SURFers Present Research

SURFers, great and small, converged on campus last weekend to celebrate the end of this year's Summer Undergraduate Research Fellowship program with a scientific conference.

The SURF program at Caltech began in 1979 to encourage creative research, promote interaction between undergraduates and faculty, and improve the undergraduate program. In five years, it has grown from 18 students to 77 students. In 1983, nearly one-third of all faculty in science and engineering participated as sponsors.

The students applied for their fellowships by developing research proposals in collaboration with sponsoring faculty members. The applications were reviewed by a committee of faculty members familiar with the fields represented. Fellowships were awarded on the basis of perceived merit.

Students worked full-time for ten weeks during the summer to complete the project, and then summarized their work. This year, stipends of $2400 were paid to each student.

Last Saturday, Oct. 8, was SURF Seminar Day. Each student had an opportunity to orally present his work in a fifteen-minute summary to students, faculty, and sponsors. The schedule of SURF Seminar Day was patterned after scientific conferences. The day started with a luncheon reception, followed by nine seminar sessions of about eight speakers each.

The topics of the SURF projects represented nearly all major areas of science. Projects ranged from Bradley Brock's mathematical work on Hadamard Matrices to John Butman's biological study of the growth of sympathetic neurons in biology.

Not all projects were necessarily dry or abstractly scientific. Catherine Hayes examined the influence of the Eighteenth century novel on the writings of Lord Byron. Paul Filmer took a trip through several European countries that took him across the Mediterranean to conduct geological studies.

Still SURFing

Top, Clare Stassen discusses computer generated holograms.

Left, Robert Anderson demonstrates landing techniques of birds in his talk titled "Water Channel Tests of Trapped Vortex High-Lift Airfoils."

Fox Named to Computing Post

Professor of Theoretical Physics Geoffrey C. Fox has been named the first occupant of the new post of Dean for Educational Computing at Caltech. As Dean, he will oversee the Institute's investments in computing facilities and development of creative ways to use those facilities in education.

"The designation of a major academic post strictly to oversee educational computing is a highly unusual, if not unprecedented, step in higher education," said Caltech Provost Rochus E. Vogt in making the announcement. "However, we feel it necessary in view of the remarkable revolution in computer hardware now under way, and our determination to use that revolution to its greatest advantage in educating our students."

According to Dr. Fox, educational computing at the Institute will be distinguished by several features, although detailed plans are not yet complete. For one thing, he said, students themselves will govern the major student central computing facility, which will include three recently purchased Data General MV4000 computers. A fourth Data General computer will be for general student and academic computing by faculty. Also unusual will be the wide array of hardware and software available to students at the Institute, he said.

"We want to provide a highly diverse environment for our students," said Dr. Fox. "We don't want to graduate students who only know about one type of computer and one operating system. There may be a piece of equipment so cost-effective that we should standardize on it, but if we can provide diversity without paying too high a price in maintaining the hardware and software, we will clearly have provided a superior computing experience."

Besides the Data General computers, the Institute has recently upgraded or purchased numbers of computers from Hewlett-Packard, IBM, Zenith, and Digital Equipment Corp. that will be available to students, said Dr. Fox. Many of these facilities will be tied together by the Institute's campus-wide computer network, to be operational this fall.

"We are currently adding 100 computers for undergraduate use—a considerable number for an institution with only 750 undergraduates," he said. "Our tentative strategy is to continue that rate of progress, so that there are one or more systems of your own in your hands when computer technology has somewhat matured, we'll have about one station per student."

"However, the real challenge will be in choosing hardware, but in choosing the use of computers for educational aims in a wide variety of disciplines," said Dr. Fox. "While computers have already significantly enhanced education, there are clear analogs of these uses in physics, chemistry, biology, and the humanities. This year, we have added courses in computer science and in computational physics and engineering, and we will continue to explore new instructional uses for computers. Caltech, with its concentration of very able and technically literate students and faculty is well placed to be the leader in innovative uses of computers."

