

*The Seduction
is Over*

The CALIFORNIA Tech

*The Rape
has Begun*

Volume LXXX

Pasadena, California, Friday, October 6, 1978

Number 3

Trans Solar Pipeline?

Oil! On Mars?

The mysterious network of river-like channels on Mars, discovered by the Mariner and Viking missions, may have been cut by massive flows of liquid hydrocarbons, a Caltech planetary scientist has proposed.

Such a vision of rivers of oil on the red planet may seem far-fetched. However, according to Assistant Professor of Planetary Science Yuk L. Yung, the theory has advantages over the current majority view that the channels were caused by flows of water. For one thing, Mars is far too cold at present for water to exist as a liquid, and advocates of the water-theory have difficulties postulating a much warmer climate in Mars' past. At even the present cold Martian temperatures, according to Yung's calculations, hydrocarbons would flow like water, and would easily evaporate and condense into hydrocarbon rain. Yung and Joseph P. Pinto, a graduate student at the Goddard Institute for Space Studies, published the theory in a recent letter to the British science journal *Nature*.

Yung's theory is based on the postulate, accepted by many scientists, that Mars' atmosphere, as with earth's, was once a "reducing" atmosphere dominated by carbon in the form of methane, rather than carbon dioxide as in today's "oxidizing" atmosphere. The assumption of early reducing atmospheres on all the planets allows a more uniform picture of the evolution of the solar system, in which all the planets condensed out of the see OIL: Page 2, Col. 3

The Coming Coronation

by Michael Kurilla

Coming at the end of this month will be a rare event in Caltech history. On Friday October 27 Dr. Marvin (Merf) Goldberger will become the new president of Caltech, filling the vacancy left by Harold Brown.

The festivities will begin the evening before on the 26th with a special dinner for the trustees and the faculty. Following the dinner, there will be a jazz concert on the Atheneum lawn. The concert was requested by Dr. Goldberger for the undergraduate and graduate students. It should begin about 9:30 pm. The music will be performed by the Benny Carter Band.

The inaugural ceremony will begin at 10:30 am on Friday the 27th. It will begin with a procession of trustees, faculty, representatives of universities, and learned societies from around the world. The presiding officer for the ceremony will be R. Stanton Avery, chairman of the board of trustees. There will be two selections sung by the



Read the article. Nuff said.

Photo: Joe DiGiorgio

Back at Tech for the Sixth Year

The Belly Dancers!

by Karen Pickens

"Bellies" of all shapes and sizes appeared on the quad last Friday at noon.

For the last six years the Diane Webber Belly Dancing Troupe—The Perfumes of Araby—has been performing at Caltech. This is a professional group that has been together for 10 years.

The crowd filled the quad and waited patiently as musicians took the stage with such instruments as violins and drums. They wore black veils and robes, or colorfully striped tunics.

Onlookers perked up immediately as the dancers appeared, wearing harem pants and glittering tops. The incense burner was ceremoniously presented and the dancing began.

A variety of dances were presented including a snake dance, a sword dance, a veil dance, a candle dance, a dance

performed while balanced on glasses, and a complete solo routine. A number of dances with special beats were also included.

The audience seemed to enjoy "Bellies" greatly, especially one male member recruited to help a dancer in distress balance on her upended glasses, and the *Tech* editor who barely missed a kiss from the soloist. [Damn it! Missed again.—ed.]

Members of the troupe are serious about their dancing. It takes from 6 months to 6 years to learn to belly dance. Many have other jobs, however. Among them are a legal librarian, a rehabilitation therapist, three mothers, and several students. Most dance professionally two or three nights a week. One member mentioned dancing for a private party at Caltech, for a group of professors.

Those who want to see more of "Bellies" can find them at the Pumpkin Festival. This is a Renaissance Faire type of event with a western motif. Groups of many kinds can be seen wandering around the fair performing.

The Pumpkin Festival is in Sylmar where the 210 freeway and the Golden State (15) cross (take the Yarnell offramp). It will continue every weekend until October 29. "Bellies" can be seen at 2:15 pm.

Those who want to join in can learn belly dancing at Every Woman's Village in the San Fernando Valley. Many other types of classes are offered, including other types of dancing, and writing. For information call 787-5100, or write Perfumes of Araby, c/o Diane Webber, P.O. Box 9204, Marina del Rey, CA 90921.

Tech Runners Still Win Big

by Thor Feat

A fired-up Caltech cross-country team exploded to a fast start and held on for resounding victories against SCIAC rivals Redlands and Whittier. Caltech's depth won the day as five Beavers beat archrival Whittier's third runner, winning 22-35. Home team Redlands was never in contention, as Tech beat them 17-45.

Caltech started off fast and ran together. Half a mile into the race Tech's first five runners were within twenty feet of each other. They hung together as Whittier's second runner fell back at the mile mark. Caltech's pack then held on to win the race without losing position. Whittier's Forthoffer blazed ahead to an individual victory, running the 4½-mile flat course in 23:46. Then Rob Bourret, Glen George, and Rich Holmes finished 2-3-4 in 24:38, 25:01 and 25:18 respectively. Bill Gould finished seventh in 25:41, and frosh Randy Field viciously out-kicked Whittier's Vartanian to finish eighth in 26:01. Sophomore Eric Korevaar finished 10th in 26:39, and freshman Brian McLain finished 14th in 28:44 to round out Caltech's top seven.

This double win boosted Caltech's record to 7-2. The coach and team are excited. "This is the best team we've had in recent history" said Coach Leroy Neal. "This year we have six people running faster than our third man did last year!" exclaimed Gould.

Also, this year Caltech has a women's team. Frosh Camilla Van Vorhees and Susan Gardner finished sixth and tenth in the women's race. Apparently another girl is trying out, so Caltech will soon be a force to be reckoned with in women's cross country.



President Goldberger and President Beausoleil (with bottle) talk at recent Y event. Story on Page 10.

Random Numbers

Clowns & Critics

Well, I finally found something worthwhile to write in Chemistry lecture (Oops—I shouldn't say that, should I?) Chemistry is the hungriest class of all. It meets right before lunch. You can hear the stomachs of Caltech roaring at 11:45 clear up in Altadena. If that isn't proof that stomachs are masochists, then I don't know what is. The roars are almost as loud as the moans afterwards. Never before have so many suffered so much because of eating so little. (My apologies to Winston Churchill.) Seriously, Food Service isn't that bad. After all, it could be worse. All it takes is a little imagination, a vivid little imagination, that is. Mainly, it is just that there is so little else that you can think of to pick on just before lunch. However, so long as we're airing gripes, the social life around here is "the pits". I had no idea that 9 to 1 was such a large discrepancy. But before you guys all go off feeling sorry for yourselves, think how the girls must feel. I have yet to see a conversation group where there is more than 1 female and fewer than 15 guys surrounding her. Of course I exaggerate, but still... I know that I may go batty from loneliness but it could get very

tiresome to be constantly surrounded by members of the opposite sex. So much so that, (Heaven forbid) you could become disgusted with them in general.

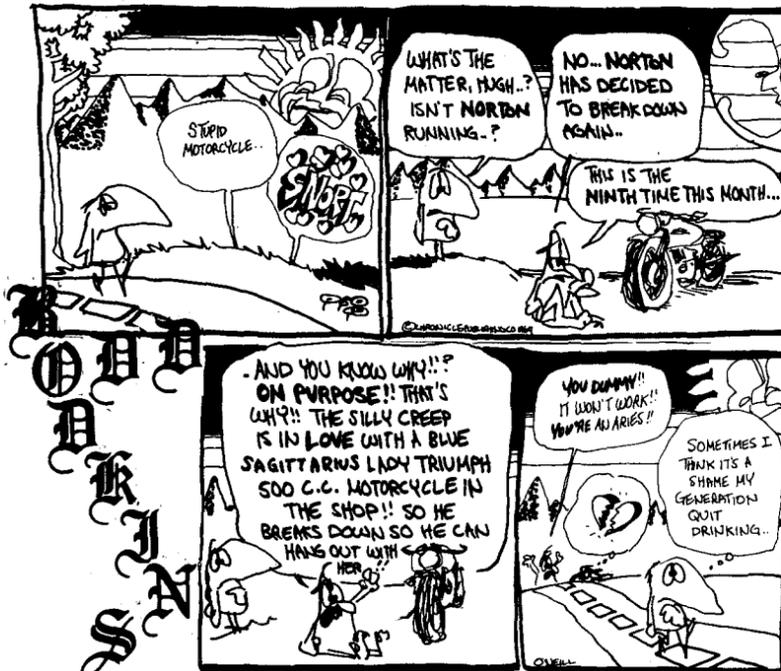
However, this can be a lonely place at times. That sure sounds like a life sentence. And I've only been here one week. What's it going to be like in two months? This column was going to be all happy and cheerful and in general, not terrifically important. That, however, has all changed. I think that it is now time for a social commentary. Friday night, I appeared at rotation dressed as a clown. Now for those people who need reasons for such acts, I suppose you could say it was a celebration of the last real night of rotation. Or perhaps you could say that it was a subtle reminder that people are more than names and numbers in a ranking system. Or maybe it was insanity. But that is not the most important issue here. Reaction is the issue. Most people smiled or laughed while others simply ignored me. Then, there were also some who were rude, impolite, and downright malicious. Whether or not they were aware of their impoliteness I do not know. It is unfortunate that we all often say or do things that have an effect on another see CLOWN: Page 10, Col. 4

OIL from Page 1

same cosmic dust clouds, dominated by hydrogen. An early reducing atmosphere on earth also makes biologists happier, for the formation of amino acids and other basic molecules of life is more easily postulated in a reducing atmosphere.

