

21 million miles from Saturn, Voyager 1 takes a close look at the ringed planet. Close scrutiny of the rings yielded surprises for scientists. See page five for more pictures.

Voyager Unfolds Saturn's Rings

by Gavin Claypool

Voyager 1, the first major space probe to the outer planets, has completed its assigned tasks and is now on its way out of the solar system.

In a hectic two-week encounter with the planet Saturn, Voyager gave scientists and the world their best view ever of the Ringed Planet, its many satellites (including at least three unknown ones), and the rings themselves—whose structure turned out to be exceedingly complex.

Animals Predict Quakes

By Lee Sunderlin

Dr. Robert Lindberg, a UCLA biologist, gave a talk here on November 10 about the use of animals to predict earthquakes. He is involved in a study in which animals left in the desert near the San Andreas Fault are constantly monitored for abnormal reactions, and these reactions are correlated with later earthquakes. So far, the results have been mixed.

America is currently supporting animal earthquake detection mainly because of reported Chinese successes in the field. On many occasions all over the world, though, stories of unusual behavior by animals before earthquakes have come to light. The problem is to determine how much hindsight and selective memory went into these "predictions."

There are many possible earthquake precursors that animals can detect, including changes in electrical and magnetic fields. Sharks are most sensitive to electric changes, and bees to magnetic.

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As Voyager approached the planet in early fall, long-range photographs of the rings revealed that the famous "divisions" discovered by Earth-bound astronomers were not empty space at all, but contain darker and less massive rings. The major rings turned out to be made up of smaller rings, so that the overall ring took on the appearance of a cosmic phonograph record.

But the greatest consternation on the part of scientists came with the discovery of spoke-like structures within the second-biggest, or "B" ring. The spokes remain visible for several hours, despite the fact that the rings are individual particles: the inner part of the spoke should be moving faster than the outer, causing it to break up. Some force in addition to gravitation appears to be acting on the particles, but the mechanism remains obscure at present.

Saturn's moons, which now equal Jupiter in number known (15), were serious targets of Voyager's scrutiny. Only Phoebe, the outermost, retrograde satellite, was bypassed; even Hyperion and mysterious Iapetus were photographed, though they were over 500,000 miles away at closest approach.

The prize, of course, was Titan. Largest of all known satellites in our system (it's bigger than at least one planet: Mercury), it received a glancing kiss from Voyager as the probe moved in on Saturn. A mere 2500 miles from the assumed surface of Titan, whose opaque atmosphere yielded up nary a glimpse of it.

The atmosphere proved a surprise too. Rather than being primarily composed of methane—and perhaps some exotic organic compounds—as some scientists believed, Titan's atmosphere seems to be mainly nitrogen, with less than 1% of it methane. There are a few

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Student sent to hospital

Bonfire Ends In Violence

By Phil Albert

Last Saturday, in the Caltech tradition, a bonfire was held to celebrate a football victory. For an apathetic campus, the bonfire drew a large crowd, and it also drew a new factor of violence in a usually peaceful environment. Anthony Miller, a Caltech undergrad, in an attempt to subdue an angry motorist, was taken to Huntington Memorial Hospital as a result of the motorist hitting him in the mouth.

The diversion was going as scheduled at the corner of Oakland and Colorado Blvd. At 11:11 pm, the bonfire was lit in the intersection of Cordova and Los Robles, in front of the Hilton Hotel and the KROQ radio station. The fire engines arrived approximately 30 seconds later and put out the fire before it got going. The quick response of the fire department was due to the fact that KROQ was informed of the real location of the bonfire and announced it on the radio.

The crowd slowly drifted in the direction of the Caltech campus, but in a move to confuse the police, another whistle was blown and everybody started running in one direction. As the crowd walked back to the campus, traffic backed up behind the blockade of people walking down Cordova Street. Most motorists were understanding and either drove on the sidewalks or made U-turns.

One motorist, however, who later admitted to being drunk, stopped in front of the crowd and then drove through the crowd before it could clear a path. Several people were thrown to the ground. He stopped at a red light at Hill and San Pasqual, and then drove through the intersection while the light was still red, after seeing the crowd approaching. He then stopped his car and yelled "Who hit my car?" The driver grabbed the closest person in an apparent attempt to start a fight, and at that point Anthony Miller attempted to

subdue the driver. According to Miller, "He grabbed [Robert] Shoemaker, and I grabbed him. When he let go of Shoemaker I let go of him. Then he [asked] 'Who had me?' and I said I did, and he hit me." After unsuccessfully attempting to start an altercation with someone else, he made the statement that "you college punks are too smart to know that you're stupid."

Amid the confusion, his door was locked and closed, locking him out of his car,

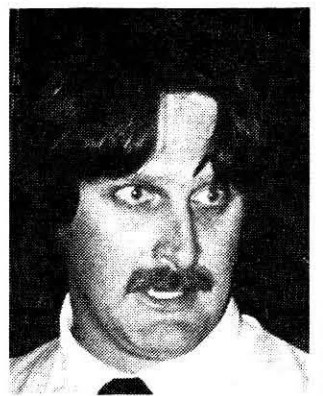


Photo by K. Gant

The enraged motorist.

which was obstructing traffic. The Pasadena Police arrived at the scene and the following exchange occurred between Miller and the police officer.

"I'd like to press charges."

"For what?"

"Cause the guy hit me."

"What did you do that the guy hit you?"

"Okay, this is what happened—"

"I know what happened—what did you do?"

At which point Miller told his story and the officer replied, "Well, I would have hit you, too." The angry motorist was allowed to leave the scene, and Miller was taken to the hospital.

VLBI Resolves Quasars to a Hair

by Tracy Furutani

Unusual discoveries in the field of radio astronomy characterized Wednesday's Watson Lecture. Dr. Anthony C.S. Readhead, Research Associate in Radio Astronomy, described new methods in radio telescope focusing on the modern technique of employing VLBI (Very Long Baseline Interferometry). This method uses many sets of two or more radio dishes, with each set a sizeable distance apart and each of a set member's signal interacting with the other signals to create an interference pattern. Such patterns can be enhanced by computer and then interpreted by humans.

What is truly amazing about VLBI is its fine resolution (the measure of how much detail that can be obtained). In ordinary light telescopes, the resolution is about one arc-second, even for the great Palomar telescope. Using radio waves and dishes many miles apart, the resolution can be increased to one ten-thousandth of an arc-second.

Dr. Readhead utilized many slides during the lecture, showing many of the enhanced images of various radio galaxies.

He converged on two galaxies in particular: 3C273 and NGC 6251. The former is the first object discovered receding from the frame of reference of Earth at a significant fraction of lightspeed. Using VLBI, a "glob" of matter, ejected from the galaxy proper, was discovered to have moved 30 light years (with respect to Earth) in three years. Adjusting for relativistic effects, the "glob" is moving at nearly

the speed of light.

