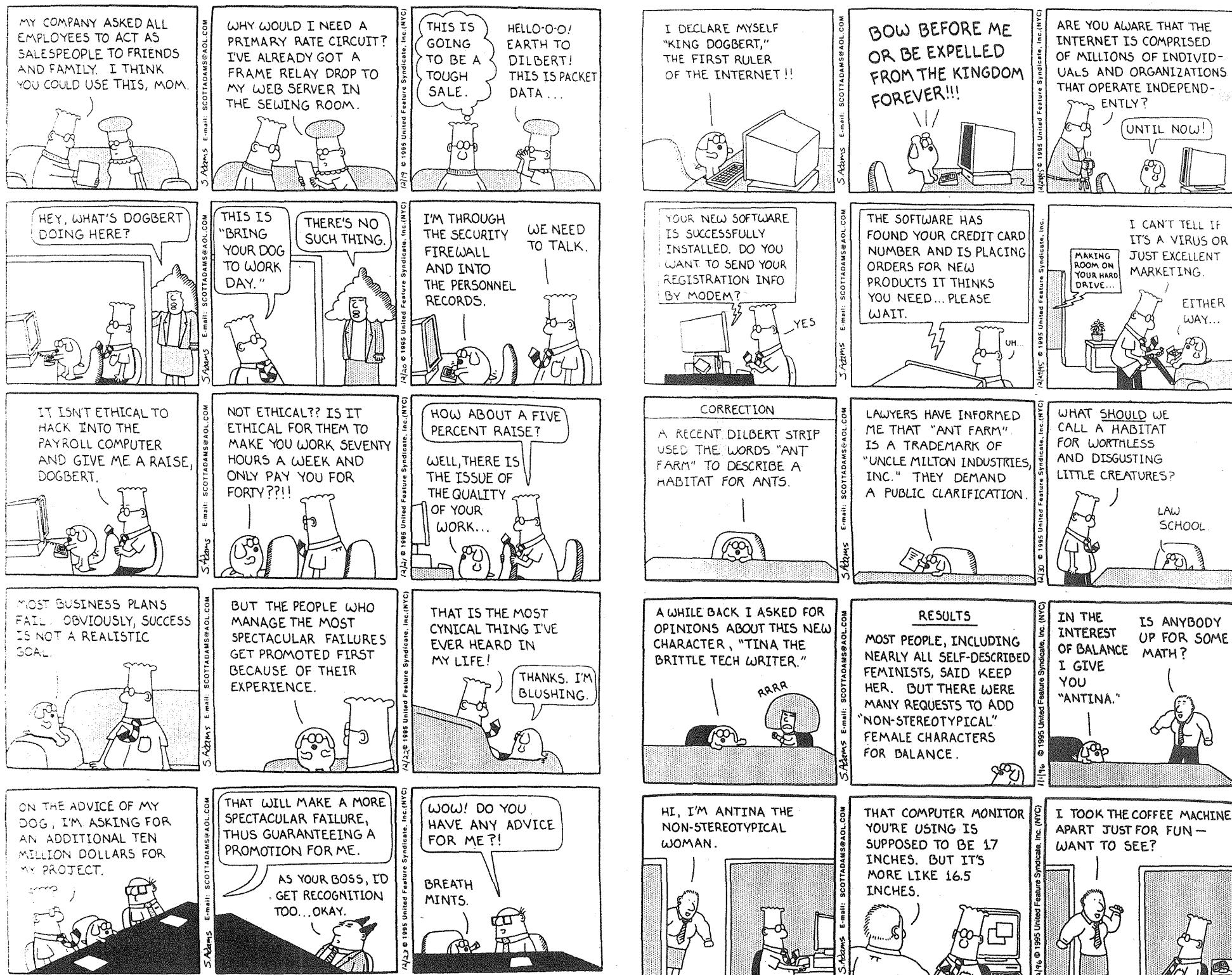
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Sat-Sun Bargain Matinee 2:15 p.m.

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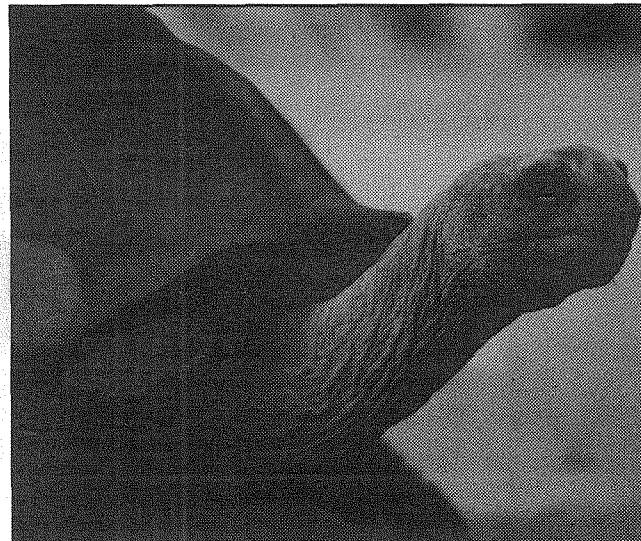
Winner: Best Foreign Film
—National Board of Review

**Shanghai
Triad**

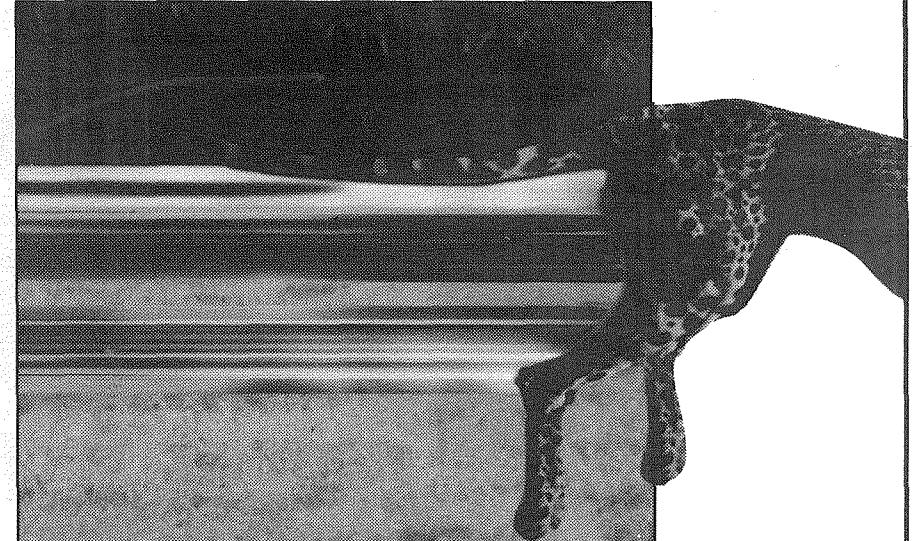
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THE RESEARCH AND DEVELOPMENT



Theirs.