In a Martian atmosphere of methane, Yung discovered, water molecules, which would be dissociated by sunlight shorter than a wavelength of 2400 angstroms, would tend to rob methane molecules of a single hydrogen atom, producing a chemically active form of methane, called a methyl radical. While most of these methyl radicals would simply find another hydrogen, some would attach to each other, "polymerizing" into chain-like hydrocarbon molecules.

see OIL: Page 3, Col. 3



The View from Outside

Proposition 6

On November 7th, an election is to be held which will determine the fate of a rather misunderstood minority group. Homosexuals have always been subject to abuse by intolerant people. They have been branded with unfair stereotypes which cause them great suffering and inner turmoil. Proposition 6, otherwise known as the Briggs Initiative, is a manifestation of this prejudice in the form of a piece of legislation aimed at not only the rights of gays, but also at rights of those who are sympathetic to their struggle against bigotry.

Proposition 6 is as much the result of political opportunism as it is a product of the

anti-homosexual movement. When State Senator John Briggs from Fullerton decided to run for governor, he was unknown and needed easy publicity. To get it, he launched a campaign against the civil liberties of an easy scapegoat—homosexuals. The L.A. Times of March 28th, 1978 reported, "The trick, he (Briggs) said, is to switch the voters from identification with an emotional issue to a single candidate—himself..." Briggs felt public opinion was on his side and growing in his favor. Recently, gay rights laws have been repealed in initiative measures much like Proposition 6. However, unlike actions in Dade County, Florida; Minneapolis; Wichita; and Eugene; the Brigg Initiative

would actually legislate discrimination.

What exactly does Proposition 6 say?

"Public homosexual conduct means the advocating, soliciting, imposing, encouraging or promoting of private or public homosexual activity directed at, or likely to come to the attention of schoolchildren and/or other employees."

"Factors to be considered by the (school) board in evaluating the charges of public homosexual activity or public homosexual conduct... shall include, but not be limited to... acts, words or deeds of a continuing or comprehensive nature which would tend to encourage, promote or dispose schoolchildren toward private or public homosexual activity or private or public homosexual conduct."

"Upon finding of probable cause, the governing board see SIX: Page 3, Col. 1

CALTECH PRESENTS

SPECTRUM PRODUCTION 17

THE PHYSICISTS

by Friedrich Dürrenmatt

FRIDAYS AND SATURDAYS
OCTOBER 6, 7, 13, 14, 20, 21 8PM
RAMO AUDITORIUM
General Admission \$5.50

America's finest Russian folk group

ODESSA BALALAIKAS

SATURDAY, OCTOBER 7 8PM
BECKMAN AUDITORIUM
\$7.00-6.00-5.00

THE SOLOMONS COMPANY/DANCE

SATURDAY
OCTOBER 28
8 PM

RAMO
AUDITORIUM

Gen. Adm. \$6.50

Tickets at MUTUAL/TICKETRON agencies & CALTECH TICKET OFFICE, 332 So. Michigan Ave., Pasadena (campus ext. 1652). Mail orders to: Ticket Office, Caltech 332-92, Pasadena, CA 91125. Caltech students get 20% off NOW, or can buy RUSH TICKETS at \$2 each at the door, if tickets still available (limit on both offers—2 tickets per student per event).

INFORMATION & VISA/MASTER CHARGE ORDERS
(213) 793-7043

SPONSORED BY THE CALTECH FACULTY COMMITTEE ON PROGRAMS

ASCIT MOVIE

Friday Night
Baxter Lecture Hall
7:30 & 10:00

ASCIT Members 50¢
Others \$1.00
Everyone Welcome

SLAUGHTERHOUSE-FIVE



from the novel by
KURT VONNEGUT, JR.

Next Week: **Casablanca**

The Caltech Y.....fly by

Wednesday, October 11, NOON UPDATE SERIES

Dr. Edwin S. Munger, Professor of Geography, speaking on "Nambia: Peaceful Change or Civil War?" Clubroom 1 in Winnett at noon. Bring a lunch.

Friday, October 13, HARRY AND LESLIE ANDERSON

Masters of Prestidigitation, Mentalism, and Magic. At noon on the Quad.

The CALIFORNIA Tech

Volume LXXX Number 3
Friday, October 6, 1978

Published weekly except during examination and vacation periods by the Associated Students of the California Institute of Technology, Inc. The opinions expressed in all articles are strictly those of the authors and do not necessarily reflect those of the editor or of the corporation.

Editor-in-Chief
ed. Bielecki

Writers
Eve Bennett, Suzanne Grace Boyer, Mike Kurilla, Robert Tajima, Richard Willson

Photographers
Joe DiGiorgio, Al Kellner, Yin Shih

Business Manager
Al Kellner

Production
Nick Smith

Circulation
Carl Lydick [Head Paperboy], Bill Gould, James Hong

The California Tech Publications Office: 115 Winnett Center 107-51, California Institute of Technology, 1201 East California Boulevard, Pasadena, California 91125. Telephone: 795-6811, Editor-ext. 2153, Business Manager-ext. 2154. Printed by News-Type Service, Glendale, California. Second-Class postage paid at Pasadena, California.

Subscriptions
\$1.50 per term
\$4.00 per year
\$100 per life

SIX from Page 2

may . . . immediately suspend the employee from his or her duties”.

Since homosexual conduct is defined as the “advocacy of homosexual activity”, you need not be a homosexual to be guilty of “homosexual conduct”. The key term here is “advocacy”. Implicit in the “advocacy of homosexual activity” is a veritably limitless range of possible circumstances which could incriminate virtually any teacher, whether homosexual or heterosexual, who suggests that it is unfair to discriminate against homosexuals or that it is all right to be a homosexual. As far as the “soliciting, imposing, encouraging and promoting of homosexual activity,” the Department of Education maintains that current law already protects pupils from sexual advances by teachers, whether homosexual or heterosexual, as well as preventing teachers from promoting their sexual life style or preference in the classroom.

Also important in the text of Proposition 6 is the use of the word “likely”. Any situation involving anyone on or off campus, in which a school employee “advocates” homosexuality, may be construed as being “likely to come to the attention of schoolchildren and/or fellow employees.” Clearly Proposition 6 is an attempt to silence teachers entirely on the gay rights issue. If it passes it will be contested on Constitutional grounds as limiting freedom of speech.

