

Stephen Hawking Comes to Tech

By Jonah Michaud
and Robert Fisher

Last week, Dr. Stephen Hawking, who has been called the greatest theoretical physicist since Einstein, visited Caltech to attend a symposium on large scale structure in the universe. Dr. Hawking holds the Lucasian chair of Mathematics at Cambridge University and is the author of the best-selling *A Brief History of Time*. On Thursday a press interview was conducted in the East Bridge Reading Room. Among those present were Hawking's nurse, two graduate assistants, a Channel 7 reporter and cameraman, and the authors. Hawking, who suffers from ALS, or Lou Gehrig's disease, has been confined to a wheelchair for over two decades. Several years ago, he nearly died of pneumonia, requiring doctors to insert a breathing tube in his trachea, silencing his voice. Now, he communicates through a voice synthesizer which he controls by selecting words displayed on an LCD monitor with a switching device held in his lap. His other hand grasps a joystick on his wheelchair which allows him to move independently.

As Professor Hawking entered the room, the participants rose and greeted him. He settled down to a discussion with the Channel 7 interviewer, who was preparing a special report on "black holes and space and stuff."

Channel7Q: Dr. Hawking, this is a thrill and an honor for me to be here to say hello and to interview you—thank you very, very much. Um.... One question that I was really interested in asking you to start off with was have you.... [A long pause] Dr. Hawking, with the advent of the Hubble Telescope have we had the opportunity to look at Cygnus one [we think he means Cygnus X-1, a strong x-ray source in the constellation of Cygnus] now with the Hubble, and if we have, what have we discovered?

A: I don't think the Hubble Telescope has looked at Cygnus X-1 yet. It is not really the right telescope for the job. What we really need is a large x-ray telescope in orbit that could enable us to see signals which are characteristic of black holes.

Channel7Q: So, the Hubble really hasn't helped us with Cygnus X-1 very much, has it?

A: It has not really helped us with

anything, but hopefully they can fix it.

Channel7Q: Yes.... Dr. Hawking, recently there have been some, some studies over the past couple of years that had talked about the possibility of a massive black hole being at the center of the galaxy. Do you believe that?

A: I think the evidence is very good that there are very large black holes at the centers of some galaxies we can see. There may also be one at the center of our own galaxy. This is more difficult to observe because there is a lot of dust in the way, but the evidence points that way.

Channel7Q: Thank you. Dr. Hawking, of course you can see that I have your book [the interviewer has held a copy of *A Brief History of Time* in

then the creator of the universe, a prime mover?

A: I don't think one needs God as a prime mover because it seems that the universe doesn't need to have a beginning and end. It can just be. But one still has the question, why does the universe bother to exist. If you like, you can define God to be the answer to that question.

Channel7Q: So Dr. Hawking, obviously you see evidence that the universe will contract, that it will not just expand until it reaches its maximum entropy, maximum disorder, it will contract, there's enough mass, matter in the universe to cause a recontraction of the universe.

A: I think there should be just enough matter in the universe to cause it contract eventually. But it is one of the great puzzles of mod-

Whereas Stephen W. Hawking firmly believes that naked singularities are an anathema and should be prohibited by the laws of classical physics,

And whereas John Preskill and Kip Thorne regard naked singularities as quantum gravitational objects that might exist unclothed by horizons, for all the Universe to see,

Therefore Hawking offers, and Preskill/Thorne accept, a wager with odds of 100 pounds sterling to 50 pounds sterling, that when any form of classical matter or field that is incapable of becoming singular in flat spacetime is coupled to general relativity via the classical Einstein equations, the result can never be a naked singularity.

The loser will reward the winner with clothing to cover the winner's nakedness. The clothing is to be embroidered with a suitable concessionary message.



John P. Preskill Kip S. Thorne

Stephen W. Hawking John P. Preskill & Kip S. Thorne
Pasadena, California, 24 September 1991

his hand during the entire interview.] and I really have enjoyed it, reading it. I noticed, um, during the course of the book there seems to be a point where high-level astrophysics and religion seem to almost merge at some point. My question is, are you a religious man?

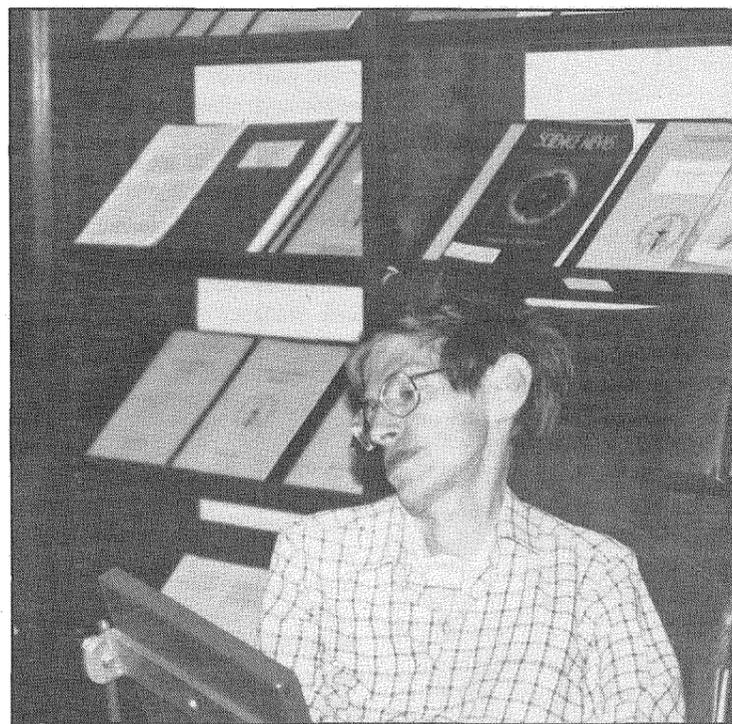
A: No.

Channel7Q: Is your concept of God

ern astronomy that so far we have not detected more than about ten percent of the matter required. It seems that there must be about nine times as much of the universe as we have seen so far.

Channel7Q: One more question.... Do you, Dr. Hawking, believe that quasars are indeed these massive objects at the edge of the observable

see page 8



Dr. Hawking (above) gave a lecture in Beckman Auditorium that drew, "The largest crowd this auditorium has ever seen." Overflow went to Ramo Auditorium where a complete audio-visual presentation of the conference was seen. Further overflow listened to the lecture via loudspeakers set up on the grass outside the auditorium.

