

This must be  
second term.

# THE CALIFORNIA TECH

I never could get  
the hang of  
second term.

VOLUME LXXXVII NUMBER 12

PASADENA, CALIFORNIA

FRIDAY 9 JANUARY 1987

## When Galaxies Collide Clue To Quasar Luminosity Announced at AAS

[CNB]—A group of extremely luminous infrared galaxies, first detected by the Infrared Astronomical Satellite (IRAS), may hold the key to the origin of quasars. Evidence for this theory was presented yesterday, January 8, at the American Astronomical Society meeting here in Pasadena, by a team of astronomers from Caltech. The scientists based their findings on optical, infrared, and radio studies of ten ultraluminous infrared galaxies.

In their report, presented by Caltech Research Fellow Dr. David Sanders, the astronomers said that galactic collisions appear to have triggered the intense infrared glow of these objects.

Quasars are the brightest—and among the most baffling—objects in the universe. They are powered by energy sources hundreds of times smaller than any known galaxy, yet they shine hundreds of times more brightly than the billions of stars in the Milky Way. How quasars sustain this luminosity is one of the major riddles of astronomy.

Quasars characteristically radiate most of their energy as visible and ultraviolet light. But in 1985, astronomers studying IRAS data reported the discovery of objects as energetic as quasars that emit more than 99% of their luminosity as infrared radiation, or heat. These objects apparently possess central energy sources enveloped in dust, which absorbs

their visible light and re-radiates it as heat.

In the current study, the Caltech scientists used the 200-inch Hale Telescope and the 60-inch telescope at Caltech's Palomar Observatory to obtain optical images of ten of these ultraluminous infrared objects. They were found to be located in a region of space populated by a similar number of optically brilliant quasars. The researchers reported today that the intense infrared activity in all of them is apparently triggered by the violent collision of two spiral galaxies.

When two galaxies collide, their gravitational interaction alters their spiral structures in characteristic ways. These include rippling and mottling of the merging discs and dual "tidal tails"—streamers of stars and interstellar material extending tens of thousands of light years beyond the central regions of the galaxies.

The astronomers found that nearly all of the infrared galaxies consist of a single disturbed body and two greatly extended, crossed tails, signifying an almost completed merger in the aftermath of a violent collision. It is likely, say the researchers, that the galaxies' original centers have coalesced to form the bright infrared region.

In another series of studies, using radio telescopes, the astronomers discovered that all these merging galaxies are extremely rich in clouds of molecular

gas and dust. According to their theory, during the collision these clouds are funneled from the merging galaxies into a common center. As these vast fuel reserves are consumed by the central energy source, the dust is heated to incandescence, producing the infrared shine.

The astronomers have obtained observational evidence for this "funneling" theory by mapping the distribution of the gas in the ultraluminous infrared galaxy closest to Earth, Arp 220. At a distance of more than 200 million light years, this galaxy is still too remote for a single radio telescope to study details of its structure. However, by using a millimeter-wave telescope made up of three radio dishes at Caltech's Owens Valley Radio Observatory, the astronomers determined that the bulk of the galaxy's molecular clouds are concentrated in its central region, confined within a radius of about 2,500 light years. The Milky Way Galaxy, in contrast, contains about one third this amount of molecular gas scattered throughout its disc and spiral arms—a radius of about 30,000 light years—and emits only about one percent of the total luminosity of Arp 220.

To examine the nature of the energy source generating this luminosity, the astronomers studied the spectrum of light of all ten galaxies, using the 200-inch Hale Telescope. By examining the spectral "fingerprints" that

## ASCIT Nominations

□ Nominations for the offices of ASCIT President and Treasurer will open at 8:00AM on January 14th (next Wednesday) and will close at 5:00PM on January 20th (the following Tuesday). Nominees must be current ASCIT members.

□ All nominations must be in writing, addressed to the ASCIT Secretary (Kathy Hayashibara), and signed by the nominee. They should be sent to the Dean's office, 102 Parsons-Gates. Statements should appear in the *California Tech* of the 23rd (and so should be submitted by Tuesday the 20th), and the elections will be held on Monday, January 26th.

□ For more information about the offices, consult the *little t* or talk to Clea Bures (President) or David Bruning (Treasurer).

characterize types of energy sources, they have concluded that the reserves of gas in the IRAS galaxies could be fueling dust-shrouded quasars. The visible light emission from these sources strongly resemble those of active galactic nuclei and Seyfert galaxies—optically brilliant galaxies that, like quasars, generate colossal amounts of energy from regions no larger than the size of the solar system.

"One of the major unanswered questions about quasars is how they acquire and process enough fuel to shine so brilliantly," said Dr. Sanders. "Galactic collisions provide a mechanism for concentrating the necessary amounts of fuel at the site of the quasar's power source."

"The evidence from the optical spectra also suggests that the ultraluminous IRAS galaxies are undergoing a 'housecleaning' process, in which the intense luminosity

of the energy source has started to disperse its obscuring dust shroud. Our data indicate that as this process continues, the infrared galaxies will begin to display the properties of optically brilliant quasars."

The astronomers involved in the project are David Sanders, B. Thomas Soifer, Gerry Neugebauer, Nicholas Z. Scoville, Jonathan Elias, Barry Madore, Keith Matthews, and Anneila Sargent, all of Caltech, and Judith Young of the University of Massachusetts. Their research was conducted at Palomar Observatory, Owens Valley Radio Observatory, Five College Radio Astronomy Observatory, the National Radio Astronomy Observatory, and the Caltech Infrared Processing and Analysis Center.

The astronomers' work was supported by NASA and the National Science Foundation.

## Planetary System In the Making More Big News Unveiled At AAS

[CNB]—Astronomers working at Caltech's Owens Valley Radio Observatory have discovered that a star much like our own sun in its youth possesses a disk of gas orbiting it in accordance with Kepler's laws of planetary motion. This discovery, reported Tuesday to the American Astronomical Society meeting here in Pasadena, is the most definitive demonstration yet that other stars might have planetary systems like our own.

The astronomers—Anneila Sargent of Caltech and Steven Beckwith of Cornell University—made their observations with the Owens Valley Millimeter Wave In-

terferometer. The interferometer consists of three radio telescopes, each 10.4 meters in diameter, designed and constructed by Robert Leighton, Caltech's William L. Valentine Professor of Physics, Emeritus. In operation, the telescopes can be separated by 15 to 100 meters and are pointed at the same spot on the sky. The information from the three telescopes is then combined, giving the effect of a single telescope about 100 meters in diameter.

The star, called HL Tauri, is a young star in the constellation Taurus and is about 500 light years from Earth. It is very similar to our sun as it must have appeared more

than four billion years ago when the planets were forming. Beckwith and his colleagues first discovered a disk of dust surrounding HL Tauri two years ago using a specialized technique of infrared astronomy. However, dust emits infrared energy in a continuum, making it impossible to determine any movements within the disk by Doppler-shift measurements.

But the interferometer has shown that the dust disk is accompanied by a disk of gas, and the

carbon monoxide within that disk emits energy at discrete radio frequencies. Because of the Doppler effect, these emission lines are shifted to longer wavelengths as the gas recedes from us and to shorter wavelengths as it approaches. This is the same effect that makes a train's whistle seem to rise in pitch as it approaches and then fall as it rushes away from an observer.

By measuring the shift in the wavelength of the emission lines, Sargent and Beckwith determined that the pattern of velocities within HL Tauri's gas disk is similar to the pattern we see among the planets of our own solar system, with the inner planets moving faster than the outer ones. Johannes Kepler (1571-1630) discovered the laws

governing the motion of the planets in 1609.