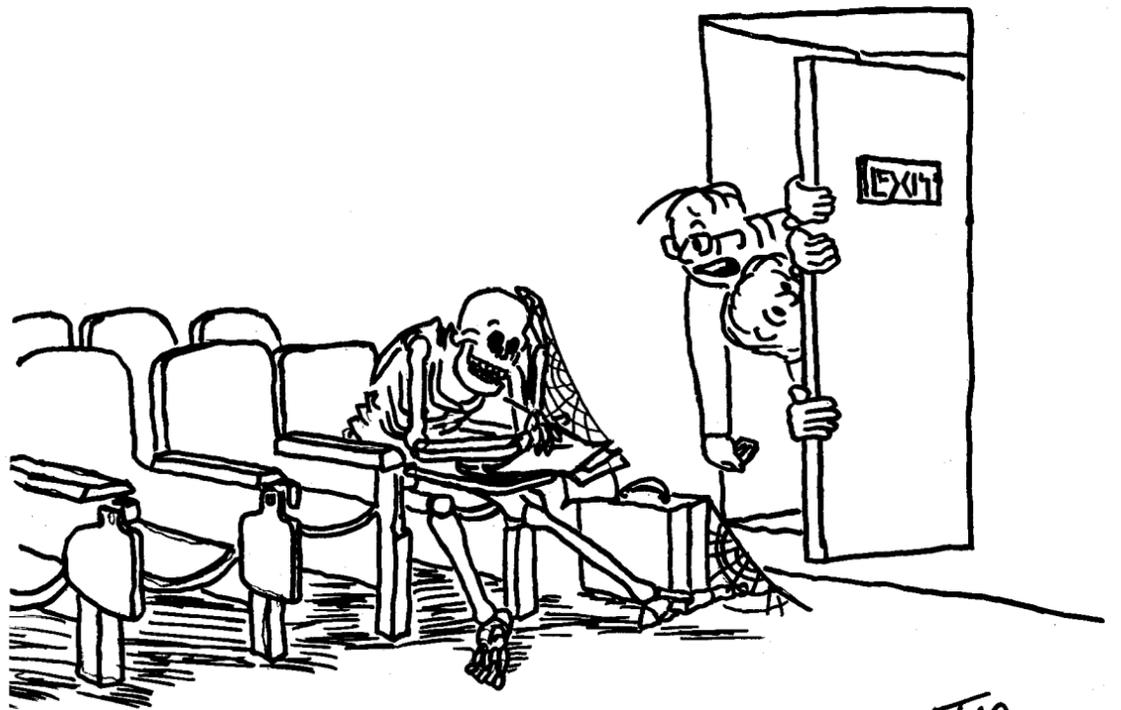
In addition to the explicit threat it poses to First Amendment rights, the passage of Proposition 6 could create a general climate of repression. Perhaps the most frightening aspect of this initiative is the effect it may have on people’s willingness to speak out for others as well as for themselves. Proposition 6 could sanction investigations into people’s private activities. Homosexuals and their sympathizers will become fearful of having their

lives and careers ruined by distorted accusations and blacklists. Indeed, a recent L.A. Times article told of movie stars refusing to be identified as sympathetic to the “NO on 6” campaign for fear of future blacklisting. And many gay people, frightened of reprisals by angry bigots, are keeping quiet too. The passage of Proposition 6 may encourage more anti-civil rights legislation. For example, the Arkansas state legislature will soon be considering a bill which would ban homosexuals from professions licensed or certified by the state, including pediatricians, child psychologists, and counselors dealing with children.

Many people would like to find overly easy solutions to the world’s problems. Because these people are unwilling to face complex issues directly, they look for scapegoats in the form of those who are different. In this case, supporters of the Briggs initiative feel that homosexuals are a perverted and corrupting element in society. They believe that by depriving gay people of their rights, the quality of life will be improved for everyone—an absurd and dangerous idea. At the very least, this kind of political thinking draws attention from the realities of the human condition to a bigoted self-serving viewpoint. At the worst, it could be the beginning of a new era of witch hunts and McCarthyism.

A short organizational meeting of the Caltech Committee Against the Briggs Initiative (CABI) will be held on Tuesday, October 10th at 7:30 pm in the Y Lounge on the second floor of the Winnett Student Center. Essentially what we need are lots of people to hand out brochures and fliers. All people are welcome. Any amount of spare time people may have can be put to good use. There might be those of you who are hesitant to work for CABI for fear of being considered gay. However, have you ever stopped to think what it would mean to feel this way if you really were gay? Now is the time to stand up against fear, before it is too late.

—Robert Tajima & Chris Vestuto



I DON'T KNOW ABOUT YOU ED, BUT THIS LOOKS LIKE ONE LECTURE I'M GLAD TO HAVE MISSED!

OIL from Page 2

Scientists have long known that hydrogen is constantly leaking out of the Martian atmosphere, and such leakage in an ancient methane atmosphere would drive the atmosphere toward producing long-chain hydrocarbons, which need less hydrogen per carbon atom to form than does methane. Once a hydrocarbon chain reached a length of about six carbon atoms, becoming the compound hexane, it would condense into a liquid, removing itself from the atmosphere and into the hydrocarbon ocean.

Thus, greater and greater quantities of liquid hydrocarbons, primarily hexane, would be formed, and these would flow on the Martian surface, producing the Martian channels.

Yung’s calculations reveal that, given the known amounts of carbon now in the Martian

atmosphere, enough hydrocarbons could have been formed to produce a layer of “oil” on the surface several meters deep.

The continued escape of hydrogen from the atmosphere over the eons could also have been responsible for the demise of Martian “oil,” said Yung.

As Martian atmospheric hydrogen became tied up in liquid hydrocarbons, more and more escaping hydrogen would have come from the breakup of water molecules, which yields free oxygen. This oxygen would have begun to combine with the hydrocarbons, eventually changing the entire atmosphere of Mars to an oxidized state, as it is today, in which carbon exists in the form of carbon dioxide.

“I think one reason scientists have stuck with water to explain the Martian channels is because we are all familiar with water

and its effects,” said Yung. “However, there are certainly other possibilities to explain such phenomena, and these are not as unusual as we might think. For example, it is now fairly certain that there is methane ice on Pluto.”

There is clear evidence that the atmosphere of Mars today is much different than it was in the past. For example, the ratio of the heavy isotope of nitrogen (N15), to the lighter isotope (N14), is higher in the Martian atmosphere than in earth’s. This indicates that considerable nitrogen has escaped the Martian atmosphere over the eons, for the lighter isotopes would escape preferentially, changing the natural ratio of the two isotopes. Thus, the atmosphere of Mars must have been much denser in the past.

Yung suggests two types of experiments which could help see OIL: Page 10, Col. 5

CALTECH'S BURGER CONTINENTAL

WELCOMES

THE CLASS OF 1982



LOCATED ON LAKE 1/2 BLOCK NORTH OF CALIFORNIA

SPECIALTIES

SHAORMA, SOUVLAKI—STEAK DELICACIES BAKLAVA, BOURMA—ARMENIAN PASTRY DESSERTS
FALAFEL—VEGETABLE BURGER WITH DELICIOUS SAUCE WRAPPED IN BIBLE BREAD

SPECIAL SERVED EVERY NIGHT: USUALLY STEAK OR PRIME RIB, RICE PILAF, SALAD, VEGETABLE, AND REFILLS ON SOFT DRINKS AND MILK

Dr. Bengelsdorf Receives Communication Award

Dr. Irving Bengelsdorf, director of science communication at Caltech, has been selected for an Energy Hall of Fame Award by the Energy Career Center Committee and the Directors of Energy Fair, Inc. The award, in science and education, is presented to Dr. Bengelsdorf for his leadership in more than 15 years of writing and public speaking about energy problems and closely related matters.

According to Shirley Solomon, president of Energy Fair, Inc., the award was presented September 29 at Energy Fair '78, held September 28 through October 1 at the Los Angeles Convention Center.

Dr. Bengelsdorf shares the science and education award with Dr. Barry Commoner of Washington University, St. Louis. The award is now in its second year; last year's winners included President Jimmy Carter, Mayor Tom Bradley, Captain Jacques Cousteau, Jack Lemmon, and Carol Holsworth.

the Hero speaks

ASCIT

by Gentle Ray Beausoleil

Just a few quick notes on the state of your favorite corporation.

First of all, the BOD and the IHC have decided to attempt to get the yearbook people to try again. We should begin to talk to the Institute Lawyers soon. If our side wins, you can expect the *Big T* in about three months.

On the academic front, the teaching awards will be discussed next week at an EPC meeting; all are invited. Also, the TQFR corrigendum we promised you will be out within a few weeks.

In a week we will be opening nominations for various and sundry offices: Garage Chairman, *Little T* editor and Business Manager, and, finally, class officers. We plan to cut the number of class officers by around a third. One idea involves simply a president and a secretary/treasurer for both the Junior and Senior classes. Sophomore Officers will be forgotten. We'll know about this by Wednesday.

And, unfortunately, we still owe the Institute \$10 Grand.

Teams Forming Now

by Rock Howard

Official training for Caltech's intercollegiate teams in the winter sports will start shortly. Tech will field teams in Basketball, Wrestling, and Swimming in the Southern California Intercollegiate Athletic Conference.