In addition to his work in high-energy physics, Dr. Fox has served as Executive Officer for Physics and is a leader in a major project at Caltech to develop a new kind of supercomputer, based on concurrent processor architecture. He received his Ph.D. in theoretical physics from Cambridge University, and has done research at the Institute for Advanced Study in Princeton, the Lawrence Livermore Laboratory, Cavendish Laboratory, Brookhaven National Laboratory, and Argonne National Laboratory.
by Zobi-Wan

The recent proliferation of proofs of the as yet unnamed theorem whose basic contention is that "everything you know is wrong" has prompted many to inquire into the nature of nature. That is, we desire to define the maximal set of things that are known that are right. Contrapositively, we may ask: What is the minimal set of things you know that are right that are actually wrong? Hilbert, Picard, and others have identified the Reflexive and Uniqueness Properties of numbers as absolutely fundamental not only to abstract constructions, but also to all descriptions of reality itself. Therefore, if we can cause these two basic notions to confound each other utterly, we will possess a useful tool for describing many of the right things that are wrong. [Cf. M. Python: "...I'm convinced that the vast majority of wrong thinking people are right."

We commence, then, with a review of the postulates to be thwarted. The Reflexive Property states that

\[ a = a,\ \forall a. \]

In particular, if \( a \) has the value 1, we obtain

\[ 1 = 1. \]

As we shall demonstrate, the Reflexive Property has no significant whatever without the Uniqueness Property, a corollary of which states, in part, that

\[ 1 \neq 2. \]

So a useful starting point for us would be the proof that \( 1 = 2 \).

Many notable proofs of this hypothesis have been put forth in the past. We shall examine two of them here, both from the tradition illegal.

Proof 2.1. Let \( a = b, a \neq 0 \). Then

\[ a = a \cdot b \]
\[ ab = bb \]
\[ a(a-b) = a+b(a-b) \]
\[ a = a+b \]
\[ a = a+a \]
\[ a = 2a \]
\[ 1 = 2. \]

But Proof 2.1 is clearly invalid because \( a-b = 0, \) so the division is illegal.

Proof 2.2. Construct the equilateral triangle \( \triangle abc \), with sides \( ab, ac, \) and \( bc \) of length 1.

Then the path \( P_1 = abc \) has length \( 1+1 = 2. \) The region between \( P_1 \) and the path \( ac \) has area \( \frac{1}{2} \times \sqrt{3}/2 = \sqrt{3}/4. \) Now find the midpoints \( d, e, \) and \( f, \) and construct the path \( P_2 = adefc. \)

This path has length \( \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 3. \) The area under it = \( 2 \times (\sqrt{3}/4 \times \sqrt{3}/2) = \frac{3}{4}. \) Now find the midpoints \( g, h, i, j, k, \) and \( l, \) and construct the path \( P_3 = aghjekl. \)

This path has length \( 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1. \) The area under it = \( 4 \times (\sqrt{3}/4 \times \sqrt{3}/2) = \frac{3}{4}. \) The process can be repeated an arbitrary number of times.

In general, then, any path \( P \) constructed in this manner has length \( L = 2n/\sqrt{n} = 2. \) and bounds an area \( A = 2^{n-1}/2. \) Also, the \( 2^n \) triangles bounded by \( P \) and \( ac \) have height \( H = 2^{n-1}/2. \) We apply the concept of the limit to obtain

\[ \lim L = \lim 2n/\sqrt{n} = 2, \]
\[ \lim A = \lim 2^{n-1}/2 = 0, \]
\[ \lim H = \lim 2^{n-1}/2 = 0. \]

Since \( H = 0, \) the path \( P \) approaches the line \( ac \) in a straightforward manner:

\[ \lim P = ac. \]

Consequently we find that this limit path, following a straight line with endpoints \( a \) and \( c, \) has a length equal to 2 and bounds an area equal to 0. But by construction, the line segment \( ac \) has length 1. Therefore,

\[ 1 = 2. \]

As is often the case, this particular proof will no doubt cause something of a stir in the general populace. If the magnitude [and direction] of this stir are sufficient, we shall examine further, equally convincing proofs of equation (7) next week.
More on the "Open Letter"

Longtime Social Issues

To the Editor:

I would like to address some of the issues raised concerning my writing and the contents of an Open Letter to the Freshmen. Hopefully, this will serve to clear up the purpose of the letter.