NGC 6251 is a radio galaxy, very close in galactic terms. It is shaped like a dogbone, with the ends being lobes of matter ejected from the central core. Using VLBI, a well-defined streamer of material was found to connect the lobes and the core. More astonishingly, with a resolution of about one-ten thousandth of

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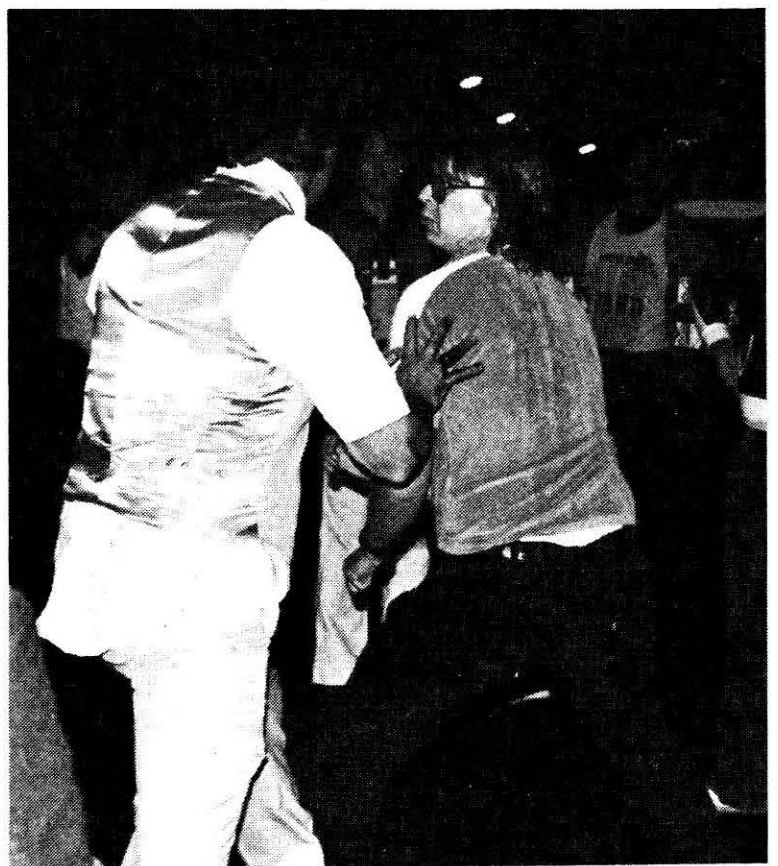


Photo by K. Gant

Enraged by the blockage of traffic, an unidentified motorist took to shoving Tech students aside after last Saturday's fire.



EDITORIAL

To analyze the word 'university' is to discover its actual meaning, "one truth." The one truth that Caltech promulgates is the rationalist doctrine, and consequently, students receive a dangerously biased educational programming. Since the nature of stability is equilibrium, it is necessary that this institute right this unbalance if it is to acknowledge its responsibility to those whom it seeks to teach.

The rationalist doctrine is essentially a causal one: event 'A' causes event 'B.' In learning the sciences here, one finds that the actions and interactions of physical phenomena are governed by a mathematical model, and this model is so complete that it can indicate future behavior of a system given only its present state. Even in modern physics, where the evolution of quantities is dealt with in terms of the probabilities of certain situations, the principles involved are patently mathematical. The question professors tend to hedge at Tech is why reality and its mathematical model fit so well together.

The reason this correspondence is so good is that our minds perceive the bridge between mathematics and reality so vividly. But since our perceptions and our reality are inextricably linked, one might just as easily state that reality is not causal at all, but correlative. And this would undoubtedly be experimentally true if one were to interpret physical phenomena in a correlative manner. Event 'A' coexists with event 'B,' and a knowledge of the relative positions of these events in time and space would allow one to project the illusion of causing event 'B' onto the minds of persons locked into a causal world view. This is one of the principles of modern Magick. An example on these lines would be to suggest quite seriously to someone who is unaware of your purpose that the number 23 is almost always involved in a coincidence. As a result, the subject will become aware of an abundance of 23's in weird circumstances and will probably entertain conspiracy theories in order to preserve causality.

Clearly, no *one* interpretation of reality is the truth, though some systems have efficient symbolism and tricks of manipulation associated with them. What Tech needs to recognize however is that other systems do exist, and the best way for students to realize this is to experience different aspects of them. Creative writing courses and philosophy courses begin to achieve this end, but this institute needs to offer creative painting courses, performing music courses, sculpture classes *et alia*. That the Humanities and Social Sciences Department is housed in one building is an affront to world civilization, but to increase its size would offer us all a chance at self-expansion.

-Stuart Goodnick

- THE CALTECH Y fly-by
- Saturday, November 22: a trip to the J. Paul Getty Museum. The transportation, coordinated by Uncle Mike, leaves at 9 A.M. from behind Winnett Center. Don't forget to bring some cash for buying lunch.
 - Wednesday, November 26: SIGN-UP opens for the Kings-New York Islanders hockey game on Saturday, December 6. Sign up in the Y office before December 4.
 - Wednesday, December 3: observance of Human Rights Day. A presentation on "Human Rights in Uganda and the Soviet Union: Eyewitness Reports by Caltech Students." Speakers will include a representative from Amnesty International and two Caltech students. The program begins at 8 P.M. in Winnett Lounge.
 - Friday, December 5: a NOON CONCERT with the Caltech Jazz Band. For a jazzy afternoon, come out to the Quad, sit next to Pretty Pat, tell him what a wonderful job he is doing, and listen to the concert.

Engineering Scholarship

The 1981 Engineering Scholarship Competition co-sponsored by the American Consulting Engineers' Council and its state affiliate, the Consulting Engineers Association of California is now open. To qualify as an applicant, a student must be: scheduled to enter his or her third, fourth, or fifth year of undergraduate study in the fall of 1981; working towards a B.S. degree in Engineering; in the upper half of his or her engineering class; interested in pursuing a career in Consulting Engineering; a United States citizen. Deadline for applications is February 20, 1981. Further information and

applications available in the Financial Aid Office, 208 Dabney Hall.

Space Cadets Wanted

The National Space Club will award a \$3,500 scholarship for the academic year 1981-82 in memory of Dr. Robert H. Goddard. Applicants must be U.S. citizens, in at least the junior year, and have the intention of pursuing undergraduate or graduate studies in science or engineering during the interval of the scholarship. Other selection criteria include academic achievement, letters of recommendation, ac-

Jobs for Pre-Meds

The American Heart Association Summer Program is to encourage and introduce gifted science students to consider careers in cardiovascular research. Selected students will be assigned to leading research laboratories in California for a ten-week period. The applicant must be enrolled in an academic institution in California (Caltech *does* qualify) or be a resident of the state. Preference in selection will be given to students who will have senior status in the fall of 1981. Applications must be requested by January 15, 1981. Please see the Placement Office, Room 8, Dabney Hall, for further information.

complishments demonstrating creativity and leadership, interest in the aerospace sciences and technology, and personal need. Interested applicants can apply by letter no later than January 12, 1981. For further information and application instructions, please come to the Financial Aid Office, 208 Dabney Hall.

LETTERS

Too Much Edited

Editors,

I would like to make a public comment in reference to my article on Interhouse (Nov. 14, 1980). I wish to point out that in my final version of the article, I referred to Fleming House (The House of Houses) as The Big Red Machine, but it appeared in print with the word "Bobsled" in it.

While I agree that editors have the right to alter articles submitted by the writers, I

would assume that alterations are limited to correction of spelling and grammar, (my grammar ain't to good) and the addition of editors notes. I write articles for the paper and when some thoughtless editor alters my articles to point where I can no longer claim it as my article, why does it have my byline? This is clearly an act of irresponsible editing. [sic]

Phil Albert
Fleming House

Vachss's Lacking

To the Editor:

It was with great surprise that many of us read about the Mudeo in last week's paper. I have yet to meet anyone who had heard about it beforehand. Apparently there was no publicity at all for it—it was not announced in *The Tech* nor in any fliers or banners around campus.

For some of us who participated as freshmen, it was

disappointing to miss this year's Mudeo simply because there was no publicity (especially considering this year's freshman class). It constitutes a very big lack on the part of the junior class president to have failed to inform a large portion of the student body about a very traditional and very much looked-forward-to event.