S.E.D.S.

by Phil Rosenthal

The Students for the Exploration and Development of Space (SEDS) offers a wide variety of activities in all space-related areas, including planetary science, aerospace engineering, astronomy, and the social and political dimensions of the space program. Last year we sponsored numerous tours, hosted guest speakers, attended landings of the space shuttle, went on monthly star parties, hosted a regional space conference, began work on GAS can experiments ("Get Away Specials" that will be flown on the space shuttle) and developed an ambitious education program. Our tours included visits to Rockwell's Palmdale facility, where we saw the space shuttle orbiter Endeavour under construction at McDonnell Douglas' plant at Huntington Beach, which features a full-scale model of space station Freedom, and Rocketdyne's facility where Delta and Atlas rocket engines and the space shuttle main engines are produced. We also toured Caltech's Palomar and Big Bear Observatories. Our conference, CalSEDS '91, featured among others Mark Albrecht, Executive secretary of the National Space Council and astronaut Deke Slayton. Groundworking was laid for one GAS can experiment endeavouring to detect gamma ray outbursts from as yet unidentified sources and another dealing with protein crystal growth.

This year, Caltech SEDS intends to expand the above menu of activities. We have a tour of the Jet Propulsion Lab planned for October 11 at 1 PM and a trip to see the space shuttle Columbia. In addition, we expect to add tours of Edwards AFB and other aerospace companies. The Gamma Ray Burst experiment will

be built this year and is scheduled to be delivered for launch by May. Significant work will be done on the other cans. As these GAS cans are student experiments, excellent opportunities exist for undergraduate student participation. Caltech SEDS will be co-hosting another regional space conference, CalSEDS '92. Furthermore, we will go to Joshua Tree National Monument or Mount Pinos for monthly star parties with our new Ultima 8 telescope. The first star party is October 5.

Though very independent, Caltech SEDS is part of an international organization. This past August, the Caltech chapter became the co-headquarters for SEDS-USA. As a result, we will be involved in many projects with national scope. Our local education program will be expanded with the goal of interesting high school and college students form around the country in the space program. Public relation and fund-raising will also be focussed on. Caltech students who want to have an impact on students around the country will have many opportunities to participate in all national projects.

Anyone who would like to get more information about SEDS, on a local, regional, or national level is invited to come to our 1st meeting on Tuesday, Oct. 8 at 7:30 PM in SAC room 25. Nomination for officers will be held and a video of the total eclipse in Baja will be shown. New members always play a key role in setting the club's direction and are encouraged to attend. If you are unable to come to the meeting, but would like more information about SEDS or the JPL tour, call Phil Rosenthal at 577-4664.

INSIDE:

Jim's back
and badder
than ever!

page 4

Lots of
Letters to the
Editors

page 2

letters

Rotation Advice

To the Freshmen and Transfer Students:

Congratulations, you've almost made it through rotation! By now you'll be thinking about the houses you've been to. Tomorrow you'll have to consider all the houses and choose which ones you'd like to live at, and which ones you wouldn't (if any). Then you'll turn in your list, and wait. And during the following day you might start to worry a little. What if I don't get into my favorite house, even if I ranked it 1 and all the others 7? What if the house doesn't like me? What's going on at the house meetings? What happens at picks?

Well, first of all, try not to worry, because after Sunday night everything that happened at rotation and at the meetings is past history. Secondly, what happens at picks on Sunday is completely confidential, top secret, and nothing that happens or is said there should ever be repeated. If you hear rumors about what went on, remember that they are strictly rumors. And if you think someone really is talking about picks, please inform the president of the house or the IHC Chairman. Don't feel funny about doing this. Talking about picks is a serious breach of trust among the students and should be taken care of immediately.

What actually happens at picks is pretty simple. The house presidents choose cards to determine the order of picking. The first five and the last five rounds of picks follow this order, going forward and then backward. The middle picks are done by a computer program which distributes the rest of the number among the seven houses. Here the order is random, because some houses choose more students than others. Following this order, all the students are picked into a house. There is a separate pick for students living off-campus. Each house brings 4 representatives besides the president and the RA's to help with the selection.

There are some things to remember about this weekend. Just as you want to be in the houses you like, so a house wants people who like that house. Secondly, there are often cases where the number of students who pick a house far outweighs the number of students a house can choose. Thus if you don't get into your first choice, and there's a very good chance you won't, it doesn't mean the house dislikes you

or doesn't want you around. In fact, they'd probably be glad to see you come back and visit and possibly become a social member. Once you get into a house, you may find that it's very easy to stay there and not interact with the other houses. So while you're still familiar with some of the upperclassmen and you recognize other freshmen from frosh camp, feel free to stop by the other houses you liked.

Whatever house you get into, remember that how much you like it will depend somewhat on the other new students and on upperclassmen you may have not met. Keep an open mind, and realize that you'll probably end up really liking the house you're picked into.

One last thing. On Sunday, go around to the houses until you find where you've been chosen. Don't get discouraged, especially if you don't get into your first choice, because the house members are waiting to meet you. There's also usually some kind of house event or activities going on to welcome you in. Of course, any type of house induction is voluntary and if you don't want to participate you should not hesitate to say so. You will not be ostracized, or teased if you choose to do this. Have fun on Sunday night and best of luck in the coming year.

Andrea Mejia

More and More Rotation Advice

I certainly hope that everyone has gotten the most fun out of rotation as possible, and I'm sure we'll all be glad when it's finished. But now that rotation is almost over and we near the time that freshmen will find out what house they are going to become a part of there are some things that everyone must know, so that we can all enjoy the next year to the fullest.

This Sunday all of the freshmen will find out what house they are going to be in and they will immediately be welcomed by a myriad of traditions and activities that are special to each house. In some houses they will start from the moment that you are told where you will be living. In any case these traditions are all intended to welcome everyone and to be enjoyable to everyone involved. They are not intended to put the freshmen in a position where they feel inferior or taken advantage of. We all can have a great year filled with joy and good

Editorial

Jon Liljeblad

Are ideas merely the stuff of abstraction and insubstantive thinking, or are they something more?

It is perhaps too easy to forget through this mundane life that the world is in many ways far more than the concrete situations and problems that we continually encounter. That is, it is a simple thing to narrow our vision down to the concrete aspects of what comes before us and ignore the immaterial—to pass over the possible meanings and consequences that may be implicated in our actions.

But is this really important? Does it really matter if events are pushed irregardless of their implications?

This past summer the populace was given the chance to view first-hand a connection between actions and the inherent ideas behind them, to witness the simultaneous unfolding of a crisis and its related significance in history. Via the international media, we were able to follow the debacled coup attempt within the Soviet Union.