The similarities between the social issues facing us today and those existing here years ago are striking. A 1961 article in The California Tech writes: "Many attempts have been made to pinpoint what it is that makes a great many students unhappy with life at Caltech. No clear conclusions have ever been reached. Blame has fallen on the faculty, the administration, policies, the Student House system, the Admissions Committee, something inherent in the type of boy who desires to be a scientist, etc."

Many of the same social problems, feelings, reactions, and frustrations have perpetuated themselves to us. Consider the following excerpt from a 1965 Tech editorial: "Most students are aware that a problem exists, but do not quite understand what it is. How often is it that Tech is a 'crock' used? Students gripe, but about symptoms, without realizing that these are only symptoms of an underlying problem. Up to now, any solution offered (e.g. abolition of Frosh grades) would treat these symptoms but would not cure the disease. . . . What really disturbs students is their environment. This includes their expectations and frustrations that are perpetuated themselves to us."

I'm not quoting the above passage because of its inherent essence of things have remained the same at Caltech, even though our transition from a non-coed four-house system to today's seven-house, co-educational arrangement. With rotation over, the section of the day, and where the former had attempted to reduce the freshmen into choosing a particular house, the latter was designed to 'integrate' them into it by forcing them to become involved in various forms of high-jinks, many of which, if must be admitted, were quite amusing. Some of the boys enjoyed the rituals, others did not. All, however, were expected to conform. It was a situation I found rather repugnant, as I was required to approve all the stunts.

"On the whole," concludes the author, "the question was whether all of life should be serious and without nonsense, but whether a ritualized system which permitted one group to chastise another should be condoned. Effective debate, form learning, necessitates student involvement, and I foresaw many years debate and slow change."

It is not just a series of traditions and rituals that are passed down to new students every year. A set of attitudes and feelings, the same limited, negative outlook on life at Caltech, is also transferred to them. Here is my question. If as undergraduates we go around and complain about life at Caltech; if we know we have a system which permits many socially numb or disen­chanted people; and if we realize that the lives and academic work of a few Caltech students each year are adversely affected by our social environment, then why do we insist on taking the freshmen each year and forcing them into this system?

Uncatched as yet by the social problems of Caltech, the freshmen still retain their positivity, energy, and independence. It is such characteristics that can eradicate the problems we've inherited through our passive submission to the way of thinking represented by the system. The alternative is to continue our traditional patterns of behavior in the houses and, as another former Master of Student Houses put it, "kill the initiative and drive in freshmen."

To revive our environment, we need to subject every aspect of the undergraduate system of life at Caltech to detailed analysis. No principle should be left too be questioned of no tradition too controversial to challenge. Discussions can place through The California Tech. I also call on the Caltech Y and the Master's Office to sponsor specific subject sessions. But the most effective and important form of discussion is the serious and honest, one-to-one interaction that can take place between friends. Particularly, at this point in time, when the freshmen are under enormous social pressures to go along with various activities in the houses, we need to give them the opportunity to voice their thoughts, challenge our practices, and offer alternatives.

The purpose of An Open Letter To The Freshmen was to bring up some of the more immediate of these issues. The letter was written to give the freshmen a sense of the problems that, I think, exist at Caltech. It attempted to outline the process thorough which, in my mind, our negative attitudes and our traditions are perpetuated.