Ours

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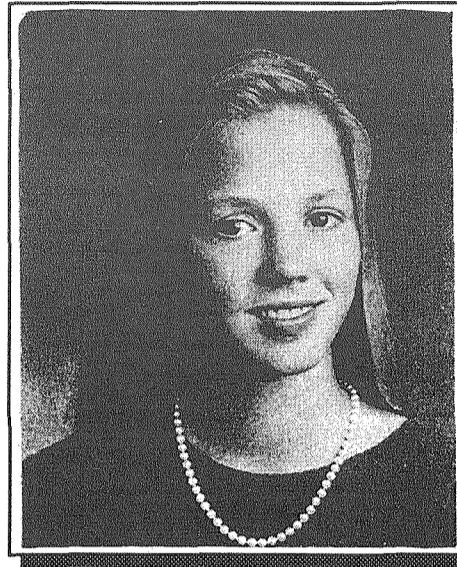
UPPERCLASS DIRECTOR AT LARGE

The Upperclassman Director at Large shall be an upperclassman at the time of election. The Upperclassman Director at Large is responsible for the management, finances, operation, and maintenance of the ASCIT van and copier. The Directors at Large shall in addition perform other duties as specified by the Board of Directors.

ALEXIS JOHNSON

I am going to try and make this short and sweet. I am running for Director at Large because I enjoy being involved. I just finished up my term as BoC Rep, and am currently playing tennis. I was also on the volleyball and soccer teams. On a different note, some might be aware and I guess I am informing everyone else, that I live off-campus. I know that it makes life a bit simpler when the Director at Large lives on-campus. Therefore, if I am elected I will find a place, on campus, that the sign-up for the ASCIT van will be kept. I will now leave you with a poem by my campaign manager, Phillip Rodriguez -

Roses are red
Violets are fuschia
Vote ALEXIS JOHNSON
And I'll give you money **



** Note "Money giveaway clause" - money will only be distributed if it snows 4 inches in the middle of Huntington Gardens while you are reading this.

DIRECTOR OF ACADEMIC AFFAIRS

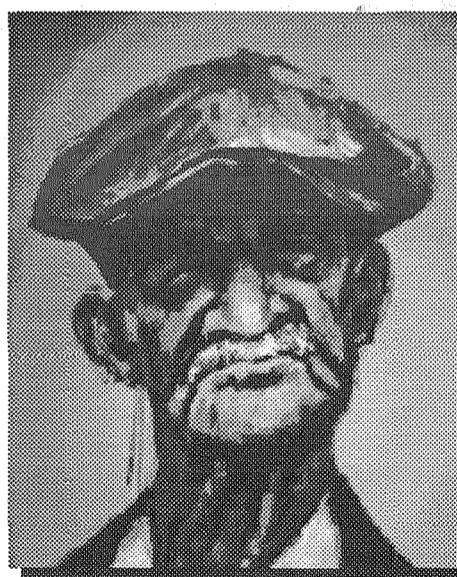
The Director for Academic Affairs shall be chairman of the Educational Policies Committee and be responsible for all other committees formed by the Corporation on academic affairs. He shall be responsible for the production, publication, and distribution of the *Course Listings of Undergraduate Education*.

KOHL GILL

Director of Academic Affairs is a challenging position. The duties include making the CLUE and chairing the Academics and Research Committee. I am qualified for these duties because I was on various committees including the ARC as Ricketts house representative, the Academic Policies Committee, and the Curriculum Committee.

"NO" sucks. I hear he's the Mack with the ladies. His name is commonly chanted by women wherever I go. I'm taller than he is. ^H ^B

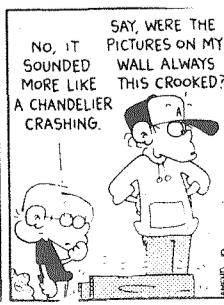
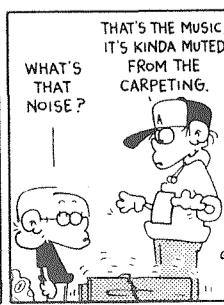
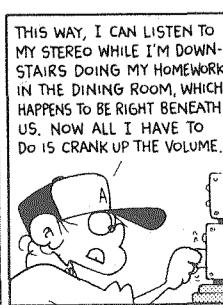
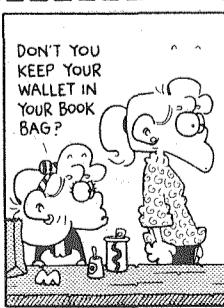
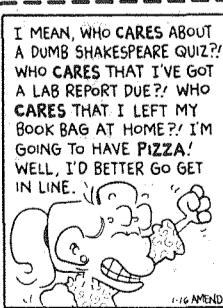
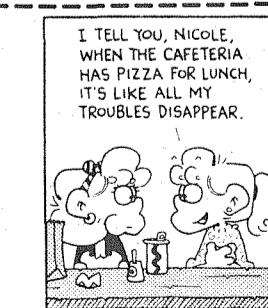
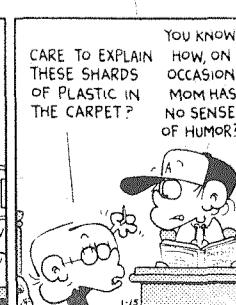
This is NO. I have assumed control of Kohl's statement. So far I have been slandered by him and that bastard Kiran (except for the part about the ladies). A for me is a vote for NO Director of Academic Affairs, NO CLUE, NO ARC, and hence, NO Academics or Research at Caltech.



Just imagine...all Dilbert, all the time.

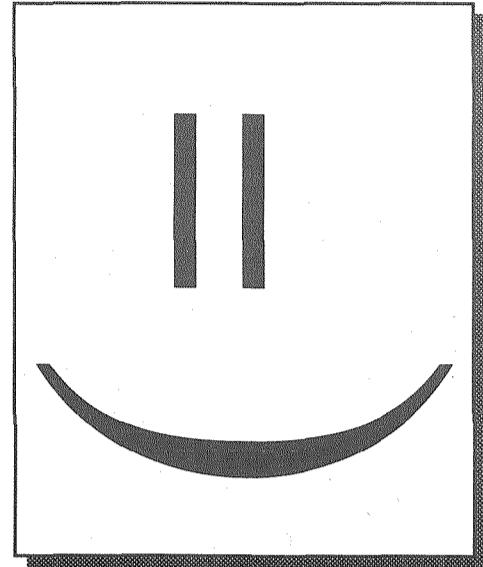
Foxtrot

by Bill Amend



SHAY CHINN

I feel I can keep the ASCIT copier functioning a good portion of the time and the ASCIT van running. I hope to automate the sign out for the Van by setting up a page on the Web and I will also take random comments to ASCIT



for those who wish to complain to me.

ARC SECRETARY

The ARC Secretary records the proceedings of the Academics & Research Committee.

KIRAN SHEKAR

My name is Kiran Shekar, and I am running for the position of Secretary of the Academics and Research Committee. The responsibilities of the ARC secretary are many, and I would perform these tasks to the best of my ability. My experience includes having served on both the Curriculum and Faculty Advisor committees.

Although his official duties are too numerous to name in this limited space (tee hee), the ARC Secretary's job is multi-faceted and is of extreme importance to the day-by-day running of Caltech. Nary a decision gets made without the opinion of the ARC and especially its secretary. A vote for me would put a dedicated soul in the position and would ensure the continued prosperity of Caltech, if not the entire free world.