Current theories of stellar evolution hold that newly formed stars will be surrounded by some of the material from which they are formed. This "protoplanetary cloud" of gas and dust should be distributed in a flattened disk bound by the star's gravity. As this disk orbits the star it may begin to coalesce, leading to the formation of planets. The discovery of the velocity structure within HL Tauri's disk, as well as ongoing studies of similar stars that may also have disks of material surrounding them, will enable researchers to constrain the theories of stellar and planetary evolution that deal with low-mass stars resembling our sun.

## Morrisroe Honored by PPD

[CNB]—David W. Morrisroe, vice president for business and finance and treasurer at Caltech, has been named a Technical Reserve Officer of the Pasadena Police Department. He received the honor in recognition of his distinguished service to the community as volunteer chairman of a Citizens Advisory Subcommittee on the Pasadena Police Station and City Jail and co-chairman of the citizens' group, Volunteers for a Safer Pasadena, during 1986.

The efforts of the committees led to the placement of a bond initiative on the November ballot to build a new city jail and police station and to voter approval of a public funding measure for the first time in 22 years. Mr. Morrisroe

and fellow co-chairman John Wells, vice president of the local investment firm Newhard, Cook and Co., Inc., were presented with the award in a ceremony in the office of Pasadena's chief of police, James R. Robenson, on November 25.

The designation of Technical Reserve Officer is granted to individuals from southern California who have distinguished themselves in their careers and have volunteered to consult with the Pasadena Police Department in matters within their expertise. Citizens who have received this designation are asked to assist the Police Department in specialized functions such as finance, construction, public relations, advanced technology, and legal matters.

The work of Morrisroe was supported by a report by Dr. Paul Jennings, the chairman of Caltech's Division of Engineering and Applied Science, who helped convince the authorities and the public that the old police station and jail were inadequate and potentially unsafe.

"Thanks to the committee's efforts and the support of Pasadena's voters, once the new jail is built, the police department will no longer have to release prisoners back on the streets because we lack the space for them," said Chief Robenson. "Construction of a new police station guarantees that the police department will be carrying on its operations in a seismically secure building."



Correction: Spike the Walrus (bottom row) was mistakenly referred to as the Seal of Approval in the last issue. Our abject apologies go out to both.

LETTERS

Parents ♥ Graffiti

To the Non-Student Readers:  
I have noticed an aspect of the discussion of graffiti in the student houses that has disturbed me. Certain groups, such as the parents and the staff, have been judged to hold beliefs that I do not feel that they actually do hold. For instance, members of the administration have portrayed parents as dismayed with the idea of their children living in a dorm adorned with graffiti. I have talked to visiting parents who have liked the graffiti very much. If you (parents, or staff, or anyone) have an opinion, please write either to *the Tech* or directly to the administration. The administration has taken upon itself to represent you in absentia. Do not allow this, please.

-H. Douglass Bloomer  
Dabney House

Food Abuses?

To the Editors:  
After observing and listening for 18 months, I have the following to report. Please note, for all expressed below, backup information is available.

① Salaried personnel who are non-exempt—working for as low as \$2.80 an hour due to extended hours. Salaried for 40 hours, generally working 70 hours per week. Some non-Anglo employees have worked 36-hour shifts with short meal breaks only. (Employees pay for their meals.)

② Dishwashers (for example) hired at \$100 per 40-hour week. Actually work 50 hours a week, or \$2.00 per hour.

③ Senior employees, 60 years plus, working up to 60 hours a week, compensated for 40 hours paid time.

④ Hourly employees—which encompasses most of Continental personnel, full and part-time—are asked to clock out at scheduled time, then return to their work.

⑤ The public abuse and degradation of employees—examples: pulling one long-time employee into the back room and taking scissors to his hair, demanding others to get down to tie Mr. Hindoyan's shoes.

⑥ Management level working regular 65-70-hour work weeks, compensated for 40, without comp time. Weekend work is "subtly demanded" to provide staff for private catering to supply food and bakery needs for the Hindoyans' other food service enterprises.

⑦ Constant verbal abuse of employees—Mr. Hindoyan as well as his "visiting family members" constantly use "Hey, mother-fucker—get your ass over here and..."

⑧ The use of food service employees as regular household servants—parties, plumbers, gardeners—all maintenance and repair is done on his personal properties at no basic wage rate. The average is \$1.60 to \$2.00 an hour. Remember please—refusal to do so results in loss of job at Chandler.

⑨ Full time (minimum 40-hour week) employees are not receiving paid days for "legal holidays"—sick leave or unused or used vacation days. Several of these persons have worked, providing food service for Caltech students, staff and faculty for 15-23 years.

In brief, Mr. Hindoyan is able to provide the Caltech community an adequate food service at a below average cost because of his employment practices, which include his concept of individual rights vs. profits and his overall guiding philosophy that the dollar is better than God. Rule by intimidation is morally wrong and is not acceptable to the citizens of the U.S.

I want to believe the Institute will make every effort to see that this abuse is brought to an end. I also deeply believe the Chandler family who dedicated funds for this central food service area, which provides all the Caltech community's food needs, would be unhappy with existing conditions.

Sincerely,  
-A concerned member  
of the Caltech  
community

[In order to assist in his investigation of this situation, Don Archer of the Personnel office has requested that the writer send him any backup information. -Eds.]

Soviet Invasion of Afghanistan

by Huy Cao

Today, Afghanistan is the site of the worst violence in the world, by any standard. The war in Afghanistan has been raging for seven years, waged primarily between Soviet troops and the Afghan freedom fighters (the mujahedin, or "holy warriors"). The Soviet troops were sent to Afghanistan in December 1979 to keep the Communist Afghan government in power. There are now about 115,000 Soviet troops in Afghanistan.

The Soviet war has devastated Afghanistan. About 50 percent of the Afghans are now dead, external refugees, or internal refugees (i.e., homeless) according to a United Nations report. The refugee population (5 million external, 2 million internal out of a pre-invasion population of 17 million Afghans) is so large due to the Soviet's efficient, systematic scorched-earth policy. It is estimated that 1.3 million Afghans have been murdered, compared with about 20,000 dead for the Red Army.

The Soviets have introduced novel tactics into this war. Afghanistan is their laboratory for testing weapons. For example, yellow rain (used in violation of international law) causes continuous vomiting, internal hemorrhages, etc. Explosives have been disguised as toys, watches, and pens; they are designed not to kill, but to maim children.

The US Helsinki Watch Committee visited Afghanistan in 1984

and reported that "just about every conceivable human-rights violation is occurring in Afghanistan, and on an enormous scale." Torture methods include electric shock, disembowelment of pregnant women, kicking Afghans to death, pulling out fingernails, crushing bones with chairlegs, roasting children over fires, etc, etc.

The scorched-earth Soviet policy includes bombing villages, massacres (sometimes called "selective genocide" in cases where the old, women, and children are selected for murder), literally rolling tanks over villages, poisoning the water supply and so on. The policy has been successful: There are large numbers of dead Afghans, refugees, and famine-stricken civilians (half a million, close in proportions to the Ethiopian famine.)

US aid has been painfully slow. In 1980 President Carter placed an embargo on grain sales to the Soviet Union and boycotted the Olympic Games to protest the invasion, but President Reagan later lifted it almost immediately when he came into office. The first five years of the war, the US officially sent neither weapons nor humanitarian aid.

But in July 1985, Congress voted official aid for the first time: \$15 million for the Afghan resistance. Since then weapons such as Stinger anti-aircraft missiles have aided the Afghan mujahedins (rebels).