For the "bad timing" of the letter, the following should suffice. If our purpose is to honestly discuss the problems with one another, there is no point in postponing the process. Since we tell the freshmen, "Excuse us, Ladies and Gentlemen, let us deceive ourselves, drop all questions of no tradition too controversial to challenge. Discussions can take place through The California Tech. I also call on the Caltech Y and the Master's Office to sponsor specific subject sessions. But the most

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James Watt resigned this week after two and a half controversial years as Secretary of the Interior.

Eighteen people were killed and forty-eight wounded when a bomb exploded at a wreath-laying ceremony in Rangoon, Burma. Among the dead were high-ranking officials accompanying South Korea's president Chun Doo Hwan on his visit to Burma. South Korea has blamed North Korea for the explosion, though no group has taken responsibility.

The system of voting in a new cabinet headed by Yitzak Shamir began today. The new government faces severe economic difficulties, and has already devalued the shekel by 23 percent and reduced subsidies on consumer goods.

Korea's president Chun Doo Hwan visited Burma on November 26, 1983, and at a joint press conference he told the news media that, "If we proceed with the plan of色素, we need to give them the opportunity to voice their thoughts, challenge our practices, and offer alternatives."

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The Navy Officer Information Team will be on campus 10 November. For an interview, call the Placement Center or call toll-free 800-252-0559.

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Folk Music in Winnett
Carla Sciaky to Perform

Carla performs a wide range of music, including traditional folk ballads of the British Isles and Eastern Europe performed on guitar, Scandinavian fiddle tunes and medieval tunes performed on the psaltery. Also delightful are her original compositions, which she weaves in with traditional songs and tunes. Carla has appeared in the Dufay Consort and with the Aman Folk Ensemble, but this will be her first major solo concert in the L.A. area.

Carla's voice prompted this comment in the Los Angeles Times: "Sciaky's distinctive high pure voice, accompanied by Jean Redpath's but is more delicate. It can easily carry the mixture of traditional tunes...and swell originals." Following her Carnegie Hall recital in the Dufay Consort, the New York Times wrote, "Miss Sciaky's guileless smile and sweet singing voice... (We guess that means in English that they liked her.)

Future concerts that the Folk Music Society has planned include: Berlitz, Crazy and Hickman, one of the best known bluegrass trios in the country, who will appear on Friday, October 28, and Old Mother Logo, a five-member band, who will perform their old-time music on Friday, December 2. These two concerts will be in Dabney Hall.

Bannister Man

Dabney: On Tuesday night at dinner, the Great Spirit said he hopes for a great multitude of Number Four cards in the colors of white, gray, blue, light green, dark green, orange, bright yellow, pink, and beige. They disappeared quickly into the hands of the Darbs, all greedy to add units, and there is a report that Marrie Carey accepted a beige one Wednesday morning, though these rumors are adamantly denied by the Registrar's Office. The Great Spirit said he hopes it doesn't cause too much confusion, and that he just wants to wish Mrs. Casey the best of wishes, and add some color to the job. She'll retire at the end of this year, so all of us at Dabney say, "We love you, Marrie, and we'll miss you!"

Bill Callahan

Fleming: No entry.

Page: Tuesday afternoon featured the traditional Greased Frosh Races and Weight Alley won the bowling pin after a grueling final match-up against Sparta. Severity ended for the Frosh of the Darbs, all greedy to add units, and there is a report that Marrie Carey accepted a beige one Wednesday morning, though these rumors are adamantly denied by the Registrar's Office. The Great Spirit said he hopes it doesn't cause too much confusion, and that he just wants to wish Mrs. Casey the best of wishes, and add some color to the job. She'll retire at the end of this year, so all of us at Dabney say, "We love you, Marrie, and we'll miss you!"

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Bill Callahan

Lloyd: The annual frosh elections (spoken w-a-s-b) went off without a hitch for the first time in years, as all of twenty of our newest Lloydies had to escape the house library through the windows, only to meet many gallons of water. But they got their vengeance, showering presidential Sergay Mnatsakanian at dinner.