While the competition for this position is fierce, the other candidate (we'll refer to him as 'NO') isn't nearly as qualified for this position (in addition he is ill-

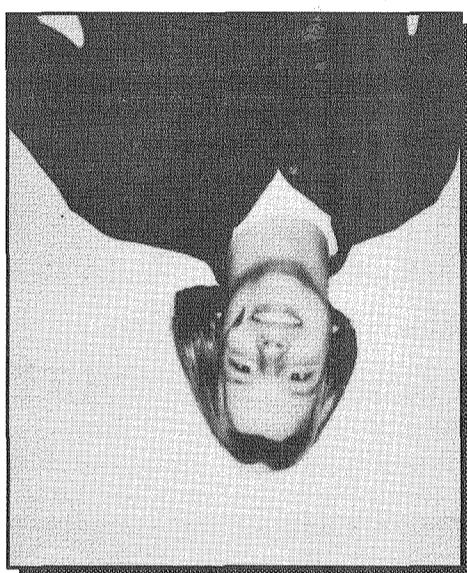
tempered and generally not a pleasant guy to be around). However, he would make a good Director of Academic Affairs (a lot better than that bastard Kohl).

FRESHMAN DIRECTOR AT LARGE

The Freshman Director at Large shall be a freshman at the time of election. The Freshman Director at Large is responsible for the publication of the *Undergraduate Research Opportunities Handbook*. The Directors at Large shall in addition perform other duties as specified by the Board of Directors.

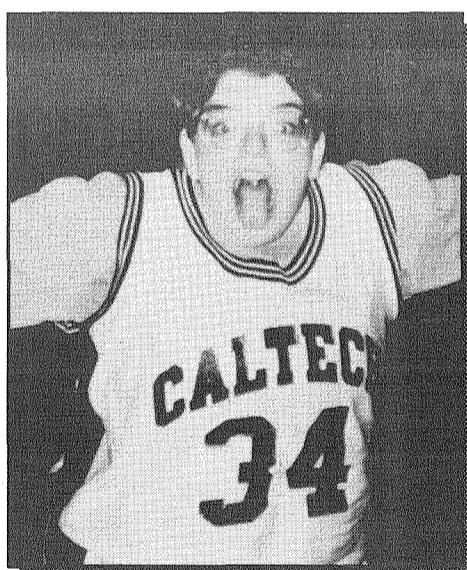
JAMES BUCKWALTER

Hello Im jim buckwalter. Vote for me for freshman director at large. I can take the pain.



KARA SWEDLOW

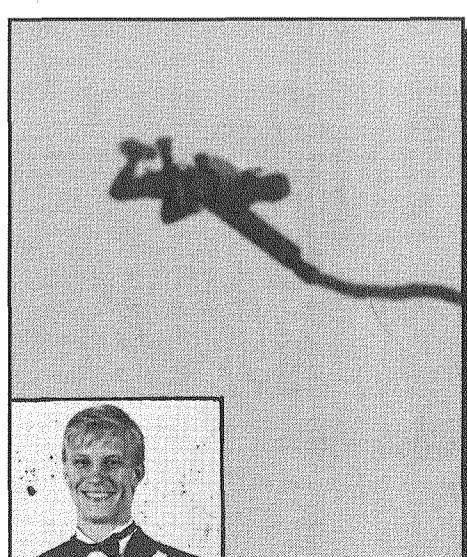
Hi. My name is Kara Swedlow, You Killed my father! PREPARE TO DIE!! Now that I have your attention, I am running for the ASCIT Freshman Director at Large. What qualifies me for this position?? Well, I am glad you asked. Most importantly I am a freshman student registered at Caltech. But wait, there is more! The primary duty of the Frosh Director at large is the UROH. Not only do I know what this is, but I am responsible enough to get it done in manner on time. I also serve as the Freshman representative to ASCIT. Well, to represent you I assume you want someone with a personality. I've got one, but not only that, I can hold my own in long boring (err, well, I suppose that they are exciting, yeah that's right) budget



type meetings. Well, vote wisely!! Vote for me!!

BRETT TOLMAN-HALBERT

When I realized that Caltech was the college for me, I looked forward to experiencing all of the different ways that I could get involved. ASCIT provides many ways for this to happen, and as Freshman Director-at-Large, I can begin that involvement. Developing the UROH will be the major task, and I will give it my best effort. I put my best effort into many activities throughout high school and produced good results. I am friendly and outgoing, and I am determined in finding ways to get a job done. I interact with different people in each of the houses, so I can better understand the views of the entire undergrada-



uate community. Give me the chance to do this job well.

ASCIT TREASURER

The Treasurer shall receive all money belonging to the Corporation and shall deposit it to the credit of the Corporation in such bank or banks as the Board of Directors shall determine. He shall keep a full account of money expended and received and shall make a report of such account once a term at a regular meeting of the Board of Directors, and at such time as the Board of Directors shall desire. He shall have the Corporation books audited as soon as possible after the close of the previous fiscal year. He shall receive and present to the Board of Directors term and annual reports of all ASCIT publications. He shall have direct charge of all Corporation property.

KRISTIE ARMENTROUT

Hello, my name is Kristie ArmentROUT. Those of you who know me may have known that I would be running for ASCIT treasurer. As treasurer I can promise diligence in taking care of the books, and in delivering funding checks to clubs, houses, and organizations as soon as possible.

Last year I served on both the ASCIT and Lloyd House social teams. As part of the ASCIT Social Team, I gained some experience with how ASCIT operates which made me want to get more involved with ASCIT.

If you have any questions or ideas, please contact me. I can be reached at *karmen@ugcs*, ext. 1331, or Lloyd 114.



BoC SECRETARY

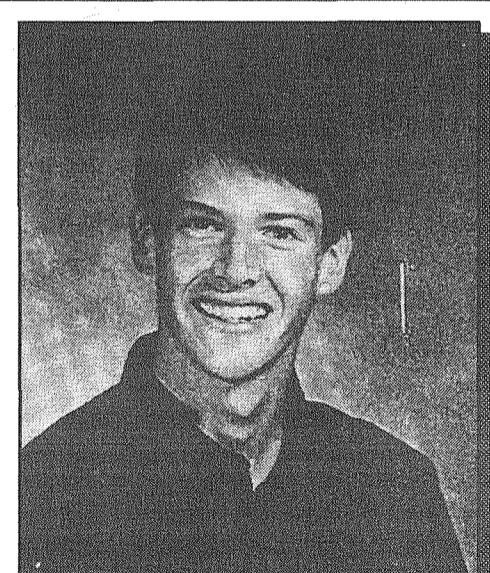
The BoC Secretary records the proceedings of the BoC meetings, and assists the Chairman with investigations. Like the Chairman, the secretary has no vote on the committee.

MATT TISCARENO

One of the most important things that makes life at Tech bearable is the Honor System. The trust we have earned from the faculty allows us great flexibility in our work schedules, and our trust for one another allows us to work together in situations where most college students would be engaged in vicious competition. Unfortunately, these benefits are not free. We must work hard to maintain the trust we have earned. This is the responsibility of the Board of Control.

So why should I be allowed to do the job of BoC Secretary, besides being able to take minutes and do other secretarial jobs which aren't that hard anyway? For one thing, I realize that serving on the BoC is a difficult, time-consuming, and often thankless task, and I'm not afraid to do it anyway. I also am not the kind of person to quit because it turned out to be harder than I expected. If I begin the job, I promise to finish it.