Practice for these teams will commence on October 16th. The coaches are all veterans here at Caltech. Hudson Scott will be on the courts, Tom Gutman will be on the mats, and Ed Spencer will be in the pool. All prospective swimmers not on the water polo team should contact coach Spencer as soon as possible. All returning students who wish to compete must submit to a physical exam before they can practice or check out equipment. Please contact the Health Center now. Freshmen and new transfers need only show up to begin practice.

The fencing team has already begun practicing, but more bodies are needed. This non-conference team is well-coached by Goerge Clovis. To see about joining show up at practice on Tuesdays or Thursdays at 8 pm in the gym.

Soccer Beavers Win

by Frank Haggerty

Caltech soccer opened its regular season with two victories. The first, 1-0 over La Verne was achieved by an outstanding team effort. The goal was scored by our star forward, Pete Kezios, in the last few minutes of the game. Mike Walsh, our goalie, earned his first shutout.

Then, last Saturday, the Beavers defeated Redlands here by 3-2 in overtime. Caltech scored in the first five minutes of the game with a goal from John McNally. The 1-1 score going into overtime was quickly remedied by another goal from McNally and one by Kezios.

Our first loss came Wednesday, when Whittier scored six goals to our one, although the score was held to 1-1 for the second half as Andy Gellman made his debut at goal with some excellent saves. Our only goal came from a penalty shot by McNally in the second half, although Mansour Sabeti and Peter Kezios also had close shots on goal.

This Saturday the Beavers play at Pomona-Pitzer at 10 am, and we expect a win.

The next home game is vs. Claremont-Mudd on Wednesday, Oct. 11 at 3 pm. The cheerleaders, as always, will be on hand.

Old American at the Museum of Art

Over 150 glass objects made in America during the 18th and 19th centuries and more than 50 examples of American furniture dating from 1700 to the 1860s will be on view at the Los Angeles County Museum of Art, at 5905 Wilshire Boulevard through next April. The glass objects, including plates, pitchers, vases, candlesticks, and oil lamps, offer a historical perspective of glassmaking in this country—from early examples of handblown glass to later, more industrialized techniques such as pressed and "lacy" glass. American furniture on view will include chairs, desks, tables, mirrors, chests, and cabinets, accented by a number of American ceramic pieces. One highlight is a magnificent seven-and-a-half-foot rosewood cabinet, 1862, decorated with ormolu, porcelain, and marquetry of various woods. A recent Museum acquisition, it is especially important since it features all the popular decorative techniques of the mid-19th century in one superb work. Admission to the Museum's galleries is \$1.50 for adults, 50 cents for students with I.D. or under 18. Museum members and children under 5 are admitted free.

"3/4 of everything that feels good, tickles."

JOIN US AT CHANDLER DINING HALL

—A convenient place to meet & eat—

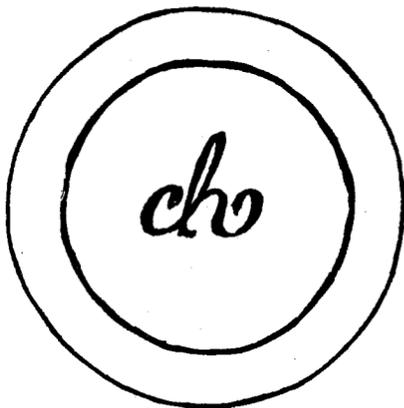
✓ check what we can offer you!

- | | |
|---|--|
| <input type="checkbox"/> Cook-to-order Breakfasts | <input type="checkbox"/> New Salad Bar |
| <input type="checkbox"/> Friendly Atmosphere | <input type="checkbox"/> Special Catering |
| <input type="checkbox"/> Daily Specials | <input type="checkbox"/> Hot "Deli" Sandwiches |
| <input type="checkbox"/> Hot Grilled Sandwiches | <input type="checkbox"/> Choice of Top Menus |

plus our Tuesday Night Buffets
(All you can eat!!!!)

WE'RE EAGER TO SERVE YOU!

Monday through Friday
7:00 am to 4:00 pm
5:15 pm to 6:15 pm
Saturday
11:30 am to 12:30 pm



AN EQUAL OPPORTUNITY EMPLOYER
(Women and Minorities are encouraged to apply)

**NOW IS THE TIME TO CONSIDER
JUNE EMPLOYMENT OPPORTUNITIES**

CAREER EMPLOYMENT OPPORTUNITIES
with the
U.S. CENTRAL INTELLIGENCE AGENCY

The Central Intelligence Agency has professional opportunities for persons with training in the disciplines listed below. If you are a senior or graduate student now completing studies we will be pleased to review your credentials.

AERONAUTICAL ENGINEERING	PHYSICS
AEROSPACE ENGINEERING	MATHEMATICS
COMPUTER SCIENCE	INFORMATION SCIENCE
ELECTRICAL ENGINEERING	NUCLEAR ENGINEERING
ELECTRONIC ENGINEERING	OPTICAL ENGINEERING
ECONOMICS	INTERNATIONAL RELATIONS

All initial assignments are in Washington, D.C. area. Some require foreign travel. U.S. citizenship required.

Get an application form from the PLACEMENT CENTER, Room 10, Dabney Hall. MAIL IT NOW!!! Qualified applicants will be contacted to arrange an off-campus interview.

MAIL YOUR OWN RESUME OR THE APPLICATION FORM TO:

L. L. Curran
P. O. Box 669
Lawndale, CA 90260

Six stories, one plot: The Romance of Our Age is Technology.



Rendezvous In Spain.

You're a software applications specialist.

When you picked this career, you

never dreamed that one day you'd rendezvous in Barcelona, Spain with two Navy destroyers.

But when your company is Texas Instruments and one of your customers is the U. S. Sixth Fleet, you learn to expect the unexpected.

The destroyers are equipped with TI computers and they need new software fast. You come aboard and sail with the Fleet until your job is completed.

Not a bad assignment for a software specialist named Susie. You're glad you got into technology.



The Incredible Talking Chip.

You're an integrated circuit designer at TI.

You've helped find a way to make

a chip talk, something no integrated circuit has ever done before.

First application: an electronic aid that helps children learn to spell. The world's first talking textbook.

And that's just the beginning. The talking chip's potential is mind-bending. You're glad you got into technology.



The Salesman's Dream.

You're a TI sales engineer. You've got what is probably one of the most irresistible

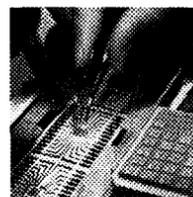
selling messages in the history of salesmanship.

It goes like this: "Hold this TI-59 Scientific Calculator in your hand. Now, let's compare it to the most popular computer of the 1950s—the IBM 650.

"The 650 weighed almost three tons, required five to 10 tons of air conditioning and 45 square feet of floor space. And it cost \$200,000 in 1955 money.

"Now look at the TI-59 Calculator you're holding in the palm of your hand. It has a primary memory capacity more than double that of the 650. It performs its principal functions five to 10 times faster. And it retails for under \$300."

With a story like this, the hardest part of your job is holding onto your sample. You're glad you got into technology.



The Joy Of Complication.

You're in semiconductor design at TI. You love it when people at parties ask you

what you do. You say, "I make things complicated." (Pause.) "In fact, I got promoted recently for creating some major complications."

What you mean (but seldom explain) is this: the more active element groups (AEGs) you can put

on a single chip of silicon, the more the average AEG cost goes down.

In short, you make things cheaper by making them more complicated.

Your work made it possible for a TI consumer product that sold three years ago for about \$70 to sell today for \$14.95.

Your future looks wonderfully complicated. You're at 30,000 AEGs per chip now and 100,000 is in sight.

You're glad you got into technology.



Outsmarting Smog.

You've always designed airborne radars for TI customers.

Now, all of a sudden you know your next radar design is going to stay at the airport. On the ground.

It's on the ground that traffic controllers at Los Angeles International Airport have a problem. They can "see" incoming and outgoing airplanes on their radar just fine, so long as the airplanes are in the air.

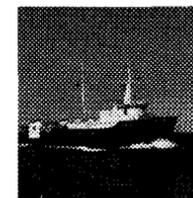
But when the airplanes are on the ground—touching down, taking off, taxiing, parking—they are sometimes impossible to see and control. Ground smog obscures them.

You believe you have an answer to the smog problem. You dig out the plans for an airborne ground-mapping radar you helped design. You adapt the design so the L. A. controllers can use it to see through smog. It works beautifully.