-Sandra Loh

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CIVIL ENGINEERING OPENINGS - OPPORTUNITIES

Department of the Navy, Division of Civil Engineering is accepting applications for Engineers for openings beginning in June 1981. Additionally, College Juniors can apply and if screened successfully can qualify for up to \$800 a month retainer during senior year.

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The California Tech

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The Body Shop

Take two aspirins and call me in the morning...never! You won't hear this old cliché at the Health Center. We're here to help you with any problems that we can and this column is one way in which we hope to accomplish that and answer questions you may have about your health.

Colds seem to be running around Caltech and are an inevitable fact of life. A cold is a virus, passed from one person to another by touch or by being carried on droplets sprayed into the air when a person coughs or sneezes. Some of the common symptoms are a runny or stopped up nose; sore or scratchy throat; or dry, hacking cough. Unlike respiratory infections colds usually clear up within a week.

Self-Care Hints

•Rest—your body needs every bit of available energy to combat a cold.

•Drink plenty of fluids—double or triple your normal intake.

•Take Aspirin or Tylenol to relieve aches and pains and reduce fever.

•Gargle with warm salt water. (1/2 tsp. salt in 8 oz. hot water)

Cold symptoms that seem to get worse or fail to get any better may indicate an underlying problem or a secondary bacterial infection, both of which may need to be treated medically. If the following symptoms develop, go to the Health Center.

- Fever above 101° F
- Chills or sweating
- Earache
- Chest pain
- Shortness of breath
- Coughing up of colored phlegm

Six Truths About Colds

1. Bed rest is the best cold medicine available.
2. Colds are not caused by cool or wet environmental conditions, but getting wet or chilled can weaken the body's natural defenses against cold viruses.

3. When the air is dry, nose and throat tissues become especially vulnerable to invading cold viruses.

4. Antibiotic drugs do not kill cold viruses.

5. Massive doses of Vitamin C will not prevent colds.

6. Chicken soup is good for a cold!

Is there anything you've always wanted to know but were afraid to ask? Well here's your chance! Write to me (anonymously if you prefer) and I promise to try and get you an answer.

—Lynnette Wilmoth RN
Health Center, 1-8

P.S. Watch next issue for more healthful hints!

Up From the Well

Hi, folks:

I know I promised to write you again real soon, so like, here it is. First off, I am sure that you immediately understood my last letter to be little more than a joke; only a few things were accurate. Now that I've been here a bit longer, let me give you a second look at this place.

First off, the naming of names. California Institute of Technology, Caltech, CIT, etc. are all designations for this here campus. It's right here, uh, somewhere in Pasadena. That's a great, big, bustling, exciting and dynamic city with a whole lot of things to do whenever I don't have any work due, which is usually the case. (Actually, I've got loads to do, but I'll get it all done before finals week.) For example, right now I can go up on the roof of nearly any building and watch a 500-acre marshmellow roast up on the mountains. Neat, huh?

You may also have gotten a mistaken impression from my

Dr. Kahl Is New Tech Counselor

By Phil Albert

The Student Health Center has a new Director of Counseling Services, Dr. Bruce Kahl, who is taking over the position from Dr. Sigrid McPherson. Dr. Kahl works with the counseling center part-time, and he also keeps a private practice going part-time in Pasadena.

Dr. Kahl went to school at Stanford, and after a combined internship in Los Angeles, he practiced with a public mental health center, until he later went into private practice. Dr. Kahl likes the challenge of dealing with the problems unique to the Caltech community.

Another change is the possible end of the drop-in center. The drop-in center was

established to allow a method of impromptu and anonymous counseling. The drop-in center is located in the Dabney basement and is usually staffed during the day. Dr. Kahl mentioned that the drop-in center was used very little, and that the counselors could be better used at the Health Center. Dr. Kahl said he would be interested in any input from the students. So, if you would like to see the drop-in program continue, or if you just want someone to talk to, go talk to him.

Personals

M.,
Time is flowing by, gently caressing as it goes. Is there need to make haste to the fulfillment? The moment awaits not much longer on my time scale. Surely before the New Year's champagne is flowing, or would it be more fun afterwards? Champagne in any event.

Sin

World:

Go to hell, I'm legal. 8011.19 17:05.

Dear Moses,

Is it true that you can part the water before you fall into the pond?

Concerned,
Al Fansome

Uganda and Soviet Union are Focus of Human Rights Talk

By Joseph Garcia

On December 3, the Caltech campus will focus its attention upon a vital issue in the world—the issue of Human Rights. Responding to this concern for human rights, The Caltech Y, in conjunction with Amnesty International, will present a discussion entitled "Human Rights in Uganda and the Soviet Union: Eye-Witness Reports by Caltech Students," at 8:00 pm on December 3, in Winnett Lounge.

The program will be presented by three speakers. The first speaker will be Jack Conn, a representative of Amnesty International, who will speak on the problems surrounding U.S. ratification of the United Nations International Human Rights Covenants. The balance of the program will be led by two Caltech students, one from the Soviet Union and the other from Uganda. They will each speak on current abuses of human rights in their respective countries.

Jack Conn's talk will concentrate on the controversy surrounding refusal of the U.S. to ratify the U.N. International

Human Rights Covenant. As Jack will explain, the covenant as it now stands is merely a recognition of human rights as an international concern. The covenant does not include the means for enforcing human rights in the countries abiding by it. In fact, the covenant only requires that a country provide an overseeing committee with a report on the conditions of human rights in that country. The overseeing committee then decides whether or not human rights are observed in that country, and makes recommendations to the country as to what it feels needs to be done to protect human rights in that country. Jack's section of the program will deal with why the United States still has not ratified this U.N. International Human Rights covenant.

The next part of the program focuses upon the abuse of human rights in two countries of the world; the Soviet Union and Uganda. This segment will feature two Caltech

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ENTERTAINMENT

MOVIES plays **SPECIAL EVENTS**

MAASAI FACE 20TH CENTURY

By H. N. I. Mayhem

The latest lecture in the Leakey Lecture Series featured Tepilit Ole Saitoti, who spoke about the Maasai, a tribe living in the Great Rift Valley of eastern Africa, in Kenya and Tanzania. Mr. Saitoti is a member of the Maasai tribe and was able to give his listeners a true picture of the tribe's way of life. His talk proved to be interesting and informative, and it made one realize the dangers inherent in trying to force a society to conform to the ways of the Western world.

The Maasai are herdsman, and live now in much the same way as they have for centuries. They obtain all of their basic needs—food, drink, clothing—from their herds of cattle, sheep, and goats. Periodically, they move from place to place in search of good grazing land for their herds. For all of this, the Maasai are by no means simple; they possess a well developed and highly complex culture.

The Maasai believe that the society, the group as a whole, must be considered above all else. For this reason, the roles of each member are well defined according to age and sex. Young children, for example, are expected to care for the younger animals of the flocks. Growing older, boys are expected to do more of the work of caring for the flock, while girls take on the job of caring for the home. All Maasai children must pass through a highly ritualized and rather painful initiation process in order to be considered as adults of the society. The purpose of the ritual and of the

pain is to teach the child, now an adult, that he or she must now learn to bear pain in order to give to the society instead of receiving from it.