The Creek alley refrigerator got its once-a-year cleaning, the event which all the rats turn out for every year. This year's crop of cultures provided them no disappointments.

Before wetting themselves, the frosh elected house shortperson Sho Kuyama as pope, replacing the late-but-forgotten ex-pope Gainez the first, and Tim Parrott as his counterpart the anti-pope. Matt Crandall was appointed work sucker...stirring much confusion, and that he just wants to wish Mrs. Casey the best of wishes, and add some color to the job. She'll retire at the end of this year, so all of us at Dabney say, "We love you, Marrie, and we'll miss you!"

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Luisa (left), played by Susan Berkeley, and Matt (right), played by Dean Elzinga, in a love scene.

The Fantasticks
Bellomy (left) and Hucklebee (right) are the fathers of the girl and boy, The Fantasticks.

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Nuking the Shovel Theory
Robert Sheer to Speak Next Week

"With enough shovels," one Defense Department analyst has speculated, the United States could survive a nuclear war. "Weird!" says Author Robert Sheer, who pretty much buried the shovel mentality in a recent book critical of current U.S. nuclear thinking. He will speak at Caltech on Saturday, Oct. 22, at the Athenaeum. The Caltech Y has 12 free tickets for students to attend the $12.50 luncheon. Sponsored by the United Nations Association of Pasadena and The Y, the talk by Sheer, National Correspondent for the Los Angeles Times, will commemorate United Nations Day. His topic: "Problems in U.S./Soviet Relations."

The available tickets will be provided to students who drop by the Y office upstairs in Winnett.

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sports

Calltech X-Country Takes Third Victory

Coach says "Everyone finished well"

Despite injuries to three key people, the Calltech men's Cross Country team was able to post its third victory of the season October 8. The Beaver harriers jumped on Whittier at Bonelli Park and came away with a 22–38 decision (low score wins).

Injuries to frosh runners John Beck, Darin Acosta, and Mike Jensen left the team weaker than usual. Thus two other competing teams, Occidental and Claremont, were able to post victories of 50–15, and 26–30 respectively.

The meet results left Calltech's record at 3–7, with two wins coming a week earlier against Cal State Bakersfield and Pepperdine.

Calltech's top finisher was senior Steve Stahl, who came in ninth overall with a time of 28:55. The race was won by Ziblott of Occidental in 28:01. Other Calltech runners included Bob Kelly (14th), Brian McClain (20th), Sean Morarity (22), Robby Dow (23), Charles Lee (26), and Tom Workman (31).

In the women's race, Jennifer Haase claimed eighth for Calltech. No times or team results were available, as Calltech did not field a complete team.

Coach Neal is happy with the progress his team has made. He said, "Saturday's results indicate tremendous improvement for us in many areas. Everyone finished well."
Social Notes
by Dan Schwartz
The ESC Music Survey is here, in this week's Tech! Please be sure to fill it out and return it by next Friday, so we'll know what makes undergrad Techers "shake their booties" and what puts them to sleep! Thanks.

We're trying to organize an ESC subsidized trip to Magic Mountain. It will probably only cost Techers 5 or 6 dollars. It can be any Saturday or Sunday, chosen from the following: 10/22-23, 10/29-30, 11/5-6, 11/19-20, 12/3-4, or Friday night, 10/28. Place your votes. For the first category, we ask you to consider events in which music is the central focus—such as dances or parties with dancing. The second category encompasses events in which the music is used to enrich the social experience, but is not the center of attention. (e.g., luncheons or picnics on the Olive Walk.)

Below is a survey questionnaire that will give us an idea of the types of music that Caltech undergrads like to hear at social events. Considered are two general categories in which you can place votes. For the first category, we ask you to consider events in which music is the central focus—such as dances or parties with dancing. The second category encompasses events in which the music is used to enrich the social experience, but is not the center of attention. (e.g., luncheons or picnics on the Olive Walk.)