Recently, a cease-fire was offered by the Communist Afghan government. But it is sham and deception according to the Afghan rebels. "We cannot trust the Soviet puppets in Kabul. How can there be a cease-fire with Soviets still in

Afghanistan, and fighting?" said a mujahedin spokesman. He added, "The war will go on until the expulsion of the last Soviet soldier from Afghanistan."

The morale of the mujahedins is said to be high, while the Soviet troops have had problems with desertions. But the Soviets have compensated with much more advanced weapons and many more soldiers. Despite dreams for an end soon, it seems that the war is now a stalemate. The Soviets, despite rhetoric indicating otherwise, seem to be preparing for a long battle: They have taken more than 10,000 Afghan children to the USSR for indoctrination.

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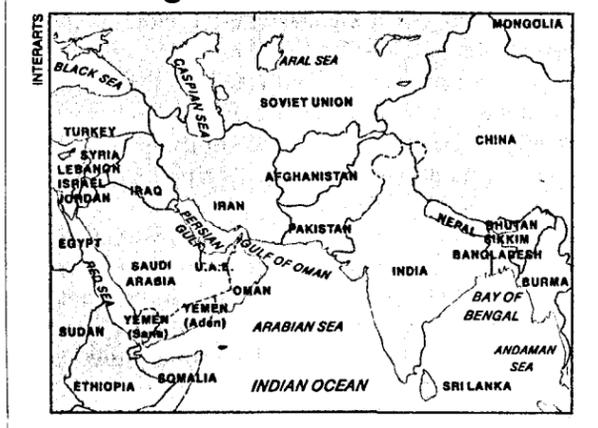
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# AIDS: Its Signs, Symptoms, and the Hopes For Treatment

by Bruce Kahl  
Last of a Series

The key concept to understand about AIDS is that it is not a single disease in the sense we usually think of illness. Rather it is a *syndrome*—i.e., a collection of clinical states and symptoms—caused by the destruction of the immune system; AIDS is in fact a phenomenon of many illnesses, which may be present in many different combinations, and thus a description of AIDS cannot be a simple listing of a few signs and symptoms. The manifestations of AIDS are as many and as complex as these many illnesses, which may run the gamut from a few simple infections to a massive overwhelming attack by opportunistic organisms, from a few relatively slow-growing cancerous lesions to massive invasion by certain forms of cancer, from nagging urinary tract infections to massive encephalitis (infection of the brain and its membranes).

## Signs and Symptoms

The following discussion is not meant to be complete but to give a general overview of the more common signs (what is observable by the clinician or others) and symptoms (what the patient experiences) of illnesses associated with HIV infection.

In the five-plus years since AIDS has been recognized there have been continued attempts to classify the range of illnesses and the overall disease process so that meaningful prognostic statements and related attempts to prophylactically treat affected individuals can be made. These classifications have also been important in medical research as ways to determine who

should receive more or less aggressive forms of therapy, experimental or otherwise. This classification system is changing as more experience is gained about the AIDS virus and the many ways in which infected individuals may become ill. Thus the categories of AIDS and ARC (AIDS-related complex or condition) have been defined as well as a number of earlier stages of illness manifestations of the HIV infection. Basically, that hierarchy progresses, from least to most pathology, from non-symptomatic infection with the virus, to non-symptomatic but clinically evident signs of immune system disturbance such as lymph node enlargement (persistent generalized lymphadenopathy), to multiple generalized symptoms with demonstrable laboratory signs of immune system damage (markedly decreased T4 cells and a reversal of the T4-T8 ratio; failure to respond to skin test allergen challenge). This latter category is that of ARC and symptoms may include night sweats, diarrhea of unexplainable origin, anorexia, weight loss, fatigue, malaise, increased frequency of colds and flu-like illnesses, minor but nagging skin infections, and urinary tract infections. The next and most severe category of HIV infection is that of formally-defined AIDS itself.

This stage of the syndrome includes opportunistic infections of a potentially life-threatening nature such as *Pneumocystis carinii* pneumonia, a common killer of AIDS patients. Other infections of AIDS patients include common tuberculosis, aviary tuberculosis, toxoplasmosis and thrush, a yeast infection by the organism *Candida albicans*. AIDS patients may also suffer from a rare type of cancer,

Kaposi's sarcoma, which originates in blood vessels and may occur on the skin (60% of these occur in the head/neck region) or internally. Prior to AIDS this cancer was seen only in elderly Jewish men of Eastern European extraction, in whom the lesions were slow-growing and almost never the cause of death; with AIDS patients the KS lesions grow rapidly and aggressively, may be very disfiguring and can definitely be the cause of death. Other illnesses include various types of cancers such as lymphoma, which may be very aggressive and unresponsive to usual forms of treatment (chemotherapy and radiation). The HIV virus also seems to have an affinity for the nervous system and is now well-known to cause multiple neuropathic conditions, from simple loss of sensation in the extremities to encephalitis, which may be insidious or very rapid and dramatic in onset. Any of the above symptoms/illnesses may be present singly or may emerge together. Some individuals are well and then are suddenly struck with a severe case of pneumonia or tuberculosis; others may progress slowly from the nagging illness over time, slowly losing ground. Although many individuals (perhaps as many as 50%) in the ARC category may progress to "full-blown AIDS," many maintain their conditions without further progression. And though the vast majority of AIDS patients progress to death there are some who may live for years with no further illness after an initial bout with pneumonia. The category structure described above may be misleading in that it implies that those with ARC are "OK" while those with AIDS are not; in fact, some illnesses associated with ARC may be lethal and debilitating, and there has been considerable controversy about the classification system as it may be used to determine eligibility for disability or other financial benefits.

## Treatments

What treatments are there for the HIV infection? Up until this year there has been no treatment for AIDS patients other than "management" of their various il-

nesses as they occur; thus the pneumonia would be treated with antibiotics if possible, and the cancer with radiation/chemotherapy if possible. No treatment for the basic problem—that of the HIV infection itself with the destruction of the T4 cells—existed. In mid-1986, researchers at the National Institutes of Health revealed the results of a nationwide double-blind study of azidothymidine (AZT), a drug which had beneficial effects in a group of 145 patients. When compared to placebo given to a matched group of the same size, AZT ultimately led to many fewer deaths over approximately six months. When this effect was realized, all patients in the double-blind study (including those who had been on placebo) were administered the drug. AZT is thought to work by "tricking" the virus into "thinking" it is taking on another nucleic acid for its genetic chain; but when it takes on the AZT instead it is unable to replicate further. Researchers have been careful to point out that AZT is not a cure for AIDS; it may slow or stop the progress of the disease, but it does not rid the body of the virus, and nobody knows yet what long-term effects may derive from use of the medication. In the short run a major side-effect noted in 25% of those on AZT had been bone marrow suppression leading to severe anemia, and many on the drug have had to receive blood transfusions.

Prior to AZT there were studies with several other antiviral and/or immune boosting agents, most notably the drugs suramin and interferon. Neither of these was seen to be particularly helpful, and suramin, in fact, appeared to cause patients to become sicker faster.

Currently under investigation at the National Institutes of Health is another anti-viral agent, dideoxycytidine, which is similar to AZT in concept. This drug has performed better against the HIV *in vitro*, but its effects in humans are yet to be established. Also under investigation here and in Europe is the drug foscarnet, which is manufactured in Sweden; no evidence of its usefulness with the HIV is yet available.

Available in Mexico are two agents which are used worldwide for treating minor viral illnesses, isoprinosine and ribavirin. Many AIDS, ARC and HIV-positive individuals have been obtaining these medications and self-administering, but no hard data are yet available regarding the effectiveness of either drug; a study of ribavirin at USC medical center is complete, but the decoding of the double-blind phase and the reporting of data have yet to be done.