After initiation, women become eligible for marriage, while the men are trained as warriors. Warriors are responsible for protecting the village flocks from predators and raids by other warriors. Unlike the women, whose status in the society is fixed once they are married, men must pass through several more levels of membership in the society. The first transition occurs at about the age of 30, when a man stops being a warrior and becomes a junior elder. According to Mr. Saitoti, this transition is very important and highly emotional, because it marks the end of the period when a man is most important to the society. The rituals surrounding this new stage of life are very extensive, and, except for an opening ceremony, are open only to the warriors and the elders who must perform the initiation ceremonies. After a man has been a junior elder for several years, he reaches the status of full elder. As such, he becomes responsible for the leadership of his village and for the continuity of the society's tradition and culture.

Perhaps the most important facet of the Maasai tribe's life style is the way in which they have lived in harmony with their environment. At the end of each day, the Maasai bring all their flocks back to their village. This allows the wild animals of the area to come at night to the same grazing lands and water holes of which the

Maasai make use. In this way, competition between the Maasai and the wild animals around them has been reduced. Another example of this harmony is the way the Maasai move about in response to the change in seasons. During the dry season, the grasses of the lowlands are not rooted deeply enough to withstand intensive grazing; the Maasai move their herds to the highlands, where the grass remains thick enough for grazing. Lowlands can be used during the rainy season; the Maasai move their herds again to prevent overgrazing of the highlands.

Unfortunately, this harmony between the Maasai and their land is now being threatened by the efforts of the Kenyan and Tanzanian governments to bring the 20th century to the Maasai. Many of the highlands the Maasai once used for grazing have been taken over for agricultural development and are now used for growing crops. The Maasai must now begin to use the lowlands during both the rainy season and the dry season. If this trend continues for very long, there will be no grass at all on the lowlands, and large sections will become desert. Without an available supply of grazing lands, the Maasai will be forced to give up their way of life. This will lead, as it has for many other societies, to the disintegration of the Maasai as a group and the loss of their culture.

CONTINUED
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Hopscotch Comedy In Fine Tradition

The merit of *Hopscotch* (playing locally at the Esquire Theater on Colorado Blvd.) is the fine comic performance of Walter Matthau and Glenda Jackson. The sardonic witticisms exchanged between Jackson and Matthau are reminiscent of those tossed about by Myrna Loy and William Powell in the Thin Man movies.

Walter Matthau is a disgruntled ex-CIA agent who decides to get back at his boss and the Establishment by publishing an exposé of CIA bumbblings. Washington is naturally a little upset and starts to track him down. Moscow is also interested in a CIA agent's memoirs and begins its own search for Matthau. But Matthau, with help from Glenda Jackson (another ex-spy) manages to skilfully elude his pursuers in an antic-filled chase around the world.

The excellent teamwork of Glenda Jackson and Walter Matthau combined with the pleasure of watching authority figures appear foolish makes *Hopscotch* a very enjoyable film.

—Lisa Grenier

BRIDGE

WEST DECLARER
NORTH-SOUTH VULNERABLE

NORTH		EAST	
♠ J 5 2	♥ 10 7 4	♠ 9 7 4 2	♥ 9 6 5
♦ J 9 3 2	♣ J 8 6	♦ 8 7 6	♣ 10 9 2
WEST		EAST	
♠ 10 8 3	♥ 8 3 2	♠ 9 7 4 2	♥ 9 6 5
♦ 10 5 4	♣ 7 5 4 3	♦ 8 7 6	♣ 10 9 2
SOUTH			
♠ A K Q			
♥ A K Q J			
♦ A K Q			
♣ A K Q			

Bidding:
North East South West
Pass Pass 7NT All Pass

Today's hand is fairly unusual in that North-South had all the points and East-West had none. As the dummy laid his hand down, East screamed bloody murder while West merely gaped. As South started winning trick after trick, East and West were observed to grow more tense. As South won his twelfth trick, East pulled out a .38 and placed two dum-dummed bullets in South, mingling his atoms with the living room's.

Moral: Smith & Wesson beats four aces.

—Tracy Furutani

Quakes

FROM ONE

Dogs are best at sensing odors from released gases. Still other creatures can detect high frequency sound from fracturing rocks.

These abilities have little or no survival value in an earthquake. The animal must be reacting to some other perceived threat, and understanding what stimuli it is responding to can be difficult. If it can be done, though, it will be a great step forward, because instruments can be made to reproduce these forewarnings. Unfortunately, the only way to test the animals is to wait for an earthquake to hit. But if you see everyone pouring out of Mudd with panic-stricken faces, and there is no fire, be warned.



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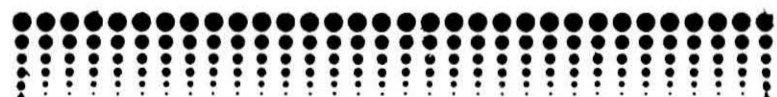
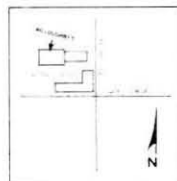


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Dinner	Monday-Saturday	5-9
Happy Hour	Monday-Friday	4-7
Entertainment	Tuesday-Saturday	9-1 ³⁰

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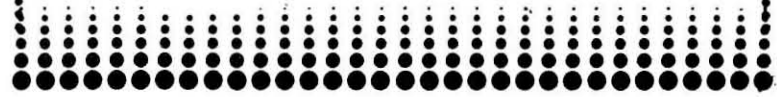


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Tech to Debate

By Dave LePoire

The Caltech debate team, in its second year of modern existence, is busily pursuing victories. The CEDA debate league topic now is: Resolved—Protection of the natural environment is more important than satisfying U.S. energy demands.