Today your smog-piercing radar is widely known as Airport Surface

Detection Equipment (ASDE). It's standard equipment at L. A. International and at the airport in Geneva, Switzerland. Other airports with smog and snow problems are expected to have it soon.

You're glad you're in technology.



Oil Sleuths International.

You're a geophysicist. A good one. You could be with any of the big oil companies. But

you wanted to get with a company whose specialty is the same as yours. Exploration.

That's why you're at TI, in Geophysical Service.

TI explorer ships, TI photo-geologic aircraft and TI truck- and tractor-mounted vibrator systems are working all over the world. They're finding oil. And they're identifying areas where no oil exists, thereby saving huge losses in drilling costs.

Also, TI's worldwide computer network and its Advanced Scientific Computer is making 3-D recording and processing possible. This exclusive exploration technique is the only practical way to unscramble "no-record" areas on land and sea.

You're a happy sleuth. You're in on the biggest hunt in history. And your team is out in front.

You're glad you got into technology.

If you're not in technology yet, think it over. If you are in technology, talk to Texas Instruments.

Campus Interviews

Oct. 10-11, Nov. 10



Send for the 34-page picture story of TI people and places.

Write: George Berryman, Texas Instruments Corporate Staffing, P. O. Box 225474, M. S. 67, Dept. CG, Dallas, Texas 75265

See what TI is doing in:

- Microcomputers and microprocessors
- Semiconductor memories
- Linear semiconductor devices
- Microelectronic digital watches
- Calculators
- Minicomputers: hardware, software and systems featuring software compatibility with microprocessors
- Distributed computing systems
- Electronic data terminals
- Programmable control systems
- Data exchange systems
- Advanced Scientific Computers
- Digital seismic data acquisition systems
- Air traffic control radar and Discrete Address Beacon Systems
- Microwave landing systems
- Radar and infrared systems
- Guidance and controls for tactical missiles
- Worldwide geophysical services
- Clad metals for automotive trim, thermostats, and electrical contacts
- Interconnection products for electronic telephone switching systems
- Temperature-sensitive controls for automobiles and appliances
- Keyboards for calculators and for many other products

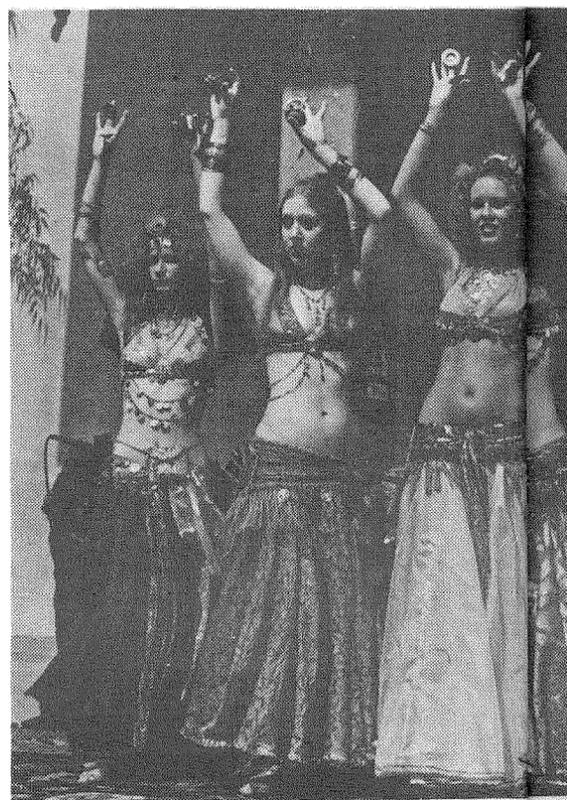
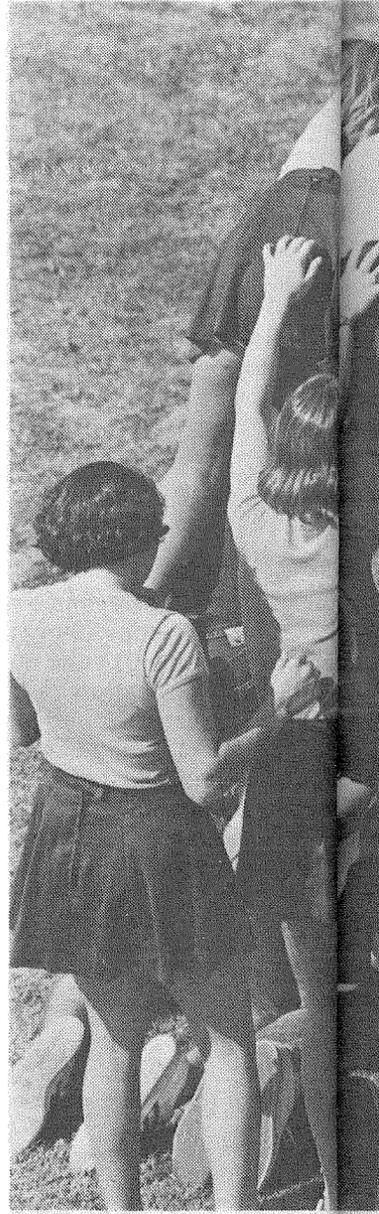