There are various other substances being examined in various centers around the country,

but no dramatic announcements have yet been made regarding any of these. Thus far only AZT appears to have any significant benefit in the treatment of this clinical phenomenon.

Very possibly what may result from all these studies is a substance or set of substances which keep the virus in check but do not eliminate it, similar to the treatment of Hansen's Disease (leprosy).

Virology is a very young science, and anti-viral medication research is an even younger field. A vaccine to protect against HIV infection does not appear to be in the offing, though some work is being done at the NIH on the molecular structure of the envelope which surrounds the virus. One hope is that by finding a protein which can imitate that critical portion of the envelope which determines antibody response, a vaccine can be developed. There is also interest in several viruses which are closely related molecularly to the HIV and which may generate cross-immunity to the HIV while being non-toxic themselves.

A topic that has received little formal attention from the medical scientific community is the impact of psychological factors on the progress of the overall disease; with all serious illnesses which have a high mortality rate, that rate never reaches 100%. Why some people manage to "beat the odds" is not easily explicable, but attitudinal factors almost certainly are important in the process. Only time will tell how much these factors play a role.

## Conclusions

It is no exaggeration to state that AIDS is the "disease of the century." It is deadly and up to now has been very mysterious. Its mysteriousness and perhaps the fact that it has primarily afflicted a controversial if not outright unpopular minority group—male homosexuals—have led to poor funding of research and clinical work. However the rapid spread of the illness with its depletion of great human resources around the world, as well as its spread into the heterosexual population, have brought much more attention from those in power; the U.S. Office of Management and Budget has just announced it is asking for another significant increase in funding for research in 1987-1988. In any case this illness deserves the serious attention of all members of society so that further spread may be prevented. If you wish any further information on AIDS please feel free to contact Lori Mulvaney or myself at the health center. We have a small library of information there, and will be more than happy to discuss questions you have.

**Tina & Michael**  
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# The Inside World

**Blacker:** Don't want to go back.

Don't want to hear them profs mutter, hear them fruit flies buzz. No overfrosting brownies, please, or books with microprint. Can still hear cry of the seagulls as the rhythmic surf climbs the sloping shore.

The Bug is my horse.

The board is my woman.

The white sands beckon.

I'm on my way.

—Arex

**Dabney:** Daryl "J" Ingers knelt in the dust of the Olive Walk. Oh, how he wished he had repented before the previous Spirits. They had been frightening, of course, but at least they had *looked* normal—the Ghost of Dabney Past in tie-dye shirt, sandals and bandanna, or the Ghost of Dabney Present in Biohazard™ T-shirt, blue jeans and bare feet. This... this Ghost of Dabney Yet to Come was hideous. Three-piece suit, DabniCorp identipin, and polished black shoes, he embodied Daryl's deepest fear—the intrusion of the real world. Ingers raised his eyes and looked south, where the apparition pointed, and there, there, just across the parking lot was the building he knew and loved, emblazoned with a huge fuchsia-colored sign reading:

## CONDEMNED

By Orders of the People's Renovation Congress  
Have a Nice Day

across its entryway.

"Please, Spirit," he cried, "must this be?"

The Ghost said nothing, but took a business card from its breast pocket and handed it to Ingers. Daryl gasped and clutched at it. *Rather a seedy-looking card*, he thought to himself, as he read the words "Revolutions, Inc. — We Export To All Major Third-World Countries."

"What?" he murmured. He looked up—and the Spirit was gone.

"You mean that's it? What an awful ending."

—Al Petterson

**Fleming:** Well, well, well, back so soon. I must say, however, that I wasn't really settled in until we had our first room pick of the New Year. Unfortunately, there are just too many people all fired up to move in, i.e. no doubles opening up as singles for the officers. What a pity. Congratulations in any case go out to the newest members of that esteemed family we call Fleming: Laura Hernandez, Dion Hawkins and Ted Rogers. So let the herd thunder, the giants trod, the men be men, the women be women and, of course, the deed shaw.

Luckily the entertainment picked up a bit after room pick: we had our first full-fledged house meeting of the New Year. And let me tell you, there's hardly anything more stimulating than a couple of hours of unfocused debate concluded with a decision not to decide. Tune in next week, same time, same channel. But next week may not be fruitful either, especially since I think I hear Damage whipping himself up into an investment frenzy at this very moment. Who knows how bad it'll be by next week?

Fleming is definitely the team to beat this year in Interhouse Ultimate, but that doesn't mean we don't need practice. So let's get out there and toss those Frisbees. Hup! Hup! Hup!

New Year's Resolution: No more abusing the frosh. No problem. I mean, the six man lift really isn't abuse, is it? Har, har, har!

—Al Fansome

**Lloyd:** This is a test of the Emergency Inside World Broadcasting System. Jethro and Enos are workin' in the fields, so I gotta do this by myself. For god's sake, it's only a test!

Remember that real popular segment, the Drink of the Week? Well, it was so popular, Theron Stanford created his own Joke of the Day. It's funny. And I thought the average Drink of the Week made me sick.

Curt's birthday was sometime last week. He almost forgot it. Cathy reminded him in a subtle, yet understated, way.

Get psyched for the ski trip this weekend. Learn how to ski on the most dangerous slopes in North America. Oh yeah, about the ski trip. While I was writing this, Lloyd President Chris Nolle walked in. "Don't forget to mention the wet T-shirt contest Saturday," he said. Well, I'm not sure if this comment was sexist or merely medically unsound, but I printed it anyway.

Drink of the Week is the Bill Cosby. Make some Jello™ according to the directions on the box, except use Everclear instead of water. It's great to give to the kids when they have the flu.

—Skeeter

**Ricketts:** So here we all are at Caltech during second term! Yee haw! But seriously, folks, we've gotten through the first week of the term unscathed. We completed room pick on Wednesday and the results are: Katryn and Mitch moved off campus so Danny and Gonzo took the rooms in Snatch, leaving a very happy Charles in 17 as a single. Jed moved on (Welcome back, Jed!), as did Samer and James.

Also on Wednesday we had Gonzo showered—partly because he didn't bring the gong to dinner and partly so that the closet wouldn't get the "mysterious smell of room 17."

Last night, the house meeting gave us "Loops!" and the social calendar. We also talked about what colors to paint the alleys. I *still* think Cherry ought to be red!

Beware, frosh, initiations are coming!!

—Shithead #1 & Giggles

**Ruddock:** Aloha! Happy New Year! Have a good summer...? I wish! Welcome to gradeland, Sophomores—where a C- is the grade of choice and UTRASHING is only minor GPA points away—But let's all be happy people. Wayne is back with a shiny new harmonica, Milton needs to shave and the Alley 5 beautification project is now complete. Don't order pizza to a room in Alley 1 'cause they don't teach binary at Monk's. Alley 2 beautification is coming soon—we're talking music, not science, so no droptics comments about the Pink Floyd album cover are allowed. Stay tuned for Siouxsie, the Clash, and—just for Ed—Michael Jordan.

The house ski trip is this weekend so get ready to crash into bunches of bunnies at Big Bear. Don't break any legs, though, since YOU are wanted at Disco football Sunday afternoon vs. Blacker.

Eddieeee—Stock the Beer Fridge!

Rudds—Pay your bar bills!

—Bets the flame!