Side-stepping the plethora of historical, political, and social analyses regarding those few days, and skipping past the mountains of rhetoric and discussion, it would do well to consider, with a little hindsight, just what exactly we witnessed.

What we saw was a population—long perceived as knowing little or nothing about life outside of totalitarianism—rising en masse to confront the representatives of their past.

And, if that was not enough, the people won. Amazingly, incredibly, it was the people who were united, organized, defiant and the bureaucracy who was confused, muddled, wavering.

But we also saw something else.

For once, in what will probably be recalled as one of the most brilliant examples of its type in 20th-century history, we saw what happens when the citizens of a nation believe as one body in a common set of ideals and ideas. We saw the giant swelling of the masses motivated not by military command or tyrannical force, but spurred on instead by the existence of a vision, a vision that had been planted years before had been slowly brought to fruition. In the end, it was not money or guns or rhetoric that brought the people forward to face the coup. It was nothing more than mere words and ideas about perestroika, glasnost, and freedom. Nothing more than the notions first asserted by Gorbachev in the mid-80s and rockily nurtured since then.

And for this, the masses were willing to die.

Marx talked about the movement of the masses, Stalin forced the populace to his bidding at gunpoint and sword, the KGB terrorized the nation into line, but ultimately none of these were able to do what the ideas of freedom were able to do—unify, motivate, and inspire the people to act with their own resolve, with their own courage, and with their own power.

In some way, one might say that here ideas for once manifested themselves as something real.

Yes, ideas are nothing more than abstractions and sometimes aimless thinking, but they are nevertheless a significant factor in the day-to-day world around us. Ideas can at times be a critical factor in motivation and conversion. They can be the crucial inspiration needed to convince, spur, and distill in order to bring concrete actions into full-fledged fruition.

times, but in order to have that happen we just need to be aware of what basic understandings govern our life here at Caltech.

So here's what you need to know:

If you are asked to engage in any activity, you always reserve the right to refuse participation. From Page to Dabney, we all have activities in our houses that may not be observed in mainstream society. If there is any activity that you feel uncomfortable with you can refuse to participate. This is something all of the upperclassmen should be aware of as well. If an underclassman is expressing doubts about an activity, then it is the upperclassman's responsibility to inform the underclassmen about the content of the activity without putting any

pressure on them. Some people would rather see an activity performed once or twice before they engage in it. Never go into a situation where you feel pressured.

You should never engage in any activity which will put you in real physical jeopardy. This is an absolute rule. If you engage in a dangerous activity and you get hurt, you won't be the only one who suffers. There are laws against engaging in dangerous activities as an organization, and if someone gets hurt, it's the organization that will suffer the most. We have all spent a lot of time trying to make Caltech an enjoyable place to be, and the house system is very special. A careless mistake where someone gets hurt could jeopardize all that we have. And this also extends beyond just physical trauma. The activity is not reasonable or just if the participants feel humiliated afterwards. A note to upperclassmen: be careful not to delude yourself into thinking that you know how this person will re-

act, friendships and trusts have been lost in the past.

At any time during an activity, you may stop participating. Even if you agree to start an activity, if the situation changes for you at any time you may stop. Although I may not be one to speak, I think that showering is a good example. It's great to wrestle and play with new friends as long as you enjoy it and it's still fun.. It's great to wrestle and play with new friends as long as you enjoy it. If you start to get hurt, it is the responsibility of all involved to stop the activity right away. Nobody wants to see anyone get seriously injured, and it's hard to tell from the outside what's going on with a person's body. If you start to become injured, and you can't go on, you should say "Stop!" and the action should cease. This applies to all activities.

In refusing participation, you will not be socially ostracized. Participation in an organized event is not what makes you a member of any of the houses on this campus. There are no rites of passage to become a real Darb, Mole, Flem, Pageboy, Rudd, Scurve, or LLoydie. Not participating in house activities simply means you choose not to participate, nothing more or less. Upperclassmen should be well aware that they are not to place social pressure in order to increase participation. The activities should be attractive enough to warrant participation on their own.

These are the basic understandings that we all live by, here at Caltech. And with all of these points

see page 3

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CRIME AND INCIDENT BEAT

Crime Tip: There is an escort service available from the security office. Call any time x4701.

- 9/23 A bicycle was stolen from the bike rack on the north side of Church Lab. The lock was apparently cut with a bolt cutter. Value: \$320
- 9/24 Two boys were found in a ladies restroom in Baxter. They were told to leave and were verbally abusive. Later, it was noticed that the restroom sign was missing.
- 9/25 A suspicious person was reported in a van with surfboards pulling up to a Caltech house. The person was Charles Rubin—he had obtained permission to store things in the rear of the home.
- 9/25 A bicycle was reported stolen from Beckman Lab pond area. The victim had told a friend to go get a cup to catch pollywogs from the pond, and the friend had borrowed the bicycle without his knowledge. The friend returned with the bike as security arrived.
- 9/26 Three students were sighted driving an orange electric cart at 2200 hours. The cart was found abandoned in Ruddock courtyard. At 2320 hours the three students were found driving a white cart on Holliston. One of the students explained that she was using the cart to move dirt for her plants. The Page House RA was informed.
- 9/27 A suspect was observed trying several doors to the Arms lab, then enter Millikan Library. The suspect could not be found.
- 9/27 A gasoline powered leaf blower was stolen from a gardener's cart. The cart was left unattended for only 2 minutes. Value: \$360
- 9/28 A motorscooter parked outside Keck House was reported missing after being left unattended for a short time. The scooter was not locked and could be started without a key. Value: \$300
- 9/30 A mouse was removed from a room in Church Lab. Value: \$88
- 9/30 A calculator was removed from a locked room in West Bridge. Value: \$70
- 10/1 A suspicious person was observed exiting the gate to Winnett roof. When a security officer attempted to talk to him he ran he said "What are you going to do?" and ran east on San Pasqual.
- 10/1 A "leak sound" was reported from a lab in Noyse. The occupants were informed that it could be either gas or water. They vacated the lab. The "leak sound" was later found coming from a water pipe.
- 10/1 A possible fire was reported in Ricketts courtyard. The security officer found the students were having a bonfire.
- 10/2 A bicycle was stolen from Bechman Behavioral Biology Building. Value: \$385

Total Dollar Value \$1523.00

continued from page 2
find. Caltech is a wonderful and warm social environment, and we want to keep it that way. These understandings that we have are the way in which we've been able to do it. Finally, if you feel any misgivings or you have any doubts about an activity, talk to your house president. If you still feel uncomfortable, you

can always talk to any of the other members of the IHC and even the chairman, himself. They are all there to help you. I hope this will help you all have a great year filled with lot's of exciting surprises, with little fear or anxiety.