In recent years, I have found myself to have an ability to see both sides of a controversy, but I will also make efforts to encourage students to adhere to the Honor System in the first



place; the fewer cases we have, the happier everyone will be. To prepare myself for the job, I have already had conversations with Ricky Carson (the outgoing BoC Secretary) and Maria Satterwhite (the incoming BoC Chair) concerning preliminary plans to run the BoC for the upcoming year. But in the end, all I can promise is that, if elected, I will do the job of BoC Secretary with all my strength to the best of my ability. Please vote on Monday.

ASCIT SECRETARY

The Secretary shall, in the absence of the President and Vice President, assume the duties of the President. The Secrary shall keep a record of the proceedings of the meetings of the Corporation and the Board of Directors. He shall post, or otherwise make public, copies of the record of each meeting within three days subsequent to that meeting. He shall post notice of all meetings of the Corporation in which legislation is to be acted on or discussed, together with a complete statement of such legislation at least seven (7) days prior to the meeting.

JEANNE WILSON

Seventy-two hours ago, I decided that I was definitely going to run for ASCIT secretary. Now I'm in the embarrassing spot of having to convince you to vote for me.

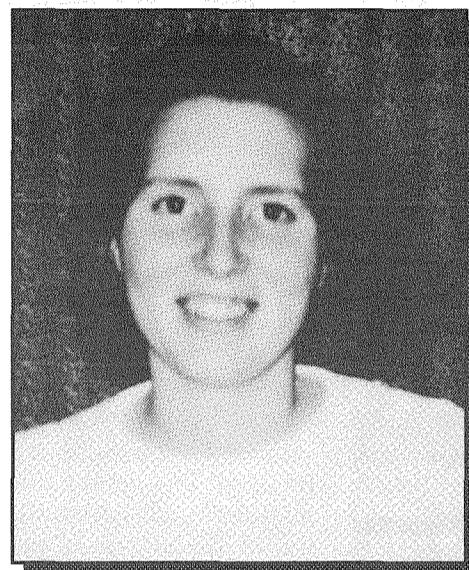
I could approach this by telling you what a good job I could do (I really could), or how well I can "organize information and coordinate it with the people who need it." (I like that line. It's from the last statement I trashed.) I could comment on the leader-like positions I've held (Blacker VP and Social Team) or the other campus stuff I've been involved in (ASCIT Movie Team, Avery Committee, BUSAC).

I could tell you how much I care, but I don't.

I could tell you many more interesting things, like how I worked two summers as a secretary and thus learned the greatest secret of the universe (sorry, it won't fit in the parentheses).

I could promise to extort money from you. It's not my style, but I've already seen it win two elections in Blacker this month.

I could tell you I have secret supernatural powers, but then they wouldn't be a secret anymore.



GRACE YANG

My name is Grace Yang and I am running for ASCIT Secretary. The reason I want this position is so that I can participate in the organization of student activities. The position of secretary calls for diligence, organization and dedication. I believe that I have all these qualifications.

I have already performed some official duties, such as ASCIT Athletics manager (yes, the varsity jackets will be here early next week), Ruddock House's Athletics Manager and high school government. I organized the Frosh Nite Out last year and I am currently organizing OPI. I already know how the ASCIT BOD functions because I have sat in on some of their meetings as ASCIT Ath Man.

I truly feel that I am the most qualified for this job. Not only do I have the ability to perform the job well, I have the desire to serve the Caltech community. For those who know me, they know that I



care very much about the state of the campus. So, on Monday, please vote for me, Grace Yang, as your next secretary.

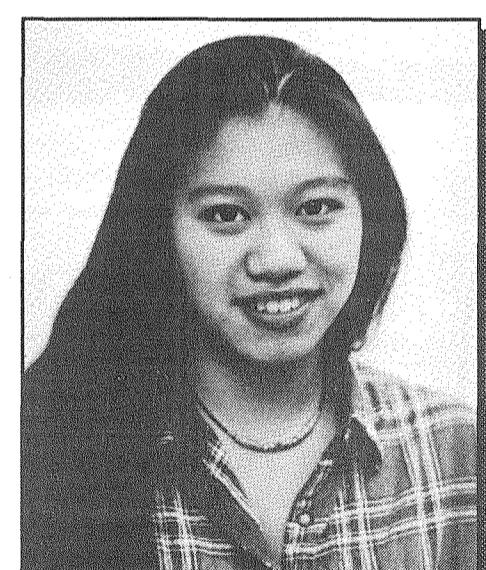
ASCIT SOCIAL DIRECTOR

The Director for Social Activities shall be chairman of the Executive Social Committee. He shall be responsible for the organization of the Corporation's social activities and shall coordinate them with the social activities of the undergraduate Houses.

EMILY HO

Was it just me or was there a distinct lack of social events this term? I am not saying that there should be a party every weekend but its midterms already and we haven't had very many social events at all! As social director, I would meet with the social chairs of all the houses and draw up a social events calendar. It is the Social Director's job to make social events plentiful and available to the students of Caltech. Being a student here is stressful enough and it's hard not to have an outlet for your frustrations. I am not suggesting that every student needs to go out and do something in their free time in order to survive but it would be nice to have options and events scheduled for you. That way you don't have to spend your free time thinking of what to do, you can just go do it.

Of course, coordinating social events is not the only job of the Social Director. This job also requires you to create some events of your own. The Social Director is in charge of organizing the ASCIT formal, the end of rotation party, and the ASCIT Halloween party. Being a native to the area, I know that LA has many famed hotels and resources that should be taken advantage of for the ASCIT formal. This is the one night that Techers (students, faculty, and administrators) can get dressed up and spend



an elegant night out on the town dancing, enjoying a nice dinner, good music, and chosen company (Hey, its a perfect date opportunity that's already set up!). As far as the other parties, I have just finished my term as Ruddock House librarian, an office whose job description includes the annual Frosh party (It was third term last year, the casino party, gambling, music, drinks, live shows...). I know I can do a good job as ASCIT Social Director so vote for me, Emily Ho, and let me show you what I can do.

ATHLETIC MANAGER

The Athletic manager shall be chairman of the Athletic committee. He shall procure all athletic awards for the Corporation. A group of Corporation members may hold this position.

There are no candidates for Ath Man. However, rumor has it that Wei-Hwa Huang is courting write-in votes.

-Eds

THE ELECTIONS FOR THESE ASCIT OFFICES

- FRESHMAN DIRECTOR AT LARGE
- UPPERCLASSMAN DIRECTOR AT LARGE
- DIRECTOR OF ACADEMIC AFFAIRS
- ARC SECRETARY
- ASCIT TREASURER
- BOC SECRETARY
- ASCIT SECRETARY
- ATHLETIC MANAGER
- ASCIT SOCIAL DIRECTOR
- ATHLETIC MANAGER
- IHC CHAIRMAN
- TECH EDITOR

WILL OCCUR ON
MONDAY FROM
10 A.M. TO 10 P.M.