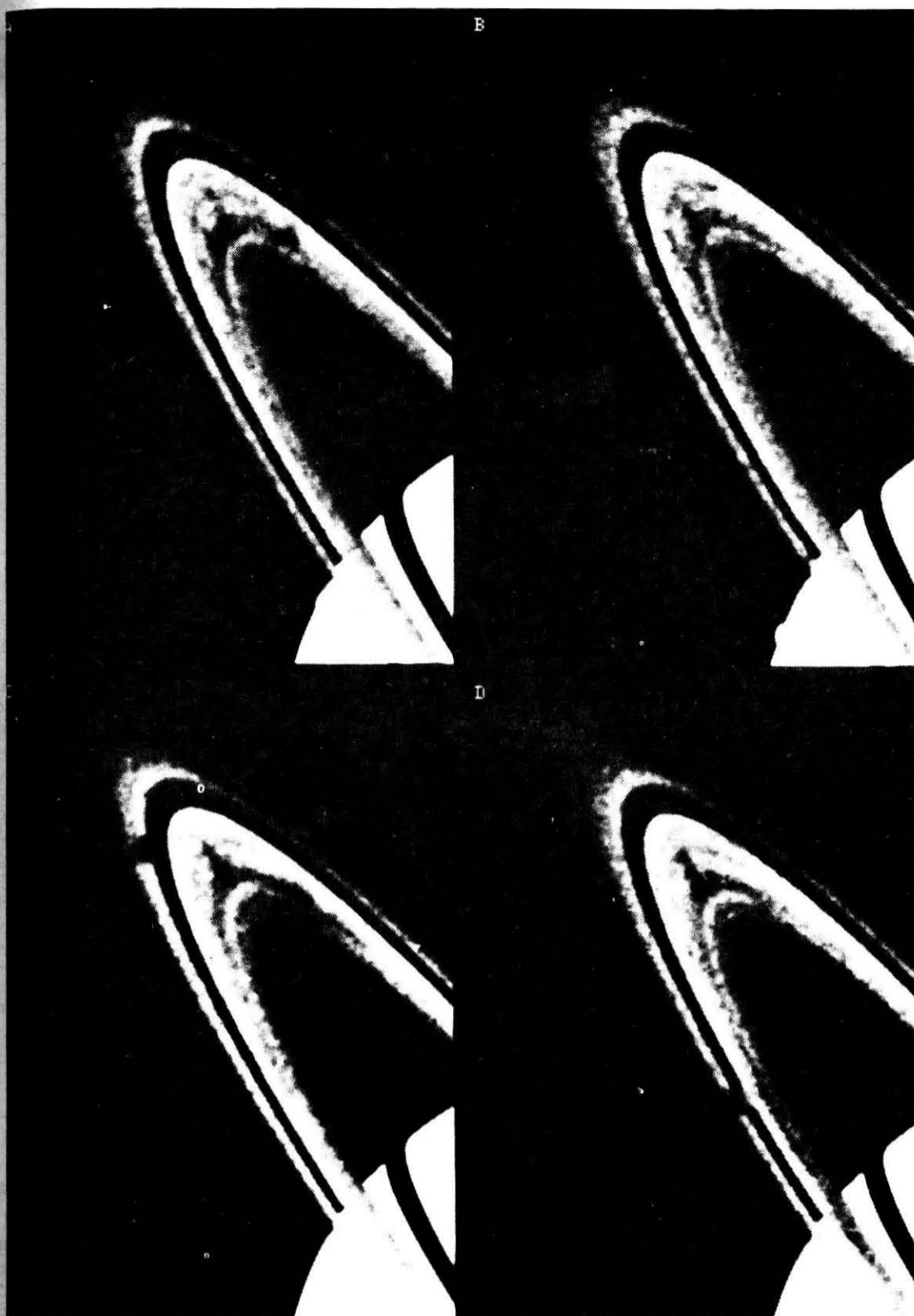
Caltech takes the approach on the Affirmative side that use of coal is the wrong value. They argue against the status quo policy of doubling coal production in the next few years. They state that as much as half of the air pollution is due to coal burning. Using a study that relates air pollution to deaths, they conclude that their plan could save 70,000 lives. Another detrimental effect they quote is the warming of the atmosphere by CO₂.

Other Affirmative teams, that have to be refuted by the negative team, argue conserva-

tion, nuclear energy, coal, petroleum, toxic wastes, and philosophical approaches to energy. The teams are usually from the west, such as UCLA, USC, CSU-Northridge, UC Berkeley, and USAF.

The teams have gone to many tournaments, and among the highlights have been: Dave Sahnaw and Michael Terepka taking 3rd place at Cal State L.A., and Wally Walters and Jeff Lavallaro going 5-3 at Berkeley. Upcoming tournaments are at UCLA and the Air Force Academy.

There will be a new topic for the second half of the year, but it will be announced sometime near Christmas. For those interested, the Caltech debate coach is Richard Kirkham (who is also an assistant coach at USC), and he can be found in 231 Baxter.



Taken on October 4th and 5th from a distance of about 51 Million kilometers, these photos from the Voyager 1 flyby reveal one of the most enigmatic results from the recent flood of Saturn data. These 'Ring Spokes', as they are called, are ephemeral features which last only about 3 hours, and have so far eluded explanation.

Photos courtesy Caltech/JPL

FROM BERLIN AN ART GALLERY PROGRAM TO CELEBRATE THE LOS ANGELES BICENTENNIAL BERLIN LOS ANGELES THE ART GALLERY PROGRAM.

During the Berlin/LA 200 Festival a number of leading art galleries in the Los Angeles area will feature Berlin artists.

For specific viewing hours, please call the respective gallery. Admission Free.

Stephen White's Gallery, 835 No. La Cienega, L.A., Tel: 213/657-6995. Photography by Hans W. Mende.

Stage One Gallery, 420 W. Chapman Ave., Orange, Tel: 714/639-8560. Paintings by Laszlo Lakner; Silkscreens by Barbara Nemitz; Sculptures by Jakob Mattner.

Mirage Edition Gallery, 1662 12th St., Santa Monica, Tel: 213/459-3017. Etchings by Günter Grass.

M.M. Shinno Gallery, 5820 Wilshire Blvd., L.A., Tel: 213/935-1010. Printmaking by Kunito Nagaoka.

Los Angeles Institute of Contemporary Art, 220 S. Robertson Blvd., L.A., Tel: 213/559-5033, Wolf Vostell Conceptual Performance.

Janus Gallery, 8000 Melrose Ave., L.A., Tel: 213/399-9122. Paintings by Raimund Girke.

Gallery West, 107 S. Robertson Blvd., L.A., Tel: 213/271-1145. Paintings by Andreas Brandt.

Gallery "Untitled", 8899 Beverly Blvd., L.A., Tel: 213/275-7473. Paintings and drawings by Peter Ackermann. Paintings by Brigitte Hein und Peter Grämer.

For further information call the Berlin/LA 200 Information Office: 213/627-3731

This is an endorsed Bicentennial project.

This program is subject to change without notice.

"Enjoy! Berlin's birthday present to L.A., was meant for everyone of us to share, savor and remember." — Werner Klemperer, host and spokesman Berlin/LA 200 Festival.



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Human Rights

FROM THREE

students speaking about past abuses in their native countries and how these abuses are continuing today in spite of what "advances" seem to have been made.

Oppression of human rights in the U.S.S.R is well-publicized to the average American. It means repression of national groups, religions, dissident intellectuals, and other individualists who pose a threat to the current communist regime. The means used to subdue these "threats" to the Soviet Union may not be as well-known to the average American as are the "threats". There are no trials for some of the accused. Instead, they are deemed "mentally unfit" and are sent off to psychiatric institutions where "proper treatment" may be administered.

The abuse of human rights in Uganda is also well-known to the average American. This East African state attracted world-wide attention when it was ruled by the dictator Idi Amin. His atrocities were well-documented and included, according to an Amnesty International report, the killing of about 300,000 citizens. About 18 months ago, Amin was overthrown following a war with neighboring Tanzania and the world community breathed a sign of relief. However, the abuse of human rights did not stop when Amin was deposed. Today, the chaos and brutality continue, although in a less obvious fashion. What originally appeared as random acts of violence are now beginning to

assume a familiar pattern. Although the post-Amin murders may not be on the same order of magnitude as under Amin's rule, we still find other severe abuses of human rights besides the abuse of the right to life. The protection of human rights in Uganda is particularly important now as the first free elections since the early 1960's begin to take form.

Presently, two of the four major political parties in Uganda are threatening to boycott the upcoming election. The controversy surrounding this incident deals with the official voting procedure. As it now stands, the method of voting is to place a voter's ballot into a ballot box specifically marked for each candidate. The parties threatening boycott feel that

this voting procedure unnecessarily leaves a voter open to the threat of intimidation.

So that's what the program will be about. Don't just go on to the next article and totally forget about this event. Mark it on your calendar. And make it a point to be there—Winnett Lounge at 8:00 pm on December 3, 1980, Caltech's Human Rights Day.

Work-Study

Just a reminder about college work-study jobs—see Mrs. Rea Jensen in the Placement Office, Room 8, Dabney Hall for further information.