Rob Hannah
With Permission of the IHC

Searching for that
BIG, BOLD taste,
with no aftertaste?
Then write for your
house
if not for the
Tech.

Inside Worlds must be submitted by Wednesday at 9PM.

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Starts October 11: Lily Tomlin in
"The Search for Signs..."

letters

Mailbox Convenience?

Dear Eds.:

Registration is here again. Go down to Dabney Hall, wait in line, wait in line. A new line this year was for the new undergraduate mailbox assignments. I went through the line, got my key and mailbox number, and got handed a pink form telling me how these new mailboxes were for my convenience.

This is not a convenient change. Not for anyone. I've yet to meet a student who's not at least irritated by the change. Now I have to pick up my mail on the Olive Walk, which is slightly less convenient than picking it up in Dabney. Big mail, like graduate school applications, I'll have to pick up in Spalding, which is very inconvenient. And we also lose some of the social character of the lounge with the loss of the mailboxes.

The advantages cited in the friendly pink flyer are also largely untrue. "No one else will have access to your mail...only you have the key." A key which opens a 3-pin lock. Anyone with any experience picking locks could break into these mailboxes with paper clips inside of 5 minutes. Furthermore, the mailboxes are now in a very open, accessible outside area, where

wandering persons of low moral turpitude might happen by.

"No matter where you live, the box number doesn't change." This was largely true before. Most Techers stay in the same house for their entire Tech career, thus always having the same mail code. Some to move, it's true. However, according to the current plan, people going on leave lose their mailboxes, to get new ones when they return. This is certainly not an advantage for these people.

Advantage #4 really takes the cake. "Small packages, such as cassettes, can now be placed in the box saving you unnecessary trips to the mail room." I've gotten lots of packages in Dabney Lounge, some quite a bit larger than cassettes, and the only other place I've had to go is down to the SAC for the really big boxes.

Now I have heard some good reasons for making mailboxes more secure. There are stories floating around about stolen CDs or credit cards getting stolen from student house mailboxes. Of course, the insecurity of the new mailboxes kind of invalidates these reasons too. But, "R. McKinnel," please stop feeding us this bullshit about the mailboxes being "for our convenience."

Steven C. Anderson
Dabney House
Mail Code 1-58

Auditions for The Ugly Dachhund

Anyone desiring to put on the dog should consider auditioning for TACIT's next production, *The Ugly Dachhund*. G.B. Stern's charming canine comedy is not, however, about a dachhund. It's about a Great Dane. He's suffering from an identity crisis. Scripts are on three day reserve at Millikan Library, and the auditions are to be Saturday, October 12th from 1 to 3:30 and 7 to 9 PM and Sunday, October 13th from 2-7 PM in Winnett Lounge. The play, adapted and directed by staff member Lynne McGrath, is to be done as a staged reading, and permission to perform it on Nov. 22-24 has been given by the Disney Company in honor of Caltech's centennial year.

The play is set in the south of France in 1938; nine of the players are dogs, and the other four are not; and while never vulgar, the humor is aimed at adults rather than children. Faculty, staff, and students are all welcome to try out. If you ever wanted to perform in something out of the common way (a combination of *The Ugly Duckling*, *Romeo and Juliet*, and *Cyrano de Bergerac*) this is your opportunity.

Ever considered writing for the Tech? Well, you should. Come by the Coffee House TODAY at 12:15!

Career Development Center



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Friday, October 11, 1991

3:30 - 5:30 P.M.

Room 8 Parsons-Gates

Come see our new look

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Filmmaking Club at Caltech

by Varoujan Gorjian

Undergraduates, graduates, and staff members interested in making films came together during the Summer to form the Caltech Film Club. The purpose of this club is ultimately to provide movie making equipment for the Caltech community. At this stage the club is trying to raise money to get video cameras, editing decks, and special effects equipment, and, eventually, the structure will be such that those who are interested in making a movie will have access to this equipment and the other members of the club will help them realize their vision. The way it will work will be that the person with the idea will be the director and the other

members will be the actors, producers, editors, key grips, etc.

The first meeting will take place in the SAC, room 35, at 8:00, Wednesday, October 9, 1991. The more people who show up, the closer we will be to getting the equipment. No concrete decisions have been made as to the format of the movie making, we can still either go with film or video. If you have a preference, show up and voice your opinion. Right now, we have access to both a video camera and a super 8mm film camera. Your interest need not lie solely behind the camera. If you want to act or write, come join us, your input will be

welcomed.

But you say "I have no experience in making movies, can I join and learn?" Sure, this is a no-experience-necessary club. Just bring your enthusiasm.

Another goal for the club is to have special showings of rare and classic films where we can learn from more experienced film makers. The selection will depend on the membership. So come on down and add your voice to this new club.

President: Alex Protopapas
Vice President: Scott Dolim
Faculty Advisor: Robert Rosenstone

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Jim's Journal



by Jim



This Week:

Great Doll and Bear Show Oct 5-6

The Great Doll and Bear Show and Sale will be held at the Pasadena Convention Center Oct. 5-6.

Featuring over 200 dealers from all over the United States and Europe, the show is a chance for all doll and bear lovers to enhance their collections.

Dolls and bears of all kinds will be available, including antiques, collectibles, and those created by the latest artists.

The event will take place in the Exhibition Hall Saturday Oct. 5 from 11 AM to 6 PM and Sunday Oct. 6 from 11 AM to 4 PM. Tickets are \$5.

Nostalgia and Collectibles Show and Sale Oct. 5-6.

The Pasadena Convention Center will host the Nostalgia and Collectibles Show and Sale on Oct. 5-6.

This giant collectible market features toys, postcards, tins, movie, and TV memorabilia and other collectibles from all over the world. In fact, over 400 dealer from 18 states and countries as far as Germany and Japan will fill the Convention Center's Exhibition Hall, making the show and sale a "collector's paradise."

The event will take place Saturday Oct. 5 from 11 AM to 6 PM and Sunday Oct. 6 from 11 AM to 4 PM. Tickets are \$5.

ENTERTAINMENT

Movie Previews:

STAR WARS, STAR TREK AND Beyond...

by Varoujan Gorjian

The next *Star Wars* movie will soon begin production. George Lucas finally announced that he will begin work on the next *Star Wars* chapter after he finishes work on his current project, *Red Tails*, the story of the first black American fighter squadron during World War II. The only definite thing about the next *Star Wars* trilogy is that it will be a prequel to the already released movies. The story, tentatively titled *The Clone Wars*, will chronicle the rise of the Empire and Vader's turn to the dark side of the Force.