# SPORTS

## Ultimate Frisbee To Be New Interhouse Sport, Decrees IHC

by the Way-cool IHC

The IHC after much long deliberate discussion has decided to make Ultimate an Interhouse sport for this year. Games will be played in the evening under the lights on the football field. There will be two games a night with the visiting team in the first game responsible for getting the cones from the building supervisor and the visiting team in the second game responsible for returning them to the building supervisor. Following is a schedule and copy of the rules.

## Ultimate Rules

### Players

1. A team shall be composed of 7 players, but a house may start a game with as few as 5. Less than 5 shall constitute a forfeit.

2. Only players on the approved eligibility lists will be permitted to play.

### Time

1. Games will start no later than 7:45PM and 8:45PM.

2. Games will consist of two halves of 20 minutes running time. 5 minutes between halves.

3. Games must end no later than 35 minutes after the hour.

4. The clock will not be stopped except between halves unless stopped by the referee or a team calls time out.

5. Time outs may only be called by the team in possession of the disc.

6. Each team gets two time outs of no more than 30 seconds per half.

### Field

1. The field shall be 50 yds wide by 80 yds long with 20 yd end zones.

### The Play

1. Unless otherwise agreed upon the game shall be played with a white 165g Whamo Frisbee.

2. Disc reception and direction of play shall be determined as in football.

3. The "kickoff" shall take place on the kicking teams goal line.

4. No player may cross the goalline before the disc is thrown on a kick off or the disc will be rethrown.

5. If the kickoff goes out of bounds the receiving team may elect to inbound the disc where the ref rules it went out or they may take the kick over. If the disc goes in or beyond the endzone the receiving team may bring the disc to the goal line as in a turnover.

6. A dropped kickoff constitutes a turnover but the receiving team can pick the disc off the ground if none of their players touched it beforehand.

7. A person inbounding the disc shall keep his pivot foot on the sideline. When bringing the disc in from the endzone the pivot foot must be kept on the goalline.

8. Turnovers occur whenever the offensive team's pass is incomplete, intercepted, knocked down, or goes out of bounds. Turnovers occurring in the offensive/defensive endzone must/may be brought to the goalline and 'inbounced' (ie. goals cannot be scored by an interception in the endzone).

9. Failure to release the disc 12 audible counts after a defender audibly calls "Stalling" shall result in a turnover.

10. Knocking the disc from a player's hand by the defense after the player gains possession constitutes a strip and is not a turnover. A disc knocked out by a teammate is a turnover.

11. A catch is made if the first foot the receiver plants is inbounds.

12. A player must stop moving upon gaining possession of the disc in the field of play.

13. A thrower must keep one pivot foot.

14. No more than one player may guard a thrower.

15. The disc must be thrown—not handed.

16. The defense must stay at arms length from the thrower.

17. If the defense is too close the thrower may push the defender away with two hands on the disc. If this must be done more than once any stalling count must start again.

18. Any foul must be audibly called immediately by the offended player.

19. A throwing foul occurs when a thrower's hand or the disc is hit before the disc is released. If the pass is complete play is continued, if not the disc goes back to the thrower at the site of the infraction.

20. Catching fouls follow football pass interference rules.

21. Uncontested defensive interference

## January Ultimate Schedule

Date	Time	Home	Visitor	Referees
Jan. 13	9:15	Blacker	Page	Fleming
	10:15	Ruddock	Ricketts	Dabney
Jan. 14	7:45	Fleming	Ricketts	Page
	8:45	Lloyd	Blacker	Ruddock
Jan. 15	9:15	Lloyd	Dabney	Page
	10:15	Ruddock	Fleming	Blacker
Jan. 19	7:45	Dabney	Page	Lloyd
	8:45	Ricketts	Blacker	Fleming
Jan. 20	9:15	Page	Ruddock	Blacker
	10:15	Ricketts	Lloyd	Fleming
Jan. 21	7:45	Fleming	Page	Blacker
	8:45	Ruddock	Lloyd	Dabney
Jan. 22	9:15	Lloyd	Fleming	Page
	10:15	Dabney	Blacker	Ricketts
Jan. 26	7:45	Blacker	Ruddock	Lloyd
	8:45	Ricketts	Dabney	Page
Jan. 27	9:15	Dabney	Ruddock	Ricketts
	10:15	Page	Lloyd	Blacker
Jan. 28	7:45	Page	Ricketts	Lloyd
	8:45	Fleming	Dabney	Ruddock
Jan. 29	9:15	Blacker	Fleming	Ruddock

the disc is taken at the site it would have been caught.

22. Contested defensive interference goes back to the thrower.

23. Uncontested offensive interference is a turnover.

24. Contested offensive interference will be judged by the ref.

25. Upon any rethrow of the disc after an interference call the disc must be checked by the defense with the offense holding their positions.

26. A point is scored only by a legitimate reception in the endzone. If an uncontested defensive interference call is made in the end zone the disc comes back to the goal line at the point of entry and the disc must be thrown in and caught (as if in bounding) in order to score.

27. If a disc is caught in front of the goal line and the receiver's feet hit the ground before crossing the line the disc must go back to the site of the catch.

28. At no time will any player physically hinder a player of the other team (eg. no offensive screening/blocking, no defensive bumping, etc.). Respect your opponent's space.

29. Any major uncool may result in ejection from the game (the game should be played in the same honest and friendly atmosphere as Caltech academics).

30. Direction of play switches after each point scored.

31. Substitutions may only be made after a point is scored.

32. There will be two referees to judge fair receptions, mark out of bounds throws, call goals scored, and mediate the contest. One of the refs is in charge of keeping time.

33. Score must be kept by one of the competing teams.

34. The point value is 6-12-18-24-30-36-42 for the year '86-'87 and shall be more permanently set by the IHC after the conclusion of that season.

35. Play fair and come out fighting.

## FLASH!

**Rules #1 & #3 under TIME are obsolete. So fergit 'em.**

—Göð.

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M-F 1 p.m. to 5 p.m.

## WHAT GOES ON

from page 8

**Wanted: Spring Singers!**

Auditions for Chamber Singers (especially women) and Men's Glee Club will be held from 4-5:30 on Monday, January 12 in the Beckman Auditorium basement. Spring activities include the Glee Club tour to Colorado and Stravinsky's *Oedipus Rex* with U.C. Santa Barbara; Chamber Singers will be performing Mozart, madrigals, and way-out contemporary.

**Spanish Civil War Films**

The following films are scheduled to be shown as part of H-132, but are also open free of charge to members and friends of the Caltech community. All films will be screened at 7:30 pm in Baxter Lecture Hall, on the Mondays listed:

Jan. 12—*To Die In Madrid*, a French documentary directed by Frederic Rossif.

Jan. 19—*Blockade*, an American fictionalization starring Henry Fonda and Madeleine Carroll.

Jan. 26—*Sierra de Teruel*, a French film directed by Andre Malraux (!).

Feb. 2—*The Spanish Earth*, a documentary with script and narration by Ernest Hemingway (!).

Feb. 9—*Alkazar*, an Italian-German co-production, is a 1940 piece of fiction from the Fascist Italian view of the Spanish Civil War.

Feb. 16—*Behold a Pale Horse*, starring Gregory Peck and Anthony Quinn, directed by Fred Zinneman.

Feb. 23—*La Guerre est Finie*, French fiction, 1966, starring Yves Montand and directed by Alain Resnais.

March 2—*Cousin Angelica*, Spanish fiction from 1974. Director: Carlos Saura.

March 9—*The Good Fight*, an American documentary from 1985.

At this time there is some doubt about *Alkazar* being shown. If it isn't shown, the replacement will be *Confidential Agent*, U.S. fiction, 1945, starring Charles Boyer and Lauren Bacall.