We have attempted to account for most musical tastes short of white noise, but if you can come up with more, please write them down when you place your votes. You may endorse more than one musical style, and you can assign a given style to both types of events if desired. Finally, a third column has been provided for you to list artists or groups that perform a given type of music.

This will indicate how you define that type of music. Also, you may list an artist in more than one Musical type—so all you know is that there are no fine lines in categorizing music!

What we find from this survey will be used to help us select musicians or recorded music to be heard during upcoming social events, so let yourself be heard also!

G.P. Bala, ESC Music Coordinator

RETURN TO: MUSIC SURVEY 105—51
or to any ESC member

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<thead>
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ASCIT Notes

The Los Angeles Olympic Organizing Committee (LAOOC) is looking for volunteers to help with many aspects of the upcoming Olympics. ASCIT would like to appoint a student to the Olympic Collegiate Liaison Council. This council works with the LAOOC "to strengthen student participation in the Olympics through staffing opportunities and student spirit." Anyone interested should contact me at x6236 or one of the Deans. —Condi McCoy

Cinematech this Saturday
Running the Paths of War!

This Saturday night, Cinematech will examine several of the conflicts faced by soldiers in times of war. The screening begins at 7:30 pm with Run Silent, Run Deep, and is followed by Paths of Glory at 9:30 pm. Both shows will be in Baxter Lecture Hall.

Run Silent, Run Deep stars Clark Gable and Burt Lancaster. Gable plays the part of an officer newly assigned as the commander of an American submarine in the South Pacific during World War II. Lancaster is his first officer. Tension builds between them as Gable persistently directs the sub on risky and seemingly pointless excursions, despite Lancaster's urgings to the contrary. Throughout, Lancaster wrestles with his duty to obey a superior officer and his duty to safeguard the welfare of the men under him.

The second film to be shown is Paths of Glory, which stars Kirk Douglas and was directed by Stanley Kubrick (Dr. Strangelove, 2001, A Clockwork Orange, The Shining). Sometimes called "a monument to the anti-human aspects of war," this controversial film revolves around the conflict that Douglas undergoes as he and his regiment become pawns in a power struggle having no connection with the war. Basically a man of peace, Douglas attempts to be fair with his men. Unfortunately, his efforts are made in vain—the regiment is continually assigned to suicide missions and otherwise manipulated.

Both Run Silent, Run Deep and Paths of Glory feature excellent casts and talented directing. They are definitely two of the most thoughtful and dramatic films of the term.

—Karen Kurowski

Next week: The Amazing Dr. Clitterhouse and The Fountainhead

Burt Lancaster ponders over coffee in Run Silent, Run Deep.

ASCIT Notes

The Los Angeles Olympic Organizing Committee (LAOOC) is looking for volunteers to help with many aspects of the upcoming Olympics. ASCIT would like to appoint a student to the Olympic Collegiate Liaison Council. This council works with the LAOOC "to strengthen student participation in the Olympics through staffing opportunities and student spirit." Anyone interested should contact me at x6236 or one of the Deans. —Condi McCoy

Below is a survey questionnaire that will give us an idea of the types of music that Caltech undergrads like to hear at social events. Considered are two general categories in which you can place votes. For the first category, we ask you to consider events in which music is the central focus—such as dances or parties with dancing. The second category encompasses events in which the music is used to enrich the social experience, but is not the center of attention. (e.g., luncheons or picnics on the Olive Walk.)

We have attempted to account for most musical tastes short of white noise, but if you can come up with more, please write them down when you place your votes. You may endorse more than one musical style, and you can assign a given style to both types of events if desired. Finally, a third column has been provided for you to list artists or groups that perform a given type of music.

This will indicate how you define that type of music. Also, you may list an artist in more than one Musical type—so all you know is that there are no fine lines in categorizing music!

What we find from this survey will be used to help us select musicians or recorded music to be heard during upcoming social events, so let yourself be heard also!