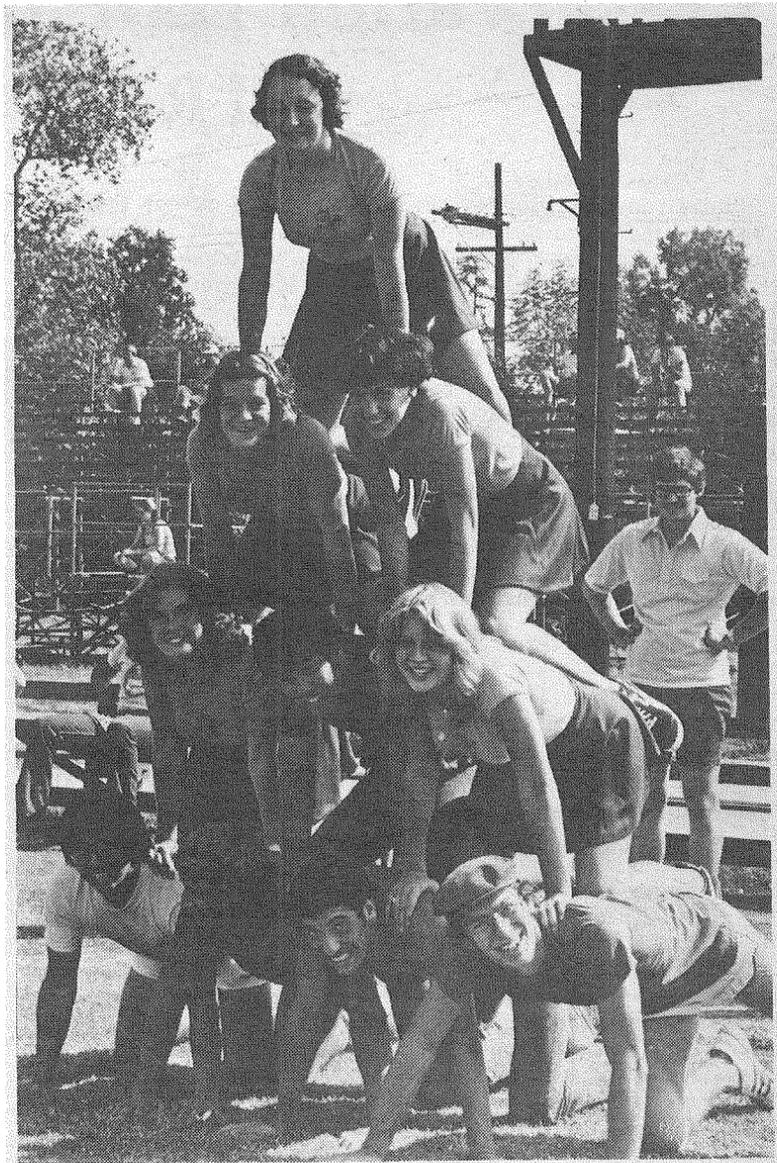
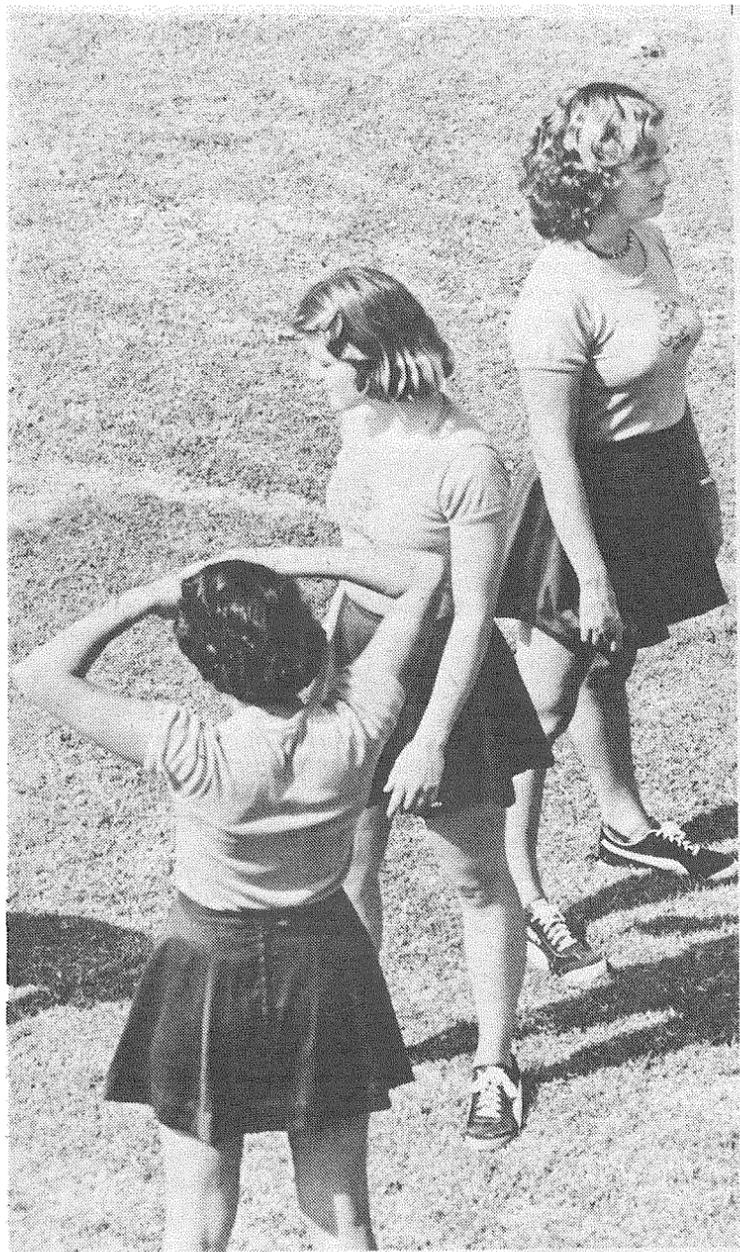
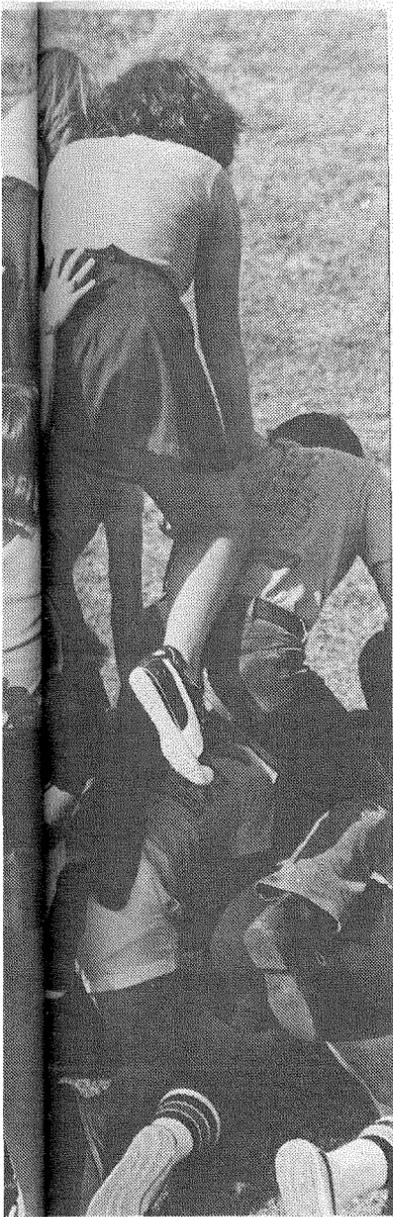
TEXAS INSTRUMENTS
INCORPORATED

An Equal Opportunity Employer M/F

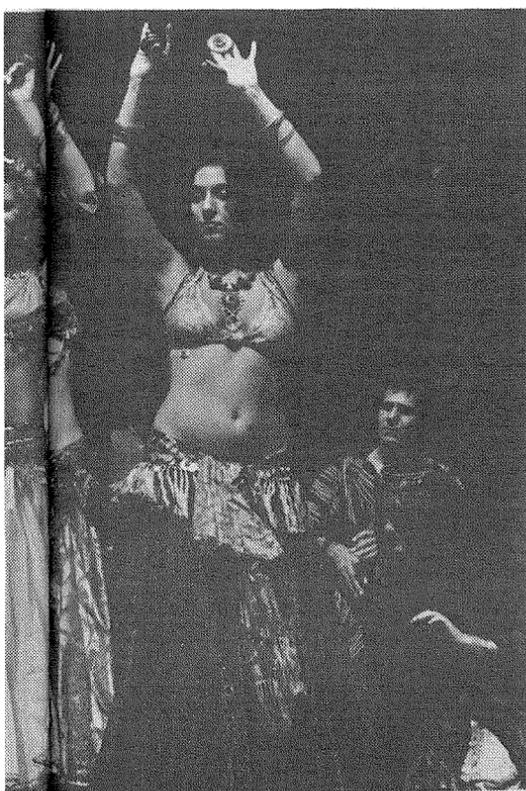
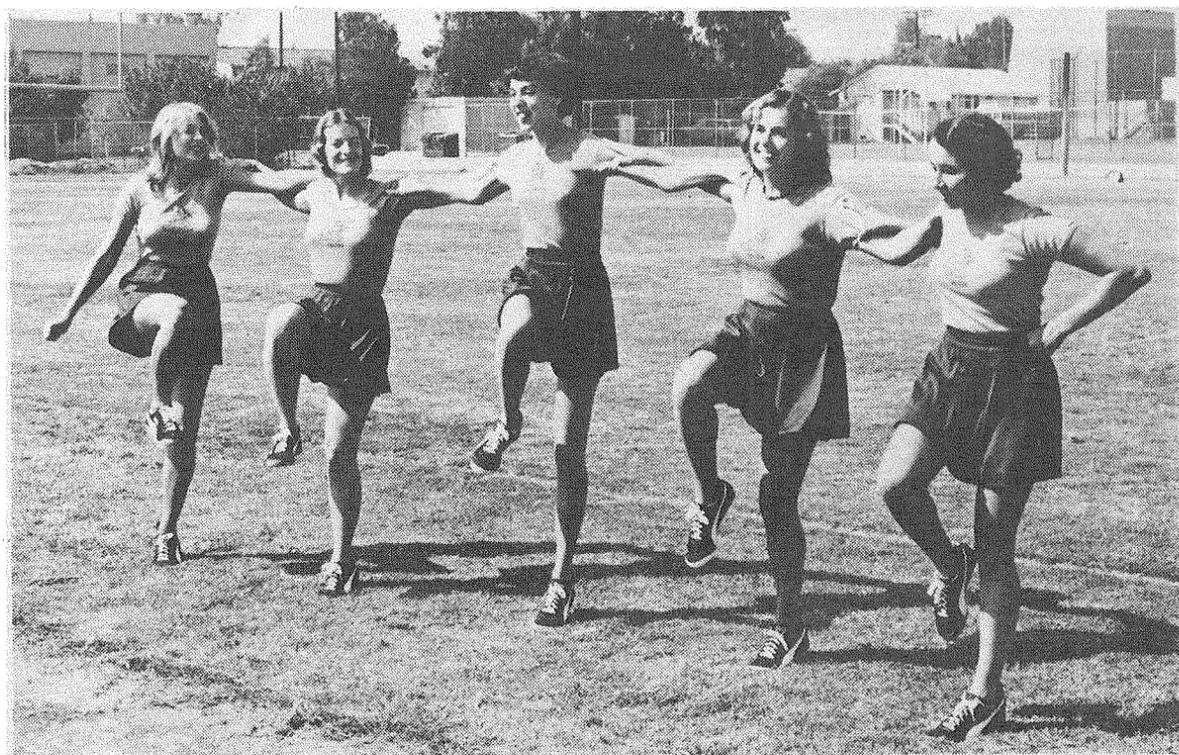


!