FROM BERLIN A FESTIVAL OF EVENTS TO CELEBRATE THE LOS ANGELES BICENTENNIAL

BERLIN LOS ANGELES

NOVEMBER 23

Realism and Expressionism in Berlin Art. A showing of paintings by seven contemporary Berlin artists: Alexander Camaro, Barbara Heinisch, Max Neumann, Wolfgang Petrick, Walter Stöhrer, Fred Thieler and Klaus Vogelgesang and by artists of the twenties such as Max Beckmann, Otto Dix, Conrad Felixmüller, George Grosz, Erich Heckel, Hannah Höch, Carl Hofer, Ernst Ludwig Kirchner, Jeanne Mammen, Max Pechstein, Rudolf Schlichter and Karl Schmidt-Rottluff. UCLA Wight Art Gallery, Nov 23-Jan 11. Open Tues-Fri 11 AM-5 PM. Sat & Sun 1-5 PM. Admission Free.

Kreuzberger Streichquartett. Berlin's renowned string quartet, winner of many international competitions. Occidental College Bird Hall. 3 PM. Tickets \$5 (\$3 students).

Rias Kammerchor in Concert. UC Irvine Concert Hall. 4 PM. Tickets \$5 (\$4 students).

Oskar Schlemmer & Tanz. Works by the famous Bauhaus choreographer Oskar Schlemmer. Musical accompaniment by the No-Set Ensemble. UC Irvine Village Theatre. 8:30 PM. Tickets \$5.

NOVEMBER 24

Kreuzberger Streichquartett. UCLA Schoenberg Hall. 8:30 PM. Tickets \$6 (\$4 students).

Oskar Schlemmer & Tanz. Cal Institute of the Arts. Nov 24, 25, 26. 9 AM-5 PM. Admission Free.

Catherine Gayer, Vocalist. The international opera star in her own one-woman "cabaret" act. USC Bing Theater. 8 PM. Tickets \$5 (\$2 students).

Musicalische Compagny. UC Irvine Village Theatre. 8 PM. Tickets \$5 (\$4 students).

The Current Berlin Literature Scene. USC Schoenberg Institute. 9:30 AM-5 PM. Admission Free.

NOVEMBER 25

Kreuzberger Streichquartett. UC Irvine Concert Hall. 1 PM. Tickets \$5 (\$4 students).

L.A. County Museum of Art Concert Series. Leo S. Bing Theater. 8 PM. For ticket information call: 213/937-4250.

Oskar Schlemmer & Tanz. Cal Institute of the Arts. 9 AM-5 PM. Admission Free.

Christiane Edinger, Violinist. This much acclaimed classical soloist appears in recital accompanied by Gerhard Puchelt. USC Schoenberg Institute. 8 PM. Tickets \$5 (\$2 students & senior citizens).

NOVEMBER 26

Siegfried Palm, Cellist. A solo appearance by the highly acclaimed German cellist. L.A. County Museum of Art Concert Series. Leo S. Bing Theater. 9 PM. For ticket information call: 213/937-4250.

Oskar Schlemmer & Tanz. Cal Institute of the Arts. 9 AM-5 PM. Admission Free.

Berlin: A City in Search of its Future. This exhibit and multimedia presentation provides, in addition to a historical view, an insight into the life of Berliners past and present, with urban development forming the background and with particular emphasis on post-World War II reconstruction. Cal Museum of Science & Industry. Nov 26-Mar 21. Daily 10 AM-5 PM except holidays. Admission Free.

Berlin's Protection Powers—Americans in Berlin.

This exhibit provides information on the Protection Powers—USA, Great Britain and France and their friendly relations with the City of Berlin and her people. Approx. 12,000 allied troops live in Berlin (West) among them 6,600 Americans who call this city their second home for a certain period of time. With all family members included, the American community numbers 15,000 people. Cal Museum of Science & Industry. Nov 26-Mar 21. Daily 10 AM-5 PM except holidays. Admission Free.

DECEMBER 1

Free Music Production. Berlin's leading exponents of "Free Jazz." Residency Program. Cal Institute of the Arts. Admission Free.

Hans Scharoun Architectural Exhibit. A display of photos and architectural renderings of Berlin's pioneer of model housing. USC Fisher Gallery. Dec 1-19. 12 Noon-5 PM. Closed Saturday & Sunday. Admission Free.

DECEMBER 2

Free Music Production. Residency Program. Cal Institute of the Arts. Admission Free.

DECEMBER 3

Free Music Production. Residency Program. Cal Institute of the Arts. Admission Free.

DECEMBER 4

Free Music Production. UCLA Schoenberg Hall. 8:30 PM Tickets \$6 (\$4 students).

Gruppe Neue Musik. UCLA Royce Hall. 12 Noon. Admission Free.

DECEMBER 5

Triadisches Ballett. Performing the "Triadic Ballet" dance as silhouetted through unique costumes and sculptural movement. UCLA Royce Hall. 8:30 PM. Tickets \$9, \$8, \$6 (\$4 students).

Gruppe Neue Musik. This 17 member ensemble is the foremost contemporary classical music group in Berlin. Claremont Colleges Garrison Theater. 8 PM. Tickets \$5, \$3.50 (\$2 students).

DECEMBER 6

Triadisches Ballett. UCLA Royce Hall. 8:30 PM. Tickets \$9, \$8, \$6 (\$4 students).

Gruppe Neue Musik. Occidental College Thorne Hall. 8:15 PM. Tickets \$5 (\$3 students).

DECEMBER 7

Triadisches Ballett. UCLA Royce Hall. 8:30 PM. Tickets \$9, \$8, \$6 (\$4 students).

Gruppe Neue Musik. UC Irvine Village Theatre. 8 PM. Tickets \$5 (\$4 students).

DECEMBER 8

Gruppe Neue Musik. L.A. County Museum of Art. Monday Evening Concerts. Leo S. Bing Theater. 8 PM. Tickets \$5 (\$3 students & senior citizens).

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FOR INFORMATION

about specific events, call the host location:
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Claremont Colleges714/621-8032
Los Angeles Museum of Art213/937-4250
Occidental College213/259-2737
UC Irvine714/833-6378
UCLA213/825-9261
USC213/743-7111
and
All Mutual Ticket Agencies213/627-1248

For further information call the Berlin/LA 200 Information Office: 213/627-3731.

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"The biggest birthday present ever is this one, from Berlin to L.A. It comes from the heart—take it to yours!" — Werner Klemperer, host and spokesman Berlin/LA 200 Festival.



MORE SPORTS THAN YOU WANT

Caltech Beats MIT Again

Caltech Ju Jitsu Club Kicks

By Mark Maier

On Saturday, November 15, the Caltech Ju Jitsu Club entered its first competition. The two teams entered were Leif Bennett and Andy Liu in the black belt division, and Mark Maier and Darrell Schlom in the green belt division. Ju Jitsu is the old Japanese combat art from which the sport of Judo was derived.

The contest, held in Chatsworth Park, was the Southern California Ju Jitsu Association's fall Kata contest. In a Kata contest a two-man team performs in front of a panel of judges. The judges grade each team according to the form and technical proficiency with which the techniques are carried out. In the higher ranking divisions contestants are required to perform more difficult techniques.

In the green belt division, Mark and Darrell performed well in their first competition and finished in the middle of the pack. For veteran competitors Leif Bennett and Andy Liu, however, success was in the air.

As the black belt division began, the anticipation of the spectators made the head judges call for silence. Leif and Andy's performance did not disappoint the crowd, and when it was over, it was evident that the other black belt teams were going to have a hard time overcoming their lead. In spite of excellent performances by the other black belts, Leif and Andy remained in the lead and won the black belt division.