No director has been announced and at the tenth anniversary convention in 1987 Lucas said that he will not direct any more of the *Star Wars* movies which was a decision he made after he directed the first one. "On a project as complex as this, directing is one job too many," Lucas said. Speculation has been rampant as to who will be chosen to direct. For *The Empire Strikes Back* and *Return of the Jedi* Lucas chose relatively unknown British directors. For his other large project, *Willow*, Lucas worked with his protege Ron Howard. Spielberg's name has also been thrown about as he and Lucas worked so well together on the *Indiana Jones* movies. The decision will be coming soon.

Unfortunately no release date has been announced for the next movie giving rise to speculation that Lucas might try to make all three of the movies back to back, and thus release in quick order. The previous *Star Wars* movies each took three years to make, so if Lucas makes just one, the first movie will be coming within three years, but if he makes them back to back, the release dates are unpredictable.

A blockbuster whose release date is more certain is *Star Trek VI: The Undiscovered Country*. In its teaser in the theaters (which does not contain any scenes from the movie) the announced date is December 13, 1991. The movie was directed by Nicholas Meyer, who also directed *Star Trek II: The Wrath of Khan*, and it is being produced by Leonard Nimoy. The whole cast is back with many new faces like Christopher (*The Sound of Music*) Plummer and Kim (*Mannequin*) Kattrall. ILM is doing the special effects so we won't have to worry about getting cardboard effects like the ones in *Trek V*. As far as the story goes, you can find out pretty much the whole thing from the BBS's and the *Star Trek 25th Anniversary Special*. Also seeing as how the trailer for *Trek V* gave away all but the last ten minutes of that movie, I would suggest you refrain from seeing any commercials for *Trek VI* if you want to be surprised when you see the movie. If a commercial comes on

and you don't want to find out the whole story, close your eyes and ears and sing something to yourself, or if you want to protect the whole audience, stand up, turn to the nearest flag, and start singing the national anthem. Others will have to follow suit and will be saved.

Now for a report from the set. My cousin was an extra on the set of *Trek VI* and he gave me some interesting anecdotes without releasing any plot points. First of all, the set was somewhat tense as the production was behind schedule. Everyone was a bit on edge, especially Meyer who knew exactly what he wanted and got it most of the time. Due to the action packed nature of the movie a lot of smoke from explosions was present on the set. Interestingly enough, the smoke is purple, but will appear brown on film. A lot of the props look very cheap and nothing like what one would imagine them to look like, but since film does not have the resolution of the human eye, the props look much better on screen.

Paramount has announced that this will be the last *Trek* movie with the old cast, but never say never in Hollywood. Apparently the early

word on the movie was so good that the end was changed to accommodate a possible sequel. According to Walter Koenig "There were some changes in the dialogue, and the way the movie ends now, there's a door that's more than an inch open. We're talking about sixteen-wheeler semi's. The indication is there in *Star Trek VI*, we're not necessarily ready to pack it all in."

Another long awaited sequel is *Highlander 2: The Quickening*. The movie finally got an American distributor and will be out November 1st. The movie stars Christopher Lambert, Sean Connery, Virginia Madsen, and Michael (*Total Recall*) Ironside. The director is Russel Mulcahy who did the original *Highlander* and, earlier, the Duran Duran videos for the *Rio* album. Unfortunately the music will not be done by Michael Kamen and Queen since they were unavailable at the time. The reason that the movie's American release was delayed was that the producers did not want to deal with the large American studios which cut several key sequences from *Highlander* in the American release. If you want to see *Highlander* in its entirety, rent

the Japanese laserdisc version.

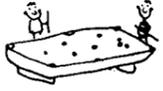
The plot of *Highlander 2* takes place in the year 2029 and is much more action oriented than the first one. Mulcahy's distinctive visual style once again comes through to liven the many sword fighting sequences. The movie was well received when it opened in Europe and based on that another sequel is in the works with the title *Highlander 3: The Magician* with Mulcahy and Lambert already signed on as director and star.

Far more in the future is *Alien 3*, or, if you prefer, *Aliens 2*. The release date for that sequel is Memorial Day Weekend 1992, thus kicking off the '92 Summer movie season. Sigourney Weaver stars in a story that has been re-written by multiple authors with a lot of studio interference. I still would not hold my breath for this movie as this is the third announced release date.

Other movies shooting for the '92 movie season are *Batman Returns* (which had to temporarily shut down production due to cost overruns), *Honey, I Blew Up the Baby* (the sequel to *Honey, I Shrank The Kids*), and *Robocop 3* (without Peter Weller).

Jim's Journal

I played pool with Tony again today.



Whenever he would make a shot, he'd say, "Alright! That was somethin', eh, Jim?"



But when he'd miss several shots in a row, he'd say, "Geez, what's wrong with me? This is ridiculous!"



by Jim

While we were walking out of the pool hall, he said, "Pool is just the coolest sport, isn't it?"



I said I thought it was okay.

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Career Development News

Yes, folks, they're finally in! The NSF Fellowship applications have arrived. Stop by to pick one up if you're interested. Graduating seniors and Master's students: If you have not already received your packet of recruiting information, please stop by and talk with Carol about getting your in-

formation and getting you on the mailing list. It includes information about on-campus recruiting, which starts on October 28 for B.S. and M.S. candidates. Mobil Corporation will be interviewing for seniors and grad students in Geophysics on October 17 for summer employment. Sign-ups

went up for these interviews on September 30.

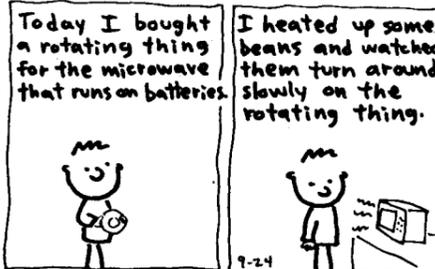
Be sure to join us for our open house on Friday, October 11 from 3:30 to 5:30. See our newly remodeled offices, have some munchies, and get to know the staff.

Stop by to peruse our listings for on-campus employment, off-campus employment, and tutoring positions.

The Alexander von Humboldt Foundation is sponsoring a "Bundeskanzler Scholarship for Germany." It was created to give outstanding individuals who are extraordinarily gifted and have shown a high degree of responsibility and leadership an opportunity to obtain a first-hand knowledge of Germany.

The Career Development Center is located in 08 Parsons-Gates. Our office hours are 8 AM to noon and 1 to 5 PM. Give us a call at x6361.