Photos
by
ed.
Joe DiGiorgio
Al Kellner
Yin Shih



Preservation Hall Jazz Band- Well Rated

Friday evening, September 29th, saw the return to Beckman Auditorium of the Preservation Hall Jazz Band. With Percy Humphrey, "Sing" Miller, Frank Demond, Willie Humphrey, Allan Chaffee, Said Frazier, and Narvin Kimball, the band played for two hours without the benefit of a prepared program.

Their numbers on the surface seem nothing more than a clever concatenation of solos. But when one delves more deeply, the solos are not pasted together; rather they form a continuous mosaic.

What we see is not the finely polished music of a concert hall. Instead we watch New Orleans jazz; Frank Demond working the spit valve on his trombone while Willie Humphrey holds onto his clarinet notes for 30 seconds at a time. (Imagine Sidney Harth rubbing rosin on his bow while Van Cliburn played one of the solos in Tchaikovsky's 1st Piano Concerto.) And yet unlike a symphony orchestra these seven men encourage us to sing with them, clap in time to the music, and generally have a good time.

We get drawn into their music and become a part of it. Indeed, the program is quick to point out "As the evening progresses, the musicians will decide what comes next, based on their unerring instinct for sizing up each individual audience."

Their instinct is indeed unerring. Each solo was greeted with great applause, each number was ended to more applause, and the band was finally toasted with the first standing ovation I've witnessed in Beckman.

-J. Copeland

by Both Accounts

The Preservation Hall Jazz Band gave a rousing performance to a capacity crowd at Beckman Auditorium last Friday night. The band played a number of old standards of New Orleans jazz, including such pieces as the "Bourbon Street Blues" and "When the Saints Go Marching In." The latter number, the grand finale, featured the band leading a march of the audience around the hall and up onto the stage.

The members of the band include leader Percy Humphrey (on trumpet), his brother Willie (clarinet), Joseph "Cie" Frazier

(drums), James "Sing" Miller (piano), Frank Demond (trombone and banjo), Allan Jaffe (tuba), and Marvin Henry Kimball (banjo and bass).

Solo improvisation on a basic melody characterizes New Orleans and other early jazz. Each player has a solo on most of the numbers. This format evolved from spirituals and the blues.

The set-up on stage was quite simple—a piano, drum set, two microphones and straight-backed wooden chairs for the performers. To start the show, Percy Humphrey, "Sing" Miller,

"Cie" Frazier and Narvin Kimball walked on stage and swung into "Hindustan" without preamble. The other band members then introduced themselves by coming on stage one by one and joining in.

Also played were blues pieces, and some numbers featuring vocals by Percy and Willie Humphrey, and "Sing" Miller.

The audience was made up of people of all ages. Their enthusiastic reception of the band's music proved that New Orleans jazz still has great musical value.

-Donald Korycansky

Schlegt-Hof Funf



This week ASCIT presents an excellent method to beat the campus-bound blahs. This very evening in Baxter Lecture Hall, Kurt Vonnegut's masterpiece, *Slaughterhouse-Five* will be presented. For anyone familiar with Kurt Vonnegut you know what this means; for anyone who hasn't heard, don't miss this chance.

The film is a satirical fantasy centered about the life of one man—Billy Pilgrim. Billy can predict the exact moment of his death. He also foretells a plane crash that he is in at the time. He was in Dresden during the firebombing and survived that holocaust. He also experiences a very sexy night in outer space with a Hollywood starlet. But Billy also has one special quality about him—he is unstuck in time. He jumps back and forth through time as if it were just another plane to crawl about on.

To bring him down to earth more, his life consists of an overweight wife, a devoted dog, two kids, a Cadillac, and the presidency of the local Lion's Club. Billy is not the 'everyman', but rather a representation of the apathetic majority. The film is a vision of a world of outrage met with total indifference. Don't miss it; for 50 cents it's cheaper than a phone call home.

-Michael Kurilla

ENTERTAINMENT SECTION



The Russians are Coming! The Russians are Coming!



Despite the theft last July of the largest of their instruments, the Odessa Balalaikas will perform again in their first formal concert of the season this Saturday, October 7, at 8:00 pm in Beckman Auditorium. Using a donated contrabass balalaika, the ensemble will present in music, song, and story the folkways of Russian peasants. The group hopes to have permanently secured another of the rare, 6-foot-long stringed instruments from the Soviet government for Saturday's performance.

Gypsy tunes, sailors' dances, Red Army marches, hymns, drinking songs, romantic and humorous melodies comprise the evening's program, and the music will be punctuated with stories and commentary. The musicians, in authentic costume, will play several balalaikas, the mandolin-like prima domra, the accordion, kugickly (a pair of pan-pipes), and the lozhki (wooden spoons).

Intensely aware of their East European ancestry, the Odessa Balalaikas all have been serious

students of Russian and ethnomusicology. The performers are Peter Rothe, Jonathan Rothe, Linda O'Brien, Judy Sherman, and David Lieberman. They came together in 1972, and have since played in many cities throughout the United States and Canada. Their 1977 season included concerts at the Dorothy Chandler Pavilion and the Hollywood Bowl.

Tickets are on sale now for the Odessa Balalaikas' concert. For more information, call the Ticket Office at 793-7043.

Opens Today!

The Big Fix- Dreyfus Holds Own with the Best of 'em

The new Richard Dreyfus movie is *The Big Fix*, a murder mystery/comedy centered about the California Governor's election. The advertisement depicts Dreyfus with a crayon-plugged gun in one hand and a plaster cast, complete with a drawn-on wristwatch, on the other. These props indicate that the show is a comedy; and so it is for approximately the first third. Then, following the surprising death of a main character, the film becomes a pretty fair and moderately paced mystery.

The opening music is a "we're-gonna-have-fun" tune which leads the viewer through the credits to a scene of Moses Wine, Private Detective, (a.k.a. Dreyfus) secretly counting turkeys. A policeman discovers Wine and his two young boys at this curious activity and checks him out. Wine proves to be at least a toy-obstructed detective if not a bumbling one. What is his explanation for the crayon in his gun? "I got kids."

Wine moves up from the poultry detail when an ex-flame from his radical Berkeley days appears at his door. Lila (Susan Anspach) is now working for the Hawthorne for Governor campaign. The campaign is in deep trouble because militant Howard Eppis (F. Murray Abraham) is spreading nasty flyers which proclaim, among other things, that Hawthorne intends that the wealth be shared by all the people. Campaign manager Sam Sebastian (John Lithgow) is duely distressed.

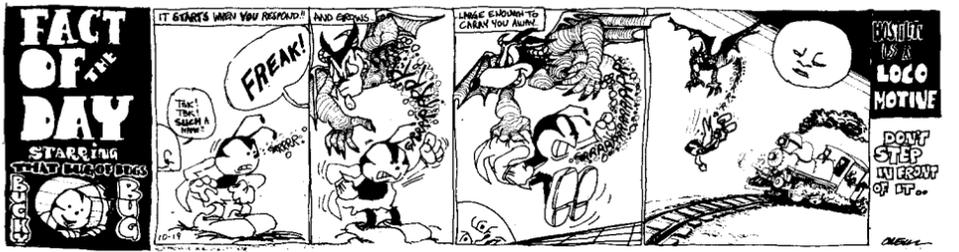
"What will the people in Orange County think of this?" he asks Wine. Because of his radical Berkeley connections, Wine is sent on the trail of Eppis.

During the first third of the movie, the plot ambles while the character introductions are being made. The aimlessness is supported by a peppering of spicy comments such as Moses' proposition to Lila that: "I'll support your candidate if you pull my lever."

Suddenly, murder arrives on the scene and the music becomes funkier. Wine seriously searches for Eppis, proving to the viewer and to himself that he can hold his own with the best of 'em. Wine begins to talk back to cops and businessmen, the jokes become fewer, and the plot becomes a race against time to find the persons who are sabotaging the campaign and who now threaten to blow up an L.A. freeway.

The latter part of the movie flows evenly with the proper doses of suspense. Due to the aimless beginning and some time spent at the end tidying up the details, the film provides little of the impact that most current movies strive for. However, the film is well above average entertainment. The running gag concerning how Wine's arm was broken works well as do the jokes involving certain sectors of the L.A. area. More editing before the film is officially released (today, October 6) would add more suspense and keep the movie from seeming longer than it is.