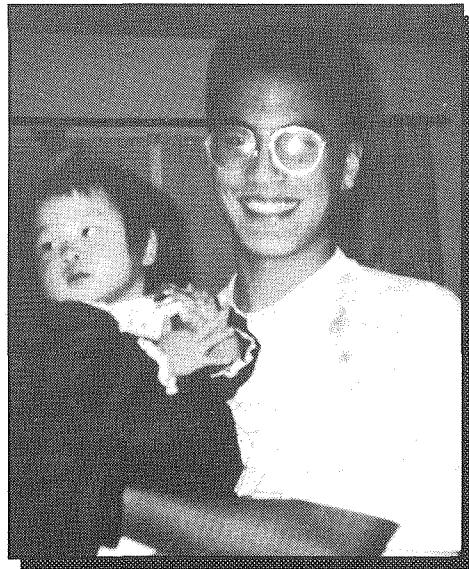
IHC CHAIR

The Interhouse Committee Chairman shall call and preside over meetings of the Interhouse Committee. He shall be responsible for liaison between ASCIT and the various House organizations. He must be either a junior or a senior in the fall term immediately following his election.

LEONARD SUNG

One of the reasons why I had decided to attend Caltech may have been a short conversation with ex-IHC chairman/Ruddock president Stanley Grant III as a HS senior. I was interested in the entire "House" system, so he told me about the rudimentary differences of each House and the problems they (IHC) were facing (Dabney fire several years ago and the Interhouse parties). We talked a little bit more about dealing with those problems, and I just thought that it was fascinating to see how much power the students have — in the form of the BOC, BOD and IHC. During the time I have been here, I feel that I have learned quite extensively about the House system and the student government. Now, I am willing to serve as the IHC Chairman. If I am elected as the IHC Chairman, my goals are to preserve, defend, and improve the House system.

Similar to last year, this race also lacks a former House president, but I feel that after serving as Lloyd House's Athletic Manager, I am qualified in fulfilling the duties of the job. Even though I may not have experienced the bureaucracy a House president usually goes through, I became involved in getting to know many people from all of the Houses. I respect every student who, for whatever reason he or she has, decided to attend this school. I think that one has to be very brave (or a little crazy) to go here, but that is what makes each of us unique. I'm glad that I had the opportunity to meet many unique people and talk to them about Caltech, work, or life in general. I'm very fortunate to be involved in many activities including research, athletics, music, arts, literature, Lloyd ExComm, or whatever and these various activities have given me the opportunity to mingle with



a variety of people. Nevertheless, I don't generalize people in one group or House, but perceive each House as a body of unique individuals. Thus, I know almost all of the presidents and the prospective candidates and if I'm given the opportunity, I believe that we'll work as an effective group. I don't have any experience on ASCIT, but I went to freshmen camp this year as a kitchen coordinator and last year, I coordinated prefrosh weekend for my House.

I trust in my abilities that I will be able to learn and become an effective IHC chairman. Even though, I don't have an extensive resume of my participation in House/Student government, I hope you would know who I am and what I can do. Out of all the offices in the Student government, this is the role that fits me the best. Thank you for reading this. And by the way — you don't win friends with salad. lxs@astro.caltech.edu .

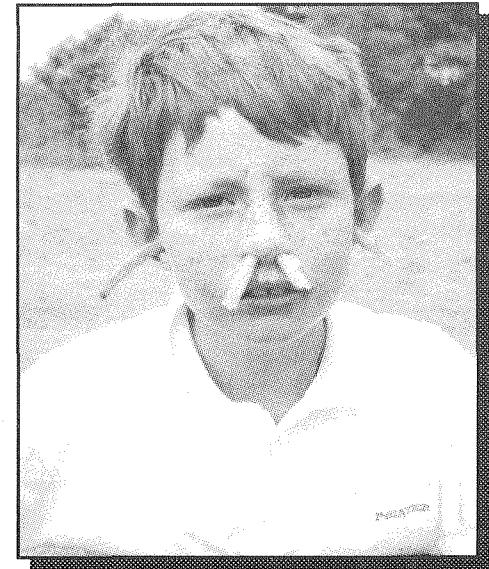
DAVID BACON

Five o'clock in the morning and your head is about to explode. Sweat is gushing down your forehead. Your hands are shaking and your eyes keep playing seesaw without your permission. The stress and strain of another all night 95 homework set has finally driven you over the edge. Glancing down at the paper thrown about your floor and glancing up at the homework in your hand you suddenly realize that you've done one problem completely wrong, another has coffee grounds smeared over the answer, and a third problem is all wrinkled up because you accidentally threw it away and had to rescue it from the depths of the trash can. Ahhhhhh!

Yet, in spite of all this agony, this blood, sweat, and tears, we still find somewhere deep inside of each and every one of us the will to triumph through four (or five) years of Tech. Sure, we all like to yell "give me liberty or give me Tech!", but deep down there is a strong devotion to this school that cannot be found anywhere else. It is this devotion — your devotion — which has driven me to seek the office of IHC chair.

IHC chair is about harmony. It is about keeping the houses in harmony. It is about keeping rotation and picks in harmony. The list goes on and on. It is my hope, if elected IHC chair, that I will be able to contribute some little amount to keeping this campus alive and running — to keep Tech a unique and special place.

Well, I won't bother you with too much more rhetoric. My feelings and motives are plain and simple: I want to help Tech. I'd just like to leave you with a



few of the qualifications that I feel would make me a fine choice for IHC chair:

- I'm almost as goofy looking as the current IHC chair. - I'm the ASCIT presidents lab partner-so if he ever gives me any bunk I can sabotage his lab results.

- My last name is a food item, so if you get angry at me there are a plethora of names you can make up to taunt me with.

- My grandfather went here, so I know about precedents so old that my grandfather actually played on a Championship Tech football team. (Yeah...that's right, I said football!)

- My hero is Dan Quayle, and I can spell potatao. - Frosh Camp, Junior Class Secretary/Treasurer, Ruddock House Vice President, Core Curriculum Committee, Academics and Research Committee, Tennis, Golf, Interhouse sports — I love to participate. 'nuf said.

TECH EDITOR

The Editor of *The California Tech* is responsible for the selection and preparation of all content of *The California Tech* exclusive of advertising material. He is responsible for meeting deadlines agreed upon with printers or other contractors. His responsibilities terminate after the publication is printed.

THE GANG OF FOUR (FIVE?)**GUMBY**

I, Gumby Timmoner, of sound mind and body, hereby declare my candidacy for Tech Editor.

I am much superior to those running against me because I am cooler than they. Lacking the ability to stretch themselves into a plethora of sexual positions (not to mention the lack of a rubber horsey plaything) will render the OTHER Tech Editor candidates much less effective (for their lack of stress relieving accessories).

And Lastly, I disagree with the previous administration's promoting of the lame comic strip known as Dildirt. The little known "Gumby" comic strip is vastly superior to any of the currently "popular" strips. Apparently the latest "rage" in comic strip "taste" is for strips known as "humorous" or even "funny." I find this "trend" to be indicative of the lack of "education" provided by the schools of this "nation." Perhaps we can "change" this trend by promoting more religion in "the" schools. Putting fear of "god" in students will inevitably "result" in the "increase" of SAT scores and the "like."



So in conclusion, vote for Gumby, he's our man. If he can't do it, he'll find someone who can. If they can't either, then it just won't get done. Too bad, huh?



FEATURES

YOUR FUTURE, YOUR ATTITUDE

by Samson Timoner

Every morning when I get up, I jump out of bed within a minute. The morning is such an exciting time. I think of all the wonderful things that can happen in a day. I think about the work I will accomplish to help me towards my goals. Life at Caltech is filled with opportunity. I love it here.