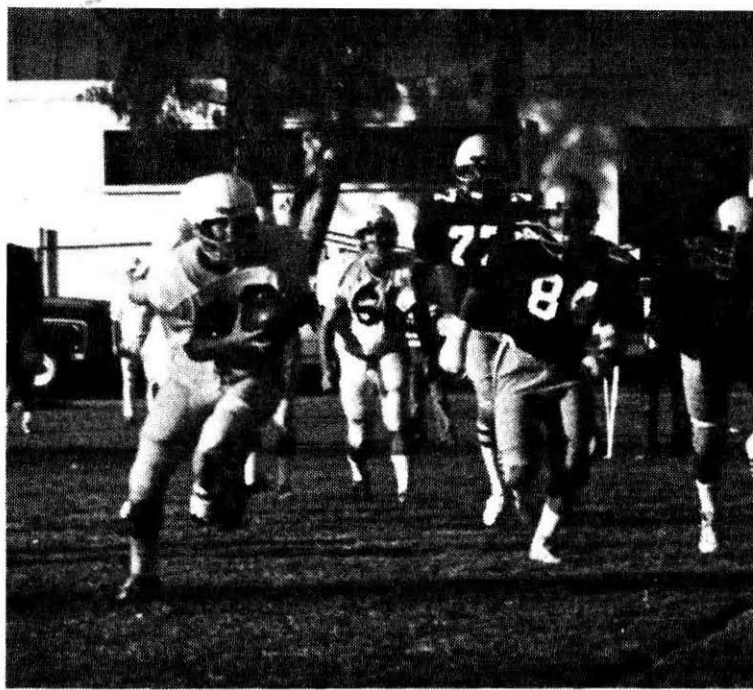
The competition was enjoyed by all entrants, and future contests are awaited. Anyone who wishes to join the Caltech Ju Jitsu Club should come to the gym on Sundays at 2:00 in the afternoon when it has its regular workouts.

By Lee Sunderlin

The Caltech Beavers beat the Mexicali Institute of Technology Spartans, 26-20, to close out their football season with a second win. The see-saw game, attended by a relatively large crowd (because of free drinks), was probably the most exciting game of the year. In the words of a fan, "I haven't seen a game like this since junior high school."

Mexicali scored first on a pass by a halfback. Caltech then ground down the field to tie it, 6-6. Mexicali scored again, but Tech took the lead at halftime, 14-13, with a touchdown and a two-point conversion. Caltech widened the lead to seven, but MIT tied the game, 20-20, at the end of the quarter. Fortunately, the Beavers quickly retaliated, and held on to win.

The bonfire that night went off without any problems, but the fire department was well prepared and quickly put it out. The only altercation occurred afterwards. About 50 students were marching down a street when a car bulldozed its way through them. Some



Caltech handily beat Mexicali Institute of Technology, 26-20, but looked forward to real competition at the bonfire Saturday.

students pounded on the car as it went through. The somewhat drunk driver, angered at feared damage to his new car (there was none), got out and punch-

ed several students. The cooler heads prevailed and the Techers withdrew, but the man's car doors had somehow gotten locked in the meantime,

and his keys were inside.

Other than that, good moods prevailed. The police and firemen were cheered as they carried out their duties. The diversion was marked by unusual political chants, such as "nuke the whales" and "increase federal spending." It is to be hoped that future bonfires will have as little student-authorities antagonism.

The team was enthusiastic over the win. Steve Martin said, "It was fun, exciting, and adventuresome—just like *Lost in Space*." A player who asked not to be identified exclaimed, "It was everything my mother wasn't." The entire coaching staff was thrown into the pool in celebration, along with much of the team.

The game was won on a team effort. Curt Trimble did much of the rushing; Terry Thomas, coming off an injury, also led the offense, and scored two touchdowns. Dan Pernich, Scott Bloom, and Tim Brazzy played well, too. The only weak spot was the kicking team, but it came through when it had to.

Pucksters Press PJC

By Grant T. Yokum

Last Sunday night Pierce Junior College ventured to Pasadena to challenge the Caltech Pucksters in the first contest between the two teams this season. At the opening face-off Pierce had only four skaters and one goalie. Normally five skaters are on a side. The Beavers, thinking this to be an easy win, skated lethargically and were soon put to shame as they found themselves behind 4 to 1 at the halfway mark. Suddenly awakening to the hard cruel fact that this was a hockey game and not a picnic, the Beavers rallied in the space of ten minutes to end the second period in a 5-5 tie.

The hard-fought third and final period remained scoreless until John Christenson flicked in his second goal of the evening. Undaunted, Pierce retaliated with a score in less than 40 seconds. After a short

rest Christenson attacked again. This time, after drawing two defenders to him, John neatly passed to Andy Gellman who rifled the winning goal into the net. The icing on the cake came with only 30 seconds remaining in the game when Louis LaMarche scored on an open net. Louis, a French Canadian, shouted his entire English vocabulary, "I take de puck! I shoot de puck! I score de goal!" Thus ended the 8-6 win for Caltech and marked the Pucksters' first victory of the '80-81 season after suffering a defeat at the hands of Valley J.C. and a tie with U.C. Irvine.

Other items of interest include:

1) Norm Bobroff, who missed the game due to his casual *handling* of hydrofluoric acid, was replaced by Sanford Krasner on the Veteran line (known as the "Vets") which includes Andy Gellman and

John Christenson.

2) The Vets accounted for 5 goals against Pierce and is the team's most productive line so far this year.

3) The scoring Sunday was rounded out by Eric Chael and Steve Percy.

4) Fred Culick, the father of three, forgot his cup and missed the first period of play when he returned home to retrieve it.

Well

FROM THREE never stands still. There's always about two or three stereos playing some good music; however, don't get the idea that all the music distracts us from what we're doing. Right now, in fact, my roommate is playing some Pink Floyd, its really great to tranquilize jangled nervss Ahhhhh...(Sorry-I don't have a roommate, that's just someone from across the hall.)

Lastly, we're all great friends, so there's a certain amount of social drinking done, but it's all in good taste. (At least, I think that a keg a week is an obvious indicator of high sophistication, not to mention other indications of highness.) In fact, I was really shocked when some cops tried to detain us for singing beautiful madrigals to San Marino and carrying our mugs with us. You'd think that at four A.M. the cops wouldn't be so unreasonably abrupt, but they actually offered to take us away from Tech in their car; naturally we accepted, since getting away from Tech for

short periods is not totally unwonderful.

Well, there's a party going on up the hall, and I want to catch it before the smoke dissapates, so I'll quit now. 'Bye!

—the realist
(incorrectly branded J.R.)

P.S.: Send some money, please?

Rah Rah

A meeting for all people wanting to cheer for basketball will be held on Monday, November 24th, in Rm. 65 of Fleming, at 4:30 pm.

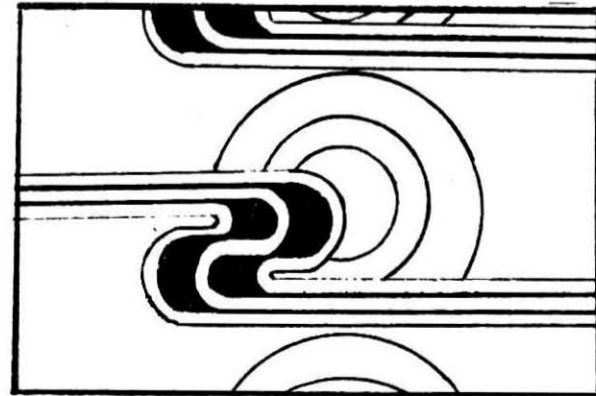
A LIT-tle Error

Lit 130b was inadvertently omitted from the preregistration list of courses for the second quarter. The course will be taught by Professor Splitter in conjunction with Psyc 101. Course credit may be applied to the 108-unit HSS requirement, but not the 27-unit Humanities or Social Science requirement. The course will consist of an intensive study of major nineteenth and twentieth century works of fiction—by Dostoevsky, Proust, and Kafka—from a psychoanalytic point of view. With background reading in psychoanalytic theory.