Jim's Journal by Jim



The **CALTECH COFFEEHOUSE**

will be open starting **Monday, October 7 at 8 p.m.**
Featuring FOOD, FOLKS, FUN, and lotsa new comic books!
*also looking for new waiters (call Hoyt at x3762)

We're celebrating our grand opening this year with two special deals! (offer expires 10/13/91 so act soon)

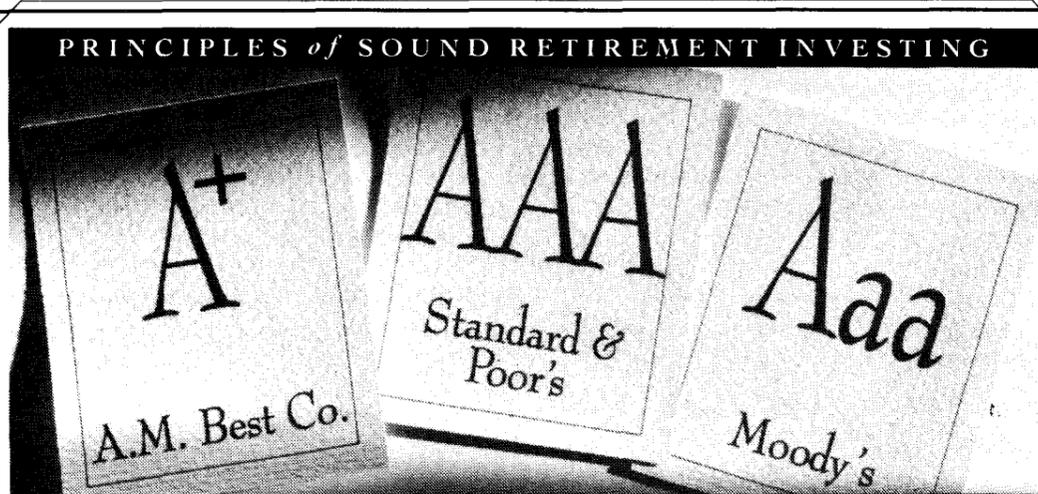
Say "No need for Milli Vanilli. Just get me some chili" and receive 25 cents off the low price for any size chili-cheese fries!	Say "I need a break. Make me a shake" and receive 25 cents off the regular low price for any shake with three or more flavorings!
--	--

Write for the Tech

Jim's Journal



by Jim



BEFORE TRUSTING YOUR FUTURE TO ANY COMPANY, ASK FOR SOME LETTERS OF REFERENCE.

You put more than just your savings into a retirement company. You put in your trust and hopes for the future, too. So before you choose one, ask some questions. How stable is the company? How solid are its investments? How sound is its overall financial health?

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TIAA received A+ from A.M. Best Co., AAA from Standard & Poor's and Aaa from Moody's Investors Service. These ratings reflect TIAA's reliable claims-paying ability, exceptional financial strength, superior investment performance, and low expenses. With its guaranteed rate of return and opportunity for dividends, TIAA is one of less than ten companies, out of

2,200 nationwide, that received these highest marks.

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what goes on

Attention Juniors in Engineering
 Professor David Goodwin's class ME 20—Heat Transfer and Thermo Design—has been rescheduled to Monday, Wednesday, and Friday 1 to 2 PM in 306 Thomas. Sign up now!

CRAF/Cassini Development Philosophy: Risk Management
 John Casani will discuss his approach to managing risk on a funds-constrained flight project. He will amplify on three principles: (1) it has to work, (2) it can't cost over \$1.6 billion, (3) everything else is less important. John will describe how the project's approach to risk management is reflected in the procurement strategy, systems engineering process, integration and test plans, and project control techniques.

The talk is sponsored by the Caltech Management Association and is at noon in von Karman Auditorium at JPL on Monday Oct. 7.

Books Wanted
 Your donations of books for the FOCAL Annual Book Sale are still being collected. Please deliver your donations of books (both hardback and paperback) to the first floor in Millikan Library. The Book Sale will be held on Friday, Oct. 11 from 8:30 AM to 2:30 PM in Dabney Lounge.

Meet New People While Learning Easy Folkdances!
 On Tuesday, October 8 at 7:30 PM in Dabney Lounge the International Folkdances will present an evening of beginning dances. This is a great way to meet new people, get exercise and learn about world cultures. No dance experience is needed. Dance lessons will be between 7:30 PM until 9:15 PM. Then there will be open dancing until 11:30 PM. Come move your feet to the folkdance beat with the new people you meet.

Guitar Classes
 Guitar classes for the fall quarter will meet Tuesdays starting Oct. 15 in room 1 SAC, with beginning instruction going from 4:30 to 5:30 PM, intermediate from 3-4 PM, and advanced classes from 5:30 to 6:30 PM. Classical and flamenco repertoires are explored but techniques may transfer to other styles. Beginner classes include jazz/folk chord system. Members of the Caltech community may attend for free (if space permits). Undergraduates may get 3 units of credit if they desire. Private instruction on any level can be arranged. The instructor is classical guitarist Darryl Denning, who has an international background in performance recording and teaching. For information call (213) 465-0881 or leave a message at 12-58.

An Ethnic Halloween Party
 On Tuesday, Oct. 29 at 7:30 PM in Dabney Lounge the International Folkdances will present their annual Halloween Party. Dance lessons will start at 7:30 PM. Music will be provided by the California/Bulgaria Band featuring musicians from world renowned Bulgarian folk ensembles. Costumes are encouraged. All are welcome. Meet new people and see the world!

Work with the MOSH
 The Director of Residence Life and the Master of Student Houses are currently looking for 3 CWS students to work in our office. If you qualify and can work at least 10 hours/week, please call Jeanine on ext. 6194.

Northrop Scholarships
 The Northrop Corporation is offering two \$3000 scholarships at Caltech for the 1991-92 academic year. The scholarships are open to freshmen through seniors in Electrical Engineering, Mechanical Engineering, Computer Science/Engineering, or Manufacturing Engineering. Students must show evidence of a strong academic record and a career interest in the aerospace/defense industry. The applicant must be a US citizen and may be a concurrent recipient of another company's scholarship. Resumes and academic transcripts must be sent to the Financial Aid Office at 515 S. Wilson. The deadline is 5:00 PM Friday, Oct. 25.

Putnam Competition
 The 52nd Annual William Lowell Putnam Mathematical Competition will be held on Saturday Dec. 7. The competition is open only to regularly enrolled undergraduates, in colleges and universities of the United States and Canada who not yet received a college degree. No individual may participate in the competition more than 4 times. Sign up in Sloan by October 11. "As usual, we hope many participants will enjoy a day of math problems and donuts."