G.P. Bala, ESC Music Coordinator

RETURN TO: MUSIC SURVEY 105—51
or to any ESC member

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**COMBUSTION ENGR. SR./GRAD STUDENT** needed immediately for CALTECH Summer Research Asst. to UC Berkeley providing technical assistance to Calif. DHEC on implementation of AB1513. Under tutelage of pro. J.F. Petersen, engaged in development of performance tests for low-level radioactive waste incinerators. Integrating variety of emissions tests and testing methods with goal of designing a joint permit application usable by multiple state agencies. Primary task will be to gather and integrate materials. Hands-on testing is absolutely essential. Travel occasionally to W. LA necessary. U.S. citizenship required. Call TIB TR Office. UCI at: (714) 856-7088 or 6300.

*Students in appropriate Physics and Chemistry disciplines may also apply.*

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**CS Scholarship**

Sophomores and juniors in computer science who are maintaining a B average can apply for the International Computer Programs (ICP) scholarship.

For the 1984-85 school year, this award will consist of one scholarship for a full year's tuition and fees, and up to $5,000 for other educational expenses.

Applications will be judged by their grade point average, need for financial aid, participation in DP-related activities, school activities and leadership roles, and an essay to be written by finalists.

Applications and more information are available in the Financial Aid Office. The deadline for application materials is November 15.

**Volleyball Triples**

The Caltech Men's Volleyball club will sponsor another triples tournament on Sunday, October 23rd, from 8 am until noon in the Brown Gymnasium.

The tournament is free and is open to all Caltech community. Teams of three will be selected at random among the participants. Trophies will be awarded to first, second, and third place.

Advance registration is recommended since there are only a limited number of prizes.

Please contact Scott Laurence or the Athletic Office at x6416 between 10 am and 5 pm weekdays for registration or more information.

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**Astronauts Vs. Droids?**

The L.S. Society presents a lecture on the psychological and sociological roots of the man versus machine in space debate. Mr. Bill Haynes, Aerospace Corporation Manager for Man- ned Spaceflight Support, will discuss the humanistic basis for this crucial space policy issue. The lecture will be held on Saturday, October 22, at 7:30 pm at JPL, Von Karman Auditorium, 4800 Oak Grove Drive. The general public is invited to attend and admission is free. Call 374-1381 for more information.

**Spend Time Abroad**

There will be a meeting for anyone interested in the Watson Fellowship program next Tuesday, 102 Parson-Gates. This fellowship enables graduating seniors to travel abroad. Joe Kirschvink, a Caltech geologist and former Watson winner, will talk about his year in Australia. Goodies will be served. The deadline for Watson essays is next Friday, October 21st.

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**Dangleflieger**

The Caltech Hang Gliding Association now exists. Anyone interested in flying or who is just curious, contact Tom Bulgerin, Dabney House, Room 4.

**See Twain's Shorts**

Pandora's Players, a newly formed theater company (partly of TACIT alumni), will be presenting "Mark Twain's Bizarre Shorits" on weekends Oct. 21 through Nov. 13. The show is an adaptation of several of Mark Twain's more unusual and lesser known works. Dates are Oct. 21, 22, 23, 28, 29, 30, Nov. 4, 5, 6, 11, 12 and 13.

Performance times on Fridays and Saturdays at 8:00 pm, and Sunday at 2:00 pm. Performances at the Little Theater of Hoover High School, 651 Glennen Rd., Glendale. Tickets are $4 for students and $6 for the general public. For reservations and information call (213) 447-6832.

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**Food and Drama**

For anyone interested in Theater Arts at Caltech, the Drama Club is offering a free dinner Saturday, October 15, starting at 4 pm in Dabney Garden. After dinner, we will see the evening production of Candelabra together.

You need not have any experience in drama; we only ask for an interest. If you wish to learn we will teach.

If you want to find out about Theater Arts at Caltech and wish to meet the people involved (and get a free meal and see a show, too), come by Dabney Garden tomorrow at 4.

For more information call x6259 or drop by the Drama Office in Winnett.

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