Conversely, I have been told by many people that they take almost an hour to crawl out of bed. When I see these people leaving their rooms in the morning, they grumble about how much work they have to do, how little sleep they had and how difficult their life is. They aren't enjoying life.

Why is it that some people love the Caltech experience and others hate it? We all have the same hardships: not enough sleep, too much homework and too little free time. Is there one crucial attribute that makes the difference? One answer is attitude.

Your attitude determines your reality. Your brain filters the tremendous amount of information sent to it and selectively finds what you think is important. The effect is like wearing a pair of glasses so that you see your experiences in the way you expect to see them. Whether or not you enjoy life is entirely up to what type of glasses you are wearing. In other words, whether or not you enjoy life is up to you alone. Similarly, if you believe Caltech is a difficult place to work, that is exactly

what you will find.

What does this have to do with your success and your future? One of the major factors that will determine whether or not you succeed is your attitude. If you approach life believing that you have almost no chance to succeed, you won't. Every time

*If you approach life believing that you have almost no chance to succeed, you won't.
If you face the future believing that nothing can stop you, nothing will.*

you face a setback, you will believe that you are going to fail, and your brain will selectively find reasons to support that conclusion.

Conversely, if you face the future believing that nothing can stop you, nothing will.

There is another "in between" attitude towards success: the belief that success comes to those who are lucky. A poll taken a couple of years ago found that about half of Americans believe that luck is an important element in becoming successful. I don't believe in luck in the traditional sense. Chance will send you unexpected opportunities. However, if you aren't prepared to act on them, the opportunities are worthless. I define luck to be when the unexpected happens to the prepared.

Last week, I was asked by

a fellow student to consider Bill Gates. I was told, "He got lucky." Bill Gates is a great example of luck. He saw opportunity and dropped out of Harvard to start his own software company. He had a burning desire to succeed, a vision of what he wanted to accomplish and an attitude that nothing could stop him. In 1981, IBM gave him the opportunity to make the operating system for its personal computers. He was prepared. Microsoft capitalized on the opportunity and has never looked back.

Your attitude will play the most important role in your career when you face setbacks. Consider the founder of Trader Joe's, Joe Coulombe, who was an Entrepreneur Club speaker two weeks ago. In the 1970's, Trader Joe's made 50% of its profits from wine and milk. At the time, the price of both was regulated by the government. Suddenly, deregulation came. Due to competition, the price of milk and wine dropped almost instantly. Trader Joe's could have gone out of business due to the sudden loss in profits, but Joe's attitude was that deregulation was an opportunity, not a catastrophe. Grocery stores were also facing deregulation and their profits were disappearing also. Joe decided that he could steal some of the grocery stores' market share and started selling things like cheese and other grocery items you now find in Trader Joe's. The store emerged victorious from deregulation

and is now the company we know today. Learn from Joe Coulombe. Attitude is everything when facing setbacks.

Believe in yourself and your ability to succeed. If you don't, you will never get anywhere on your path to your dreams. Always remember that happiness is an integral part of success. To be happy,

you need a positive outlook on life. Look for the good things in your work, other people and yourself. If you look, you will see all the wonderful things around you and you will smile — like I do.

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SPORTS

Occidental Edges Out Caltech Tennis Teams

by Karen Nelson
and Bill Bower

The Caltech tennis teams opened their seasons with a combined men's and women's match against Occidental on Wednesday January 24th. Despite some strong showings, Caltech fell to the Tigers 6-7. The contest consisted of four women's singles matches, four men's singles matches, one women's doubles match, one men's doubles match, and three mixed doubles matches.

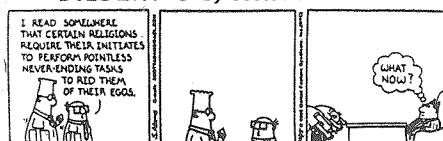
Sophomore Alexis Johnson played very well in the number one singles position, defeating her opponent 7-5, 6-1. Junior Lena Petrovic played a tough second set at number two singles but couldn't maintain her momentum in the third set, falling 6-4, 1-6, 6-0. Freshman Amy Chang-Chien made her debut at number four singles, coming out strong and taking the first set 6-4. Her opponent battled back

though and took the next two sets 6-3, 6-3. Chang-Chien teamed up with first year player sophomore Grace Yang in the women's doubles match. Caltech took control early with a 4-1 first set lead. Occidental regrouped however and evened the score with a service break.

Occidental pulled out the first set and maintained control throughout the second set to close out the match 7-5, 6-2. Sophomore Ronak Bhatt, senior Amir Alegheband, sophomore

Jason Jenkins, and sophomore Ben Miller (numbers 1, 2, 3 and 4 respectively) all won their singles matches. Bhatt and Jenkins teamed up to capture the men's doubles match as well. Bhatt won a close three set match 6-1, 5-7, 6-2, showing great mental toughness. The men's doubles match also went to three sets. Bhatt and Jenkins lost the first set 1-6 only to comeback strong winning the second set 6-4. They closed out the match with a decisive third set score of 6-0. Occidental captured all three mixed doubles matches. Alegheband and Johnson lost at number one, 4-6, 1-6. Miller and Petrovic fell 4-6, 1-6 as well at number two. Freshman Charles Kim and senior Laura Verhoff gave their opponents a strong fight at number three, falling 5-7, 4-6.

DILBERT ® by Scott Adams



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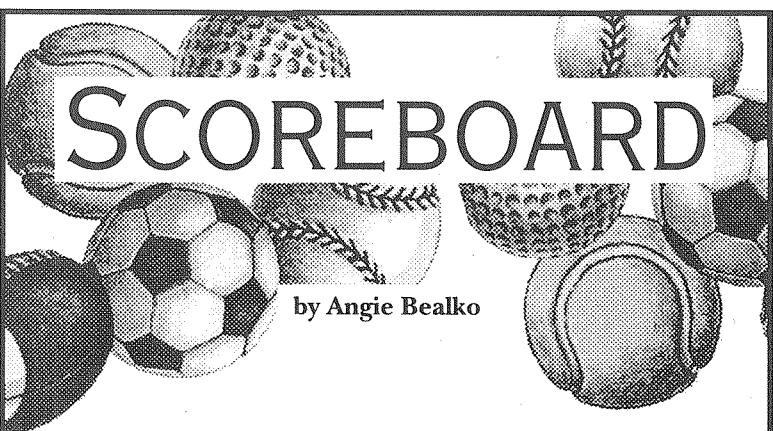
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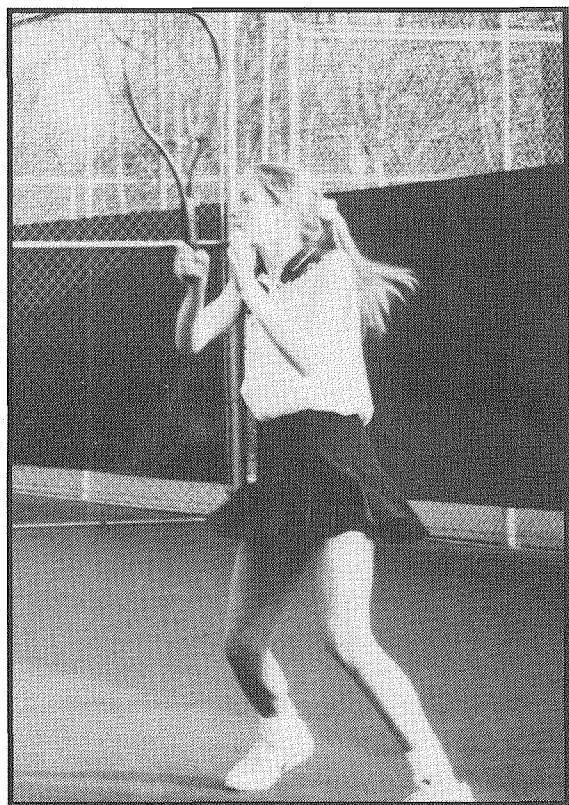
- Men's & Women's Mixed Tennis LOST 6-7 Occidental
- Men's Basketball LOST 39-68 Claremont Mudd