**Analog Devices Jobs**

Analog Devices, a leading supplier of digital signal processing products, is looking for BS/MS graduates in EE. They will be holding an information meeting on Thursday, January 15, from 4-5 pm in Winnett Lounge.

**Fireman's Fund Jobs**

Fireman's Fund, a leading provider of property and liability protection, will be having an information meeting on Monday, January 12 from 4-5 pm in Winnett Center, Clubroom 1. Fireman's Fund will be interviewing on campus on February 11 and March 2. They are looking for graduates from E & AS Division, AMa, CS, ES, MS, Humanities and Social Sciences Division, and Physics, Mathematics and Astronomy Division.

**Fortepianist at Castle Green**

The Harpsichord Center "Artist Series" presents Andrew Willis, fortepianist, in a special performance at The Castle Green on January 14 at 8 pm. Mr. Willis, who has made numerous appearances playing historic pianos of a vintage similar to the music he plays, will perform works by Mozart, Haydn, W. F. Bach, C. P. E. Bach and Beethoven. One of the highlights of the evening will be his performance of "Seven Variations on 'God Save the King'".

Tickets are \$18.00, and a catered artists reception follows the concert. The Castle Green is at 99 S. Raymond, in the Old Town part of Pasadena. For information and reservations call (213) 254-9613.

**New Humanities Classes**

**H 131: History Through Film: The Spanish Civil War.** [This, by the way, is the same course referred to in the other announcement as H 132. Don't blame us—H&SS sent them both!] Fifteen fictional features and documentaries from five countries will be screened during the quarter, as listed separately. Hours: M 7:30-9:30, W 1-3. Prof: Rosenstone.

**H 161: "Reds"—The Life and Times of John Reed.** A course that will highlight with the important cultural and political issues surrounding the career of this American poet, bohemian, journalist and radical who took part in both the Mexican and Russian Revolutions. Three films related to Reed will be shown—the Academy-Award winning film *Reds*, the Mexican feature, *Reed—Insurgent Mexico*, and Sergei Eisenstein's classic, *October*. Reading will include Reed's two major works, *Insurgent Mexico* and *Ten Days That Shook the World*. Hours: Thu. 1-4 pm. Prof. Rosenstone.

**CMRS Meeting**

The Caltech Medieval/Renaissance Society will be having a meeting & pot luck this Sunday, Jan. 11, at 3 pm in the Y Lounge. CMRS fighting practice (medieval-style armored combat) will start before the meeting, at 1 pm (meet at Winnett Center). For more information about the meeting, call Amy (794-2612); for fighting practice info., call Allan Kershaw (288-2082).

**Folk Music Concert**

January 17 will provide an evening of Cajun music, as Tracy Schwarz and Dewey Balfa, two long-time folk music performers, play in Dabney Hall Lounge. This latest in the series of Caltech Folk Music Society concerts will be at 8 pm. Tickets are \$6 in advance, \$7 at the door. For those of you unfamiliar with the names, Tracy Schwarz played for 16 years as one of the Lost City Ramblers. Dewey Balfa played for years with the Balfa Brothers Cajun band, and his record *Souvenirs* was nominated for a Grammy in 1986.

**Second Term Room and Board**

All undergraduate students living in on-campus houses, off-campus houses, 150 S. Chester, 1170 E. Del Mar, or Marks House will be billed for second term room and board charges on their December month's student account statement. In addition to a full term room charge of \$539.28 for on-campus houses and off-campus houses or \$615.72 for 150 S. Chester and 1170 E. Del Mar or \$588 for Marks House, the Housing Office will assume students will remain on a board plan similar to the one they chose for first term and students will be charged accordingly. For example, if you are currently on a lunch-only plan, you will be billed for lunch only for second term. Students who wish to change their meal plan for second term must do so by today (January 9) in the Housing Office.

For questions or concerns with your room and board charges on your student account statement, feel free to come into the Housing Office and speak with Jeanine Conneally.

**Women's Glee Club**

It's not too late to join. If you are interested, come join us Monday, January 12 at 7:30 in Winnett Lounge.

**Distinguished Speaker**

The Caltech Y's Distinguished Speakers' Fund presents: Two Days at Caltech with Dr. Montague Yudelman. Dr. Yudelman is a former director of the World Bank and a Distinguished Fellow, World Resources Institute. On January 13 at 8 pm in Ramo Auditorium, he will speak on "Changes in Global Agriculture—From Scarcity to Surplus." Then on Wednesday, January 14, at noon he will speak on "Changes in Thinking About Agricultural Development" in Clubroom 1 of Winnett Center. In the evening of the 14th, at 8 pm in Winnett Lounge, he will discuss "African Agriculture." All three talks are free of charge.

**Little Things With Many Legs**

"Insects and Spiders of the Foothills" will be the topic of a free lecture by Dr. Charles Hogue of the Natural History Museum of Los Angeles County. Dr. Hogue, Curator of Entomology, will speak at the San Marino Women's Club at 8 pm on Tuesday, January 20. The San Marino Women's Club is located at 1800 Huntington Drive, between San Marino Avenue and Virginia Road, in San Marino.

Slides of common and notable species of insects and related creatures of the San Gabriel Mountains and Foothill area will accompany this commentary about insect biology, behavior and relationship to area residents. Dr. Hogue, a long-time local resident, joined the museum 24 years ago and has written two books on insects.

Refreshments will be served at the lecture, which is sponsored by the Museum's Foothill Council. For more information, please call (213) 744-3438.

**\$\$ For Consulting Engineers**

Consulting Engineers Scholarship Competition Awards for Juniors and Seniors in engineering who are interested in consulting engineering as a possible career. State awards are up to \$2,000 and the top national award is \$7,000. Information and applications are available in the Deans' Office, 102 Parsons-Gates.

**Tron Lives!**

The fourth in this year's series of five Earnest C. Watson Lectures is: "Brain-Like Decisions by New Computing Circuits." This lecture, given by Dr. John J. Hopfield, the Roscoe G. Dickinson Professor of Chemistry and Biology at Caltech, will be in Beckman Auditorium at 8 pm on Wednesday, January 14. The lecture is free and open to the public.

Although both the brain and the computer engage in intelligent decision-making, scientists have long recognized that they process information very differently. While computers can perform thousands of computations and other logic-based tasks in a fraction of the time it takes people, they are deficient in such human skills as pattern recognition and problem-solving that requires insight and a grasp of "the big picture," or the number 42.

Dr. Hopfield will summarize the structural differences between the brain and computer and discuss current efforts to design and build networks of silicon-based "neurocircuits" that perceive, think, and even dream like the brains of living organisms.

**Career Development Seminars**

The following Career Development Seminars will be in Clubroom 1 of Winnett Center this month:

Monday, January 12, 12-1 pm, "On-Campus Recruiting."

Wednesday, January 21, 4-6 pm, "Assertive Interviewing."

Thursday, January 22, 1-2 pm, "Summer Job Search."

For more information, call the CDC, x6361.

**A Term of Energetic Research**

The U.S. Department of Energy announces a new Science and Engineering Research Semester for undergraduates at five National Laboratory Research Centers: Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Berkeley Laboratory, Oak Ridge National Laboratory, and Pacific Northwest Laboratory.

The new Student Research program offers challenging research opportunities at five U.S. Department of Energy laboratories. Students spend one academic term in energy-related research at the frontier of science with state-of-the-art facilities and equipment. The program emphasizes hands-on scientific and engineering investigation supplemented by educational enrichment activities including seminars, academic courses, workshops, and advanced instrumentation training. Faculty-student research teams are encouraged. Academic credit can be arranged in many cases through home institutions for the research experience.