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Gallery Fragments

On Tuesday, November 25, there will be an informal talk with Director Michael Smith on the subject of "What is Baxter's Role in the Southern California Art Community?" If you have any questions or answers on this subject, bring them to the Baxter Art Gallery at noon, along with your lunch.

Sea Hunt

Dr. Heinz Lowenstam (363 Arms, x2136) is looking for volunteers who would like to help him search for *monoplacophora*, a rare primitive mollusk living on the ocean bottom off the California coast. He's leading a five-day research cruise aboard the 110-foot *Velero IV* from Monday, Dec. 1, through Friday, Dec. 5. Don't miss this interesting opportunity to escape from Tech, and breathe some fresh sea air.

∇×Fe

I still have a curling iron that I brought back from frosh camp for one of the frosh girls. Come to room 42 Ricketts to get it back. (Leave a note if I'm not in.)

Soccer

Practices for the women's soccer team will be 5 days a week from 4-6 pm and start in January. An organizational meeting was held last week; if you are interested in playing and didn't get a note for the meeting, please contact Sue Fuhs (leave a note in the Fleming OC box), or the Athletic office.

Italians Eat Sauerkraut

What would have happened to the Italian fleet if Mussolini had defied Hitler? The Caltech Gamers answer this question Saturday night with another naval miniatures encounter. As usual, the game is in Dabney Hall Lounge at 7:30 pm. We are always looking for new players.

De Kárnán Fellowships

Eighteen fellowships of \$2500 will be awarded in the 81-82 academic year to students enrolled for study in the United States. Students in any discipline, entering their senior undergraduate year, or third or more graduate year, are eligible. Deadline for applications is January 31, 1981. For more information contact Linda Berkshire (x2280) in Financial Aid.

Nyet Strelai, Tovarich

The Caltech/JPL Russian study group seeks a native speaker of Russian willing to contribute at least one night a month to help in Russian conversation, pronunciation, usage, etc. No teaching experience required or formal knowledge of Russian/English grammar needed. Person can speak entirely in Russian. This is an excellent opportunity for an exchange of conversational skills for an interested emigre. This group meets on Wednesday evenings, 7-9 pm, in the Steele Lab conferenc room 110. Transportation to and from Caltech will gladly be provided. For further information, please call Larry Mak (JPL 57-5090) or Kate Baker (Caltech 2341).

GDG Potluck

The Caltech Gay Discussion Group will participate in a potluck dinner with the PCC Gay Student's Union at 7:30 pm, Friday, Nov. 21, at 92 N. San Marino Ave. There will be no regular meeting. Contact Greg Hullender(210 Lloyd, 578-9166) or Ken Campos(341 S. Holliston, x2828) for more details.

Off-Campus Jobs

House sitters—get away from it all...occasional weekends.

Robot developer...students to repair computer games...10 hours per week...\$20 per call.

Telephone receptionist and billing in law office, 20 hours per week...\$5 per hour.

Research assistant in new company...part-time work involves isolation of gamma globulin and albumin from plasma of different animal species. Experience in chromatography, gel filtration, electrophoresis and immunoelectrophoresis required. Flexible hours...\$7 per hour.

Xmas job...telephone sales of Christmas gift certificates...work at home or in office...flexible hours...paid by sales.

If any of the above job opportunities interest you, call Ruth Turpin immediately, x2362.

Royal Invitation

The Caltech Y has 15 tickets for the Los Angeles Kings vs. New York Islanders hockey game to be held on December 6 at 7 pm at the Forum. Transportation will be provided by the Y and the tickets will cost \$5.50 each. Sign up for the ticket lottery

Batter Up

There will be a meeting of all prospective baseball players in the lecture room of the Caltech gym on Tuesday, Nov. 25, at 4:15PM. All people with previous baseball experience are strongly urged to attend. Coach Preisler would also like to invite anyone without experience but who is interested in playing baseball and all potential managers and statisticians to attend this meeting.

A Proof:

Given: *Without her, I am nothing;*

ME - SHE = 0

ME = SHE

M = SH

The identity, *IT = IT*, implies,

MIT = SHIT

QED
 - Gary Oberbrunner, MIT

Maasai

FROM FOUR

Mr. Saitoti recognizes that the Maasai must change and can no longer live apart from the rest of the world. However, he believes that this can be done without endangering the Maasai way of life. For instance, the money now being used for agricultural development could be diverted to the Maasai to help them to improve breeding techniques and increase the size of their herds without harming the land.

These extra animals would constitute a source of food for the rest of the country, in the form of meat and not grain. Mr. Saitoti pointed out that in this way, the harmony between man and nature would continue. The government's plans for crops necessitate that the wild animal be driven away, while according to Mr. Saitoti's plans, wild and domesticated animals would live side by side as before. Given the number of animal species threatened with extinction, and the small amounts of land left for them to live on, it becomes apparent that Mr. Saitoti has the right idea.

Happy Thanksgiving

Saturn

FROM ONE

kinds of hydrocarbons, and the whole is topped off with a photochemical smog.

(Of course, all this is being done by Saturn to welcome Voyager. The record pattern in the rings is in recognition of the gold record that Voyager bears as a gift; the smog is to make it feel at home.)

The other surveyed moons may be no more complex than balls of frozen water. They seem to be 10 to 100 times less massive than the Jovian satellites; their density ranges from 1.1 to 1.4 grams per cubic centimeter (1.0 g/cm³ being water). All, except Enceladus, show evidence of massive impacts on their surface and no eroding force to smooth them out. The exceptional moon is relatively smooth, indicating that something may have caused its icy surface to melt, removing any such features.

Voyager's additions to the list of satellites include two

"sheepdog" moons, who appear to orbit just inside and outside the very thin "F" ring. They may serve to keep particles in the ring from escaping out into space or dropping down into the lower rings. The fifteenth moon orbits a scant 500 miles outside the border of the "A" ring, and may play a similar role.

Voyager 1 followed a trajectory past Saturn that took it below the ring plane before pericronon, and then arcing back above it and away. Its remaining task is a simple one: to monitor solar particles, in order to determine where the sun's influence ends and the stars take over. In other words, to find the effective boundary of the solar system.

Voyager 2, the probe's sister ship, will have its encounter with the Ringed Planet in August 1981. Its trajectory should allow a better look at some of the other moons before it passes Saturn and heads for a 1986 rendezvous with Uranus. If it continues to function beyond this point, it will be able to send data from the vicinity of Neptune in 1989.

Quasars

FROM ONE

an arc-second (the angle subtended by a human hair at fifty miles), another smaller, yet as precisely defined jet of matter was seen coming straight out of the core in the same direction as the larger streamer. The energy emitted was calculated at approximately 10⁶¹ ergs, equivalent to the energy released by the complete an-

nihilation of 100 million suns. Dr. Readhead postulated that these effects (the narrowness of the streamer, the smaller jet, and the incredible energy) could be explained by a rotating black hole of around one billion solar masses.

The slides illustrated the ideas of the lecture quite well, giving the overall impression of a fairly well organized and enlightening lecture.

The next in the series of Watson Lectures will be "The Recombinant DNA Revolution", given by Dr. Norman Davidson, on December 10, at eight p.m.

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