Saturday Jan. 27th

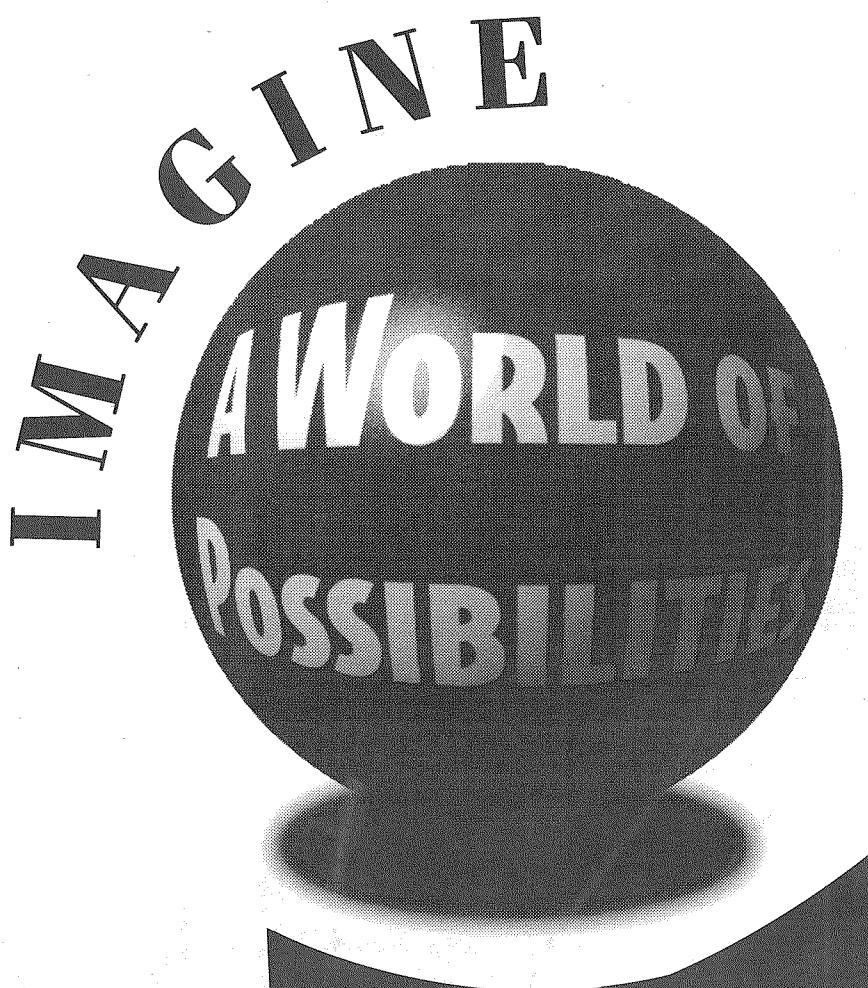
- Baseball WON 6-1 DodgerTown
- Men's Tennis LOST 7-8 DodgerTown
- Swimming LOST 0-9 Redlands
- Men's Basketball LOST Claremont Mudd Scripps LOST 41-92 Pomona

Monday Jan. 29th

- Golf WON BY FORFEIT Whittier



Sophomore Alexis Johnson



Look for us on campus

Information Session: Monday, Feb. 19th

4-6:00pm, Booth Hall, Room 201

Interviews: Tuesday, Feb. 20th

9am-4:30pm

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Baseball Splits with DodgerTown in Double-Header

by Angie Bealko

This past Saturday, the varsity baseball team opened their season at home with a double-header against DodgerTown, a club team from Los Angeles. Despite battling hard in the second game, the Beavers lost 7-8, splitting the series with their opponents.

The first game was dominated by the Beavers, as they clinched the win with a score of 6-1.

Senior Jon Wesselmann pitched the entire first game, throwing less than 85 balls across the plate in seven innings. He faced only four hitters in the first inning, including California State Senator Tom Hayden, who played right field for Dodgertown.

The Beavers scored three in the first as junior Roopesh Doshi and sophomore Rob Tryon both

tallied RBIs, allowing freshman Matt Dawson and sophomore Jon Allen to score. Wesselmann also scored after the opposing pitcher threw a wild pitch.

Wesselmann registered only six pitches in the second inning, striking fear in Caltech's opponent. Doshi earned another RBI in the third inning as he brought

Wesselmann home making the score 4-0. Wesselmann topped his second inning accomplishment by throwing only five pitches in the fourth, and striking out three out of the four batters in the fifth.

The highlight of the game came when senior Gene Faulcon hit a home run in the 6th, bringing

home sophomore Jason Barnes in the process and running the score up to 6-0. Dodgertown managed to cross the plate once, tallying a run in the 7th inning off of a wild pitch.

The strongest hitting effort came from Wesselmann who tallied a single in each of his three at bats. Dawson, Doshi, Tryon,

and senior Adil Karim all hit their way onto first base once for the Beavers. Karim did an excellent job behind the plate keeping the runners uneasy at the bases throughout the game. Freshman Grant Williams made the defensive play of the game at left field, diving and rolling for a long fly ball.

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Announcements

Get the most out of career day! The Alumni Association is sponsoring a career panel discussion on Tuesday, February 13th, at 7:30pm in the Winnett Lounge. The panel will discuss *What You Need to Know About Your Future Employer and What Your Future Employer Needs to Know About You*. Light refreshments will be served. If you would like to attend, please RSVP by February 12th to Kerry at x6852 or at e-mail kerry_etheridge@starbase1.caltech.edu.

Delta Airlines is offering special "extra credit" student fares as low as \$138 round-trip (and as high as \$318, depending upon locations of travel) for travel between the dates January 26th and March 31st. Tickets are nonrefundable and must be purchased at least seven days before departure, with certain blackout dates. To get these special rates, students are to call Delta at 1-800-9DELTA0.

Events

The Caltech Y Presents **John Sirkis** who "plays a very unique instrument..." in their next Noon Concert, today, February 2nd in the Winnett Quad at 12 noon.

As part of the Caltech-Huntington Interdisciplinary Seminar Series "The Long Nineteenth Century," James Chandler from the Department of English of the University of Chicago will be giving a seminar entitled *Representative Romanticism and the Novelty of the Historical Situation* in the Trustees Room, Huntington Library, on Saturday, February 10th, at 2pm.