Racquetball
 Racquetball players needed for upcoming singles tournament in South Pasadena, Oct. 19 and 20. For questions and/or entry forms call Earl Potter at x6530.

Caltech Y Hike to Throop Peak
 The Caltech Y will be sponsoring a hike to Throop Peak on Saturday, Oct. 19. The trip will have two options: (1) an easy hike to Dawson Saddle, or (2) a strenuous hike from Vincent Gap to Mt. Baden-Powell to Throop Peak to Dawson Saddle. Hikers must provide their own lunch and water. Sign up at the Caltech Y by Wednesday, Oct. 16.

Alpine Club Meeting
 The Caltech Alpine Club will have its first meeting of the year on Wednesday, October 9 at 7:30 PM in Winnett Clubroom 1, above the bookstore. The featured speaker will be research fellow Peter Green, who will present a slide show entitled "Backpacking, Skiing, and Climbing in the Saint Elias Mountains: Travels Near the Top of North America." This year's trip schedule will also be discussed. Trips in the works include camping in Caltech's sequoia grove, hiking in the San Gabriel Mountains, mountain-bike rides, cross-country skiing, and backpacking in the Sierras. Everyone is invited to attend, bring their trip ideas with them, and prepare to meet other folks who also like to spend time in the out-of-doors! For more information, call Andy Wells at x4165 or send e-mail to andyw@design.

Gay, Lesbian, Bi Discussion Group
 Meetings are scheduled for the 1st and 3rd Tuesdays of each month from 7:30 to 9:30 PM in the Health Center. This confidential meeting is open to all members of the Caltech community. The first hour is devoted to discussion of a specific topic, and the remaining hour is open for general conversation and socializing. Refreshments are served. For information please call 356-8331.

Announcements for What Goes On may be submitted on forms available outside the Tech office (SAC room 40A) and in the copy/mail room (SAC room 37), or use a plain piece of paper. Send announcements to 40-58, or put them in the IN box outside the Tech office. Announcements should be 75 words or less. Indicate the date(s) the announcement is to run. Announcements for the current issue must be received by 5 pm Tuesday. Announcements will be published as space becomes available and will be chosen according to size and interest to the Caltech community. Announcements for commercial events unrelated to Caltech will not be published.

Yearbooks
 The 1991 yearbook is here! All upperclassmen who have registered for the past three terms are entitled to one. You can pick your copy up from your house editor/or historian. People living in off-campus can also pick up a copy from Michelle Tseng, Marks Rm 115.

If you are interested in working for the award-winning 1992 Big T yearbook, please talk to either Chris Ho (Fl 63), Julian Chen (Ri 68), Michelle Tseng (Marks 115), or Emily Wen (L1 133).

Theater
 After the first few weeks of classes, everyone will need some relief from the onslaught. Theatre Arts' "Broadway Musical Revue" will be the ideal solution. The "revue" will feature musical numbers from many shows such as "Three Penny Opera", "Damn Yankees", and Rodgers and Hammerstein's "South Pacific", as well as music and songs by Irving Berlin, Leonard Bernstein, George and Ira Gershwin, Cole Porter, Stephen Sondheim, and more. The "Revue" is directed by two physics graduate students—Depto Chakrabarty and Rob Knop, and features both graduate and undergraduate students along with members of the Caltech and JPL staff. The "Broadway Musical Revue" will be performed in Ramo Auditorium at 8 PM on Thursday, Oct. 24; Friday, Oct. 18 and 25; and Saturday, Oct. 19 and 26 with a matinee performance at 2 PM Sunday, Oct. 20. Tickets will be available at the Caltech ticket office at 332 S. Michigan Ave. (call at 356-4652 for more information) as well as at the door for \$5 for students and senior citizens (see, it will fit easily into your budget) and \$7 for general admission.

Career Dev. Center Open House
 Friday, October 11 from 3:30 to 5:30 PM in Room 8 Parsons Gates. Refreshments served!

Save the Environment/Make Money
 The Caltech Y has a work/study position open for the campus recycling program. For those interested, please contact Chris Sundberg at the Caltech Y for information by Oct. 10.

Chamber Music Series
 Planetary science graduate student David Koerner will present a piano recital on Sunday afternoon at 3:30 as part of the Dabney Lounge Chamber Music series. Admission is free and a reception will follow the concert.

David was a professional musician before coming to Caltech. He was a contestant in the 1982 Tchaikovsky Competition in Moscow, and has been soloist with numerous orchestras, including the Caltech-Occidental Symphony Orchestra. He will play a program of music by Bach, Mozart, Beethoven, Chopin, Debussy, Rachmaninoff, Scriabin, Ravel, and Stravinsky.

In case you can't attend the concert on Sunday, David will be doing a run-through of his program in Dabney Lounge on Friday (today) at 2:00. Stop by and help him get nervous.

BOC Rep. at Large
 A member of the BOC, Michael Lazarro, is on leave for this term. As a result, he has resigned his position as Rep. at Large. Any undergraduate who is interested in serving on the Board until March should sign up on the list outside Eddie Grado's office before October 11. Interviews will be held. Question, call the BOC at x6200.



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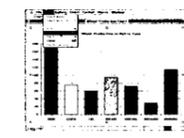
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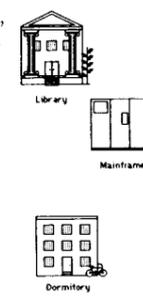
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SPORTS

Runners

by Ned Bowden

The Caltech Invitational cross country meet this past Saturday at Lower Arroyo Park turned into a dual meet for the women and an intrasquad meet for the men. After hearing about how the Beavers mauled the competition in their first meet, every team - except La Verne - backed away from this meet to face easier competition at UCLA.