Student support includes a weekly stipend of up to \$175, round-trip travel reimbursement, and housing. Applicants must be U.S. citizens or permanent residents and be juniors or seniors with a GPA of at least 3.0.

Application deadlines are April 15 for the Fall 1987 program, or October 30 for the Spring 1988 program.

For detailed information and application forms, write to: Student Semester Research Program, Division of University and Industry Programs, ER 44, Office of Energy Research, U.S. Department of Energy, Washington D.C. 20585.

**Pennies From Heaven**

Caltech's musical, *How To Succeed in Business Without Really Trying*, is looking for 2 rehearsal pianists to play two nights a week each. There is some pay available. The time would be from January 10 to February 15. If interested, or you know someone who might be, please contact Roberta Goldstein at 356-4689 or Arie Michelsohn at 356-6822, immediately.

**NSF Engineering Program**

A new National Science Foundation program, titled "Creativity Awards in Graduate Engineering," is being offered to make graduate study more attractive and to improve the quality of engineering education by encouraging creative activities. These new creativity awards will support students based on their ideas as embodied in a plan of research.

Approximately 30 grants per year will be awarded competitively to students, whether they are still undergraduates or have graduated in the last three years and have not done graduate work. Grants will be for up to \$30,000 a year for up to three years and could be used to produce a graduate thesis. The grant will go to the student's institution and will provide an annual stipend of \$11,100 plus tuition and fees as well as funds for research. To apply, a letter should be sent to NSF by February 1, 1987 describing the research idea. Full information on what should be in the letter is available from the Office of the Dean of Engineering or from Chairmen of Engineering departments. The applications will be evaluated by a review panel. The grant is portable and is conditional on the awardee being accepted into a graduate school.

**MIT Summer Minority Program**

The MIT Lincoln Laboratory has a summer research program for undergraduate and graduate minority students. They will have the opportunity to develop valuable research expertise in areas such as communications systems, radar analysis, digital data processing, and solid-state electronics. The program extends from early June through mid-August. During the ten-week period, participants receive weekly salaries and are accommodated in MIT Campus Housing in Cambridge. Round-trip travel to the Boston area is provided for each student, as well as daily round-trip transportation between campus and the Laboratory.

Requirements: Students must have completed their sophomore year in college before the summer; they must be minority students in electrical engineering, computer science or applied physics, interested in a research career; they must be U.S. citizens.

For further information write to:  
Chet Yablonski  
Personnel Office  
MIT Lincoln Laboratory  
244 Wood Street  
Lexington, MA 02173-0073

**Grant & Fellowship Directory**

A directory of grants and fellowships compiled by the Graduate School of the University of Massachusetts at Amherst is now available at the Career Development Center. We have also received the latest of Peterson's Guides to Engineering Science and Computer Jobs. Visit the Career Development Center for more information.

**Summer Abroad... 87**

The Experiment in International Living is looking for highly qualified people to lead their Summer Abroad programs. The basic qualifications of leaders are: 1) An intimate knowledge of the language and culture of the country to which a candidate applies to lead; 2) Experience in leading, working, or living with U.S. teenagers; 3) A minimum age of 24 and the holding of a B.A. or equivalent; 4) An active interest in international understanding.

Summer Abroad Leaders travel free with groups of 6-15 Experimenters to more than 20 countries, instilling self-esteem, fostering the development of positive attitudes and international understanding in today's generation of young people.

For more information on leadership opportunities with the Experiment, please call toll free at 1-(800)-345-2929.

**Graphic Communication \$\$\$**

Seniors who plan to attend graduate school and study fields related to the Graphic Communication Industry (mathematics, physics, engineering, etc.) or graduate students currently studying in that area are encouraged to apply for the National Scholarship Trust Fund Fellowship. Awards range from \$1,500 to \$3,000. Applications and further information are available in the Financial Aid Office, 12-63. Deadline is January 10, 1987. (Better hurry!)

**Summer School at Weizmann**

The Weizmann Institute of Science's annual Karyn Kupciet International Science School is accepting a small number of science students (from second year) from overseas for the summer of 1987 to participate in research projects in mathematics, physics, chemistry and biology.

A modest stipend and dormitory-style accommodation near the campus are provided. No travel funds are available.

Application forms may be obtained from the Academic Secretary, Weizmann Institute of Science, Rehovot 76100, Israel. Completed applications should be returned before February 15, 1987.

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WHAT GOES ON

Announcements for *What Goes On* must be submitted on an announcement form (available outside 107 Winnett) or on a plain piece of paper. Please indicate the date(s) you want the announcement to run. Send announcements to 107-51, or put them in the mail slot in the door of 107 Winnett. Announcements must be received by the Tuesday prior to publication.

**Summer Biomed Program**

The Jackson Laboratory, in Bar Harbor, Maine, is sponsoring a 9-week program in various areas related to biomedical research, including biochemistry, developmental genetics, formal genetics, immunology, molecular genetics, and physiology. Each student conducts an original research project within the on-going program of a member of the research staff. The focus of the program is on research training in mammalian genetics and development using multi-disciplinary experimental approaches and genetically defined laboratory animals, primarily mice.

The cost is \$1,500 for the nine weeks, including room and board, with scholarships available for participants who require financial aid. Application due date is March 2, 1987. Program runs from June 14 to August 11. For further information call (207) 288-3371, x253, or write: The Jackson Laboratory, Training & Education Office, Bar Harbor, Maine 04609.

**Med School Money**

The Army Health Profession Agency is offering 350 scholarships to students planning to attend medical school. To qualify you must be a full-time student, a U.S. citizen, and under the age of 35 when you enter medical school. Students who accept the scholarship will become members of the Army Reserve and be required to attend 45 days of Active Duty Training per year they are in this program. This scholarship pays 100% tuition, books and fees, and provides a monthly stipend. There is no obligation attached to submitting an application. Deadline is May 1, 1987 for 4-year scholarships. To apply write to: U.S. Army Health Professional Support Agency, 1600 N. Broadway, Suite 300, Santa Ana, CA 92706-3954, or call collect (714) 836-2355. Additional information is available in the Financial Aid Office, 515 S. Wilson.

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**Jazz Buffs Take Note!**

The International Association of Jazz Appreciation and Donte's nightclub (the new home of the IAOJA) are presenting a special benefit performance by blues master Jimmy Witherspoon. Proceeds go to support IAOJA's "Jazz Goes to School" program. The performance will be on January 25th at 7:30 pm at Donte's, 4269 Lankershim Blvd., North Hollywood. Donation is \$10 for non-members of the IAOJA, and membership information will be available. This benefit performance is part of a series of "Last Sunday" IAOJA concerts, to be held at Donte's on the last Sunday of each month.

**Jazz At The Playhouse**

Sunny MacKay, formerly of Donte's-North Hollywood and the Blue Parrot-La Jolla, presents, on the night before Superbowl, Jazz at the Pasadena Playhouse. The M.C. will be L.A. Times jazz critic Leonard Feather. Performing will be Grammy Award winners SuperSax, and the L.A. Voices.

This all takes place at the Pasadena Playhouse, 39 S. El Molino, on Saturday, January 24 at 8:30pm. Ticket prices are \$17.50-\$20.00-\$25.00. For ticket information call 356-PLAY.

**Soroptomist Fellowship**

The Soroptomist International of Los Angeles is offering a \$3,000 fellowship to an outstanding woman graduate student for 1987-88. To apply you must be a U.S. citizen and a California resident. Consideration is given to the student's potential contribution to society. Field of study is open. The Financial Aid Office (12-63) has more info. Deadline is February 15, 1987.