Legendary guitarist Doc Watson will be performing a program of folk and bluegrass music, accompanied by Jack Lawrence on Friday, February 9th, at 8pm in the Beckman Auditorium. Admission starts at \$19, with \$8 student/senior rush tickets one-half hour before the performance starts.

Omer Barov of the Department of History at Rutgers University will be giving a William Bennett Munro Memorial Seminar on *Industrial Killing: World War I, the Holocaust and Representation* at the Judy Library, first floor of Baxter, on February 8th at 4pm. Re-

Ye Olde Back Page

∞ denotes a new announcement.

freshments will be served.

The 1996 Inter Valley MS Walk is seeking volunteers to help make this fund-raising 10K and 5K walk to be held on April 14th possible throughout the Valley. Volunteers are needed to help planning, assist on the day of the event at registration or at rest stops, and to promote the walk in the area. This walk is the largest single fund raising events the MS Society holds annually, with the funds raised going to research and to help provide services to the over 7,000 families affected by MS in the area.

From the Counseling Center

Looking for a safe and supportive place to discuss issues such as coming out, being out, dealing with family, coping with a homophobic culture, and being GLB at Caltech? Want somewhere just to make new friends? You are invited to the **Gay/ Lesbian/Bisexual Support Group**, which meets on the first and third Tuesdays of each month from 7:30pm till 10:00pm in the Health Center lounge. This is a confidential meeting and attending does not imply anything about a person's sexual orientation—only that he or she is willing to be supportive in this setting. The group usually discusses a particular relevant topic and then moves on to the general discussion. Refreshments are served. If you would like more information, please call x8331.

Fellowships and Scholarships

Finding that Science and Math aren't your only interests? The **J.P. Getty Museum** understands. In fact, they have a program for people like you: The J.P. Getty Trust is now accepting applications for summer internships from culturally diverse undergraduate students interested in exploring careers in art museums and related areas of the visual arts and the humanities. Students of all academic disciplines are encouraged to

apply. The internships can be held at a variety of J.P. Getty locals in the Southland, go from June 17th through August 23rd, and provide a \$3,000 stipend. The deadline for applications is **March 4th**.

From the Fellowships Advising and Resources Office, extension 2150, e-mail lauran_stolper@starbase1.caltech.edu

Women who are U.S. citizens can apply for a **travel grant to Sweden** if they plan to study or research in Sweden. More information is available in the Fellowships Advising Office. Students can request an application from The American Women's Club in Sweden, Scholarship Foundation, P.O. Box 12054, S-102 22 Stockholm, Sweden. *Be sure to include a self addressed envelope with your application request.*

Work as a volunteer in one or more of 23 countries this summer! Volunteers receive room and board and can work from 2 to 4 weeks on a project. More than one project can be scheduled. Projects include tasks such as restoring a castle, organizing a festival, planting trees, building a playground or implementing a recreation program for children. This program is sponsored by the **Council on International Exchange (CIEE)**. It is a very popular program, and it is highly advisable to apply early. No language skills are needed with the exception of Spanish for Spain and conversational French for North Africa. There is a placement cost of \$195 for one 2-week project. Information brochures are available in the Fellowships Office or we would be happy to send you one via campus mail: e-mail your name, the fact that you want an International Volunteer Projects 1996 brochure and your mail code to lauran_stolper@starbase1.caltech.edu. A listing of last year's volunteer projects is available for review in the office. Note that special fellowships for minority students interested in this program are available through the CIEE.

From the Deans' Office, 102 Parsons-Gates:

The Deans' Office is accepting proposals for the **Monticello Foundation and the Robert and Delpha Noland Summer Internships**. Three to five Caltech undergraduate women (current freshmen, sophomores and juniors) will be given an opportunity to participate in research projects outside the Caltech-JPL community for ten weeks.



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lines. Applications are due **February 15, 1996**.

The Consulting Engineers and Land Surveyors of California (CELSOC) are offering scholarships of up to \$5,000 to undergraduates and graduates working towards degrees in engineering or land surveying. Undergraduates must be juniors or seniors in 1996-97. Both undergraduate and graduate applicants must be enrolled full-time, have a minimum cumulative GPA of 3.2, and be U.S. Citizens. Applicants must also be interested in pursuing a career in the consulting engineering or land surveying fields. Completed applications and all supporting documents are due **February 16th, 1996**.

The Thai Government is offering scholarships to Thai students studying in the U.S., who are also under 30 years of age, and who are majoring in computer science (2 scholarships), economics (1 scholarship), and business administration (1 scholarship). Students must have no commitments to other scholarship donors, as they will be required to work for the Thai Revenue Department, Ministry of Finance for a period of time following graduation. Both undergraduate and graduate students are eligible. Applications and supporting documents are due by **February 29th, 1996**.

In 1997, The Rotary Foundation will celebrate 50 years of awarding scholarships with the **1997-98 Rotary Foundation Ambassadorial Scholarships**. These are scholarships for students who want to study abroad for 3 months to 2 or 3 years. The scholarships are for study in any field, or to do intensive language training and cultural immersion in certain countries. The maximum award of the Ambassadorial Scholarships is \$22,000 for a year. Interested students should apply to a local Rotary Club (not all Rotary Clubs will offer scholarships every year). Application deadlines are set by individual Rotary Clubs and may be as early as **March, 1996** or as late as **July, 1996**.

The College Women's Club of Pasadena is accepting applications for scholarships for the 1996-97 academic year. The competition is open to both undergraduate and graduate students who are planning to enroll full-time for 1996-97. Women who are U.S. Citizens, who will be at least sophomores in 1996-97, and who have a minimum 3.0 GPA are eligible to apply. Applications are due at the **Financial Aid Office**, 515 S. Wilson, on **February 8th, 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 15th, 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 15th, 1996**.

The American Chemical Society is accepting applications for its **Minority Scholars Program**. Qualified applicants must be of African-American, Hispanic/Latino, American Indian, Alaskan Native, or Native Pacific Islander descent, and must be citizens or permanent residents of the United States. Applicants must also be majoring in chemistry, biochemistry, chemical engineering, or in a chemically-related science, and must be planning a career in a chemically-related field. Other qualifications include full-time attendance in 1996-97, demonstrated high achievement in chemistry or science, and evidence of financial need for scholarship aid according to FAFSA guidelines.

Next in the series: Violinist Lee-Chin Siow on February 25th.

Science, Ethics, and Public Policy Seminar
Dr. Gerald L. Geison, Professor of History at Princeton University, will be giving a Science, Ethics, and Public Policy Seminar entitled *Did Pasteur Cheat? Does it Matter?* on Friday, February 16th at 3:30pm in the Judy Library.

Next in the Series: *Modern Themes in the Science and Politics of the French Revolution* on February 26th

Concert/Lecture Series Schedule

Lagerstrom Chamber Music Concerts
Duetto D'Amore, including the talents of soprano Judith Nelson, soprano Randall Wong, and Elaine Thornburgh on harpsichord, will be held on Sunday, February 4th at 3:30pm in the Dabney Lounge. The program includes works by Bach, Strozzi, Hasse, Fontei, Vivaldi, Scarlatti, and Haydn. Admission is free.

Next in the series: Violinist Lee-Chin Siow on February 25th.

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