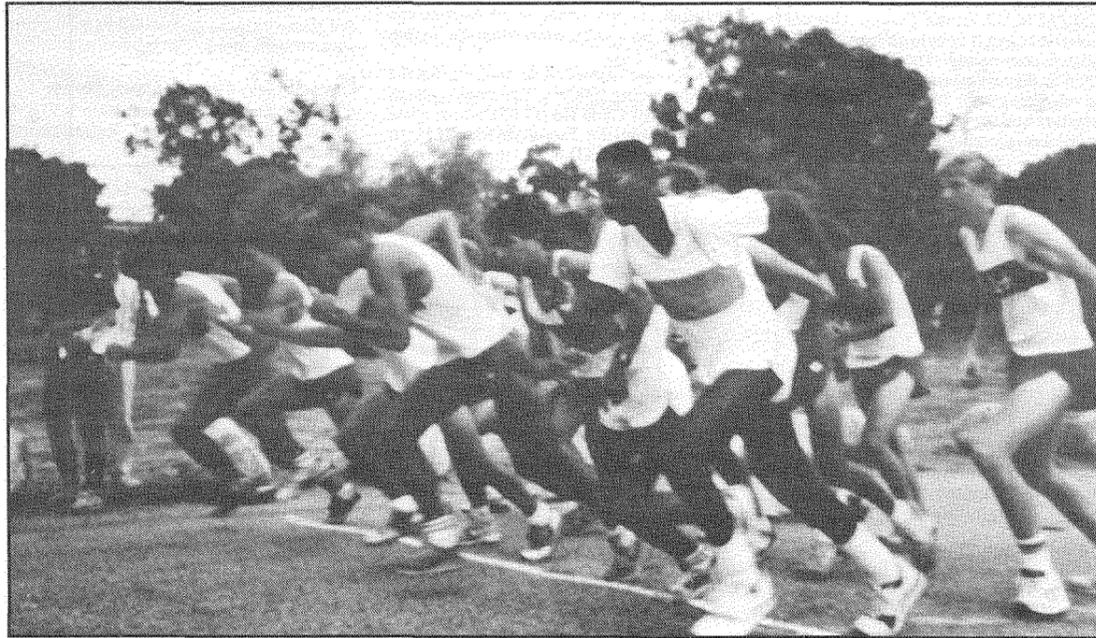
La Verne showed up with a squad of nine women all hoping to take the first place plaque back with them. Two La Verne women placed first and second over the new and accurate five kilometer course. Once again, Carol "Don't Mess With Oreegun" Johns came in first for Caltech with a time of 24:11 (38 seconds faster than last week). Jessie "I Want My Twenty Dollars" Haldeman ran with conviction to come in at 25:46 (1:01 faster than last week). In fine fashion, Tristy Kibbey held off a fast approaching La Verne runner in a time of 25:46 (1:12 faster than last week). Despite forsaking preseason for the sun and sand of Maryland, freshman



Romp At Home

Tobé Corazzini ran an impressive 26:16 in her first collegiate race. She also edged out a La Verne runner. With 800 meters left Anna "No Pain, No Gain" George shouted for ice but refused to stop. She over-

came the pain to place fifth on the team in 26:38. Rounding out the top seven were Aimee Smith (26:45) and Emmeline "Coach Is Soooo Persuasive" Naranjo (27:19). Coach O'Brien described the women's race as a "barn burner" as the Caltech women won 28-29! Way to go!!



Cross Country off to a blazing start in Lower Arroyo Park.

photo courtesy of Ned Bowden

Hawking

(continued from page 1)

universe, or are they closer? What do you, what do you feel personally?

A: I believe that quasars are at great distances from us. That means they have to be giving out enormous amounts of energy to be as bright as we observe. The only mechanism that seems to account for this energy is matter falling into the center of a giant black hole at the center of the quasar.

Channel7Q: Thank you Dr. Hawking, it's a pleasure. Thank you.
A: Thank you very much.

Channel7Q: Thank you.

At the end of his questioning, the reporter and his cameraman departed immediately. Over forty-five minutes had elapsed since the interview began, so we decided to limit ourselves to a single question.

TechQ: We know you have a standing bet with Kip Thorne over the existence of a black hole in Cygnus X-1. [The conditions of the bet state that if there is a black hole in Cygnus X-1, Hawking must buy Thorne a year's subscription to *Penthouse*. If not, Thorne must buy Hawking a four year subscription to the British satirical magazine, *Private Eye*.] Do you hope to collect on the bet, and why the particular choice of magazines?

A: I have conceded the bet and sent Kip a subscription to *Penthouse*. *Penthouse* was Kip's own choice. I chose *Private Eye* if I won. I now have a new bet with Kip and John Preskill about naked singularities. It doesn't involve magazines, but clothes to cover our nakedness. Maybe Stewart [Hawking's graduate student] can show you the bet.

Afterwards, we were led to the Athenaeum to inspect the document on which the bet was formalized. On the way there, we talked briefly with Hawking's assistant. We were told that we had come across a real "scoop," since the bet had been recorded just the day before. Although Dr. Hawking seems to have received the more difficult end of the bargain, he may yet be able to claim his prize. As he remarked at the conclusion of our interview, braving the unfamiliar territory of the Caltech campus to return to his conference, "I'll find a way."

ferred at the end of the race and ran a 30:32 to reach them ahead of his hungry teammates. In a close battle for second, freshman Schuyler Cullen (32:10), Andy Lavin (32:14), and Jonah Michaud (32:27) ran as a pack until the end. Schuyler's time is all the more impressive because it was his first race and he had never attended a Caltech practice! Rounding out the top seven for the men were Mike "FSUSUX" Mahon (33:03) and freshman Ron Steiger (33:08). In the intrasquad meet, the orange team came away the victor in a score of 28-29. The Minnesota Twins clinched their division, but the luckless Vikings fell to 2-3. As of Thursday, the Atlanta Braves were tied for first place in the National League West with the oh-so-lucky L.A. Dodgers.

Weekly Sports Calendar

DAY	Date	Time	Sport	Opponent	Location
SAT	10/5	2:00 pm	Volleyball (W)	Pacific Christian	@ Caltech
SAT	10/5	10:00 am	Soccer	La Verne	@ Caltech
SAT	10/5	all day	Water Polo	Caltech Classic	@ Caltech
SAT	10/5	TBA	Cross Country	Biola Invitational	@ La Mirada Park
SUN	10/6	1:00 pm	Football	Antelope Valley Crusaders	@ A.V.H.S.
SUN	10/6	all day	Water Polo	Caltech Classic	@ Caltech
TUE	10/8	7:30 pm	Soccer	Caltech	@ Cal Lutheran
WED	10/9	4:30 pm	Water Polo	Chaffey	@ Caltech
THU	10/10	4:00 pm	Football	Australian National Team	@ Caltech
FRI	10/11	6:00 pm	Volleyball (W)	Caltech Invitational	@ Caltech
SAT	10/12	9:00 am	Volleyball (W)	Caltech Invitational	@ Caltech
SAT	10/12	10:00 am	Soccer	Caltech	@ Redlands
SAT	10/12	11:00 am	Water Polo	Alumni	@ Caltech
SAT	10/12	TBA	Cross Country	Open Date	@ TBA

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