**Scholarships For The Blind**

The National Federation for the Blind has six scholarship programs available for 1987-88. Applicants must be legally blind. Scholarships are awarded on the basis of academic excellence, service to the community, and financial need. For more information contact the Financial Aid Office, 12-63. Deadline is March 31, 1987.

**Waltz Party**

On Saturday, January 24th at 8 pm in Old Union on the Occidental campus, the Caltech-Occidental Orchestra will provide music for an evening of waltzes. Admission charge is \$2; refreshments will be served. In preparation for the party, there will be two dance practices, on Thursdays January 15th and 22nd in Dabney Hall, beginning at 7:30 pm. The instruction will be given by members of the Caltech chapter of the International Folk Dance Association.

**Attention Writers!**

The Literature Faculty is proud to announce the 41st Annual McKinney Competition. The Mary A. Earl McKinney Prize is awarded each year for excellence in writing. Only full-time students officially registered at Caltech as undergraduates are eligible to enter the competition. This year three prizes will be given in three categories: poetry, prose fiction, and non-fiction essays. All submissions must be typewritten and double-spaced. In the poetry category, entrants may submit up to three poems. Submissions of prose fiction should not exceed 12,000 words. Essays may be ones prepared for a humanities class or any good piece of original writing on a topic relevant to the humanities. The prize in each category will be \$300.

Each student is entitled to only one entry in each category. All contestants must submit their work to Professor Jenjoy La Belle, Division of the Humanities and Social Sciences, by no later than April 30, 1987. No entries will be returned. Each category will be judged by a three person committee from the Literature faculty. Essays will be judged on the quality of thought and the effectiveness of the writing. Winners will be announced the last week of May. The names of the winners will appear in the commencement program. There will be an Awards Banquet on May 28. The Committee may divide the award in each category in case of more than one outstanding essay. Previous winners in any one category are not eligible for the competition in that category.

If you have any questions, contact Dr. La Belle, x3606, or Betty Hyland, x3609.

**Korean Scholarships**

The Korean American Scholarship Foundation is offering scholarships for 1987-88. To qualify you must be a full-time student of Korean American heritage. Scholarships average \$1,000 per student. Deadline is 31 January 1987. To receive an application write to:

Scholarship Committee  
Western Region Office  
Korean American Scholarship  
Foundation  
Box 3388, Santa Ana, CA 92703  
1-800-523-5948.

**SAM/PE Money**

Engineering, physics, chemistry, and metallurgy students studying materials and processes are eligible to apply for the Society for the Advancement of Material/Process Engineering \$1000 scholarship for 1987. Applicants must be full-time undergraduate students. Application forms and information are available in the Financial Aid Office, 515 S. Wilson. Deadline is February 1, 1987.

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**Summer Conservation**

The Student Conservation Association (SCA) offers college students, recent graduates and other persons 18 years old or older, the opportunity, through a conservation program involving actual field experience, to develop job skills, gain work experience and cultivate professional contacts in the resource management field.

The SCA is presently accepting requests for applications and listings of the 700 positions that are being offered during the 1987 summer and fall season. Positions begin at varying dates throughout the summer and fall. Any person that is interested in participating or learning more about the program should send a postcard requesting an application and listing of the summer/fall RA position to: The Student Conservation, P.O. Box 550C, Charlestown, NH 03603, or telephone the SCA at (603) 826-5206/5741.

Applications for summer positions should be received in March to receive the best chance at selection for top choices.

**A Century In Solvang**

The SCOR Cardiac Cyclists Club will be hosting the Fifth Annual "Solvang Century" bicycle ride on March 14, 1987. The ride will start and finish at Santa Ynez High School and is a moderately tough 100 mile ride through Solvang, Buellton, Lompoc, Santa Maria and Los Olivos. All riders receive a route slip, ULTRAENERGY packet, water bottle, fanny pack, full SAG support with 5 food and drink stops and a patch for their entry fee. The entry fee is \$20 if paid before February 28, 1987. An additional option is the pre-ride pasta dinner to be held at the Santa Ynez Elementary School in Santa Ynez on March 13 at 5:30 pm. Race Across America record holder Pete Penseyres will be the guest speaker. Dinners are \$9 per person. Entry forms are available at the Human Performance Center in Whittier and most bicycle shops, or can be mailed to entrants who call (213) 945-6366.

**Guitar Classes**

Guitar classes for second term will meet on Tuesdays, starting January 13 in Winnett Basement as follows: Beginning class, 4:30-5:30 pm; Intermediate class, 3:30-4:30 pm; Advanced class, 5:30-6:30 pm.

Classical and flamenco repertoires are explored but techniques transfer to other styles of guitar. The Beginning class also includes a new jazz and folk chord system. Classes are free to Caltech students (and other members of the CIT community, space permitting). Undergraduates can receive 2 units of credit if they choose. Private instruction on any level can also be arranged. The instructor, classical guitarist Darryl Denning, has an international background in performance, recording and teaching, and can be reached at (213) 465-0881 for more information.

**University of Arizona**

The Department of Systems and Industrial Engineering at the University of Arizona offers outstanding opportunities for graduate study at all levels. Financial support is available for outstanding students. Students who receive fellowships or assistantships are exempt from out-of-state tuition charges. If you have any questions, please call (602) 621-6552.

**Disease Fellowship**

The National Institute of Allergy and Infectious Diseases (NIAID) will sponsor a Summer Fellowship Program for minority and non-minority students. Students receive 6-8 weeks of biomedical research training in NIAID laboratories and are provided a training stipend. Summer fellows train in very active and highly productive research laboratories. The mentor system is used, and counseling is offered. Weekly research project(s) to peers, and specialists in their particular field of interest. Although travel will be provided by the NIAID, housing must be covered by each of the candidates from their stipend.

Nominees must have a 3.0 or higher GPA, preferably higher in their science coursework. Selection criteria shall include academic records, GPA, special achievements, recommendations from major professors and Deans, the student's letter of motivation, and curriculum vitae. Applications are due no later than March 2, 1987. For further information please call Mr. Vincent Thomas or Dr. Katherine Jaouni at (301) 496-4846 or (301) 496-1409.

**State Assembly Fellowships**

Applications are now being accepted for participation in the California State Assembly Fellowship Program. Set to begin in August, 1987, twelve persons will be selected to work with state Assembly members and their staffs in Sacramento.

Fellows serve in the State Capitol with responsibilities equivalent to those of legislative or committee staffers. Tasks include legislation, analyzing bills, working with constituent groups, organizing press conferences and helping to develop legislative strategies. A stipend of \$1300 per month, plus health benefits, is paid for the eleven-month Fellowship year.

Fellows also earn twelve graduate credits from the California State University at Sacramento by participating in periodic seminars and discussion sessions which provide important base and further enhance their hands-on experience.

Minimum qualifications for selection are a BA or BS degree (by August 1987), and completion of applications along with three letters of recommendation and transcripts.

Applications and information are available in the Deans' office. Deadline for applications, letters and transcripts is February 20.

**Engineering Scholarship**

Consulting Engineers announces their 1987 Scholarship Competition for upper-division undergraduates in Engineering.

To be eligible, a candidate must be ① a junior or senior as of fall 1987, ② in the upper half of his or her engineering class, ③ working for a B.S. degree in Engineering, ④ interested in Consulting Engineering as a career, and ⑤ a U.S. citizen.

Engineering students with strong academic and extracurricular qualifications who meet the requirements are invited to obtain complete details and application forms from the CEAC office in Sacramento by calling (800)442-2322. Applications must be received no later than February 16, 1987.

continued on page 7



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