-Eve Bennett



these cartoons were reduced 69%

Bank of America's College Plan: Checking on your terms.

Our College Plan® Checking Account offers you the services you need, when you need them.

For just \$1.00 a month for the nine-month school year, you get unlimited checkwriting, with no minimum balance required. There's no service charge at all for June, July, or August. And your account stays open through the summer, even with a zero balance, saving you the trouble of having to close it at the end of the spring, and reopen it in the fall.

It's easy to tie in our free Money Transfer Service, too. So funds can be automatically transferred on a regular basis to your College

Plan Account from any other checking or savings account in California.

And if you qualify, we also offer a variety of other banking services with your needs in mind. Like educational loans. Student BankAmericard® VISA® And Instant Cash overdraft protection.

So check in with us. You may never have to check anywhere else.

Depend on us. More California college students do.



Merf's Views

by Spencer Klein

The Humanities and Social Sciences Department is "of central importance to education", according to Dr. Marvin Goldberger, our new Institute President. Dr. Goldberger was speaking at a question and answer session at which he gave his view on a variety of subjects.

He felt that the humanities deserved much more attention than they are presently getting. He said that "We're going to do something significant in the way of appointments," alluding to the presently unfilled Dreyfus Professorship, and the lack of a HSS head. He said that he was looking for some sort of an angle, or idea, (probably a person or group of persons) to improve the department.

He felt that this should be included as part of a general broadening in curriculum. He hinted that he would like this broadening to include requiring a course in biology.

In line with this broadening, he would like to attract many more women and minority students. He said that he thought that, "a goal of 25% women in the next few years would not be unreasonable." To accomplish this, he favors a major effort to extend our recruiting program. He favors greatly extending our program of visiting high schools. One major goal of the visits would be to talk with guidance counselors, to correct any mis-conceptions that they might have about Caltech. He also thought that it might be advisable to try to bring guidance counselors on campus to show them the school.

Another concern he mentioned was undergraduate teaching. He said that he would like to have the older, more experienced teachers teaching the lower level classes, and the "young whippersnappers" teaching the advanced, graduate courses. He felt that this would be a good idea for several reasons. First, older, more established professors would be more isolated from the "publish or perish" syndrome. This would give them more time to devote to their classes, since they wouldn't be so worried about research, having already achieved a reputation. Second, young professors would be able to teach about their research, leading to increased enthusiasm on their part. He planned to use the carrot and stick method to try to accomplish this. He explained that the individual department heads were responsible for teacher assignments, and that he had to "convince them by the sweet voice of reason." He added that he would consider student involvement in teacher assignment in the future, but "The TQFR (teaching quality feedback report) is not the best way in the world to accomplish this."

Goldberger said that he would like to broaden the graduate education too, although he realized that this is not always possible in view of the specialization necessary to do original work for a thesis or dissertation. However, he stressed that he felt that we should not turn out graduates capable only of becoming professors or postgraduates, but also graduates

The Physicists



Photo: Alan Loh

OPENS TONIGHT

in Ramo at 8

capable of being lawyers and senators.

Goldberger also gave some of his views on the state of science in the U.S. He blamed the shift in national funding priorities from pure science to applied science on the fact that legislators control the money, and many of them can't see the value of pure research. He felt that more scientists should become congressmen. He said that scientist-congressmen could have a disproportionate influence, because there are so few of them around, and so their less-informed colleagues ask their advice. "Some of them are real jerks," he added.

Goldberger's appearance Wednesday at noon in Winnett Lounge was sponsored by the Caltech Y. His questioners were Peter Dewees, head of the Caltech Y Excomm, G. Ray Beausoleil, ASCIT hero, the GSC treasurer, and various members of the audience.

Before coming to Caltech three months ago, Dr. Goldberger had spent the last twenty-one years at Princeton, as professor and as head of the Physics Department. He received his PhD from the University of Chicago in low-temperature physics. Dr. Goldberger has been active in politics. In 1972, he headed a delegation that travelled to the People's Republic of China. From 1965 to 1969, he served on the President's Advisory Council.

Pour It Out

Have a story to tell? Bitter at Caltech. Disillusioned with the Caltech education? Falling in love with someone? Exuberant with your research? Lonely? Happy with the opportunities provided by a Caltech education?

If you have anything to say about your experiences here at Caltech please contact me, Dave Wheeler, at x2154, mail code 105-51. I'm your 1979 Big T editor and I would like to make this yearbook a book not only for the students and about them but also by them. I would like to hear your stories so I can incorporate them into this year's Big T.

"The Physicists," a satirical comedy by Friedrich Durrenmatt, will be performed by Spectrum Productions in Caltech's Ramo Auditorium on Friday and Saturday nights at 8:00 pm through October 21.

The scene of the play is the drawing room of an elegant lakeside insane asylum. One patient thinks he is Einstein. Another thinks he is Newton. The third crazy physicist, an inmate named Mobius, gets nightly dictation from King Solomon. He has solved the "problem of gravitation" and is working on a "unitary theory of elementary particles." When the curtain rises, the police come in to examine the body of a dead nurse—Einstein has strangled her—and the ensuing drama involves more murder, social satire, and scientific jargon.

The cast of "The Physicists" includes Iris Belhayes as Doktor von Zahnd, Walter Fidel as Mobius, John Fahringer as the Police Inspector, Stuart Downing as Einstein, and Dr. Harald Dyrenforth as Newton.

This is Spectrum's seventeenth production since 1972. A non-profit company whose chief purpose is to stage "unusual plays of high literary merit," Spectrum is the creation of Oscar Mandel, Professor of Literature at Caltech, and is directed by Shirley Marneus.

Tickets are on sale now for all the October performances of "The Physicists." Call the Caltech Ticket Office at (213) 793-7043 for more information.



CLOWN from Page 2

person that we did not intend them to have. When a performer gives a performance, he or she places a great deal of trust in his or her audience. It takes a great deal of love for poeple in general, for anyone to go through all the trouble associated with any performance. Grease paint is not overly comfortable and costumes are always too hot or too cold. Why do we do it then? Well, I can't speak for anyone besides myself, but I do it to make people smile or laugh, not so much at me but with me. The thought that I made someone a little happier is what makes all the time, expense and trouble worthwhile. And I also realize that just as much as I have the right to express myself, other poeple have the right to ignore me. But no one has the right to intentionally make another person feel bad. I hope and pray that I never do, intentionally or otherwise. This is not the first "bad" audience that I've had nor will it be the last. But I believe, however, that bad audiences are never necessary. It is usually one or more people who do not realize the power of their comments or actions, that can spoil a performance for everyone involved. I returned

home Friday night more down than I have ever been after a performance of any kind and I believe that, in and of itself, says a very great deal. To those of you who smiled, my sincerest thanks. To those of you who passed quietly by, again my thanks for respecting my rights and feelings. And if I offended anyone, in any way, by my appearance or "performance", I offer my humblest apologies. I'm sorry—I can say no more than that. And those of you who fear a repetition in the near future needn't worry. It will take much convincing before I apply clown white again.

—DGM

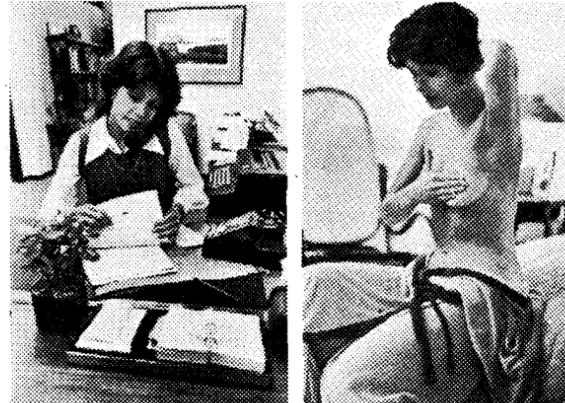
OIL from Page 3

prove his theory. One is to actually drill for oil on Mars.

"If large amounts of hydrocarbons once existed on the Martian surface, chances are there are still large deposits beneath the surface," he said, "which a Mars lander might be able to detect by drilling."

Yung also proposes that the next Mars lander contain a device to detect atmospheric methane, which may have leaked from subsurface deposits.

Protecting yourself against cancer is no big deal.



It's a regular part of living.

For millions of women, monthly breast self-examination is routine. But for many others, it isn't. Why? Because some women are afraid they might "find something."

If you're afraid, remember that 80% of all breast lumps are not cancer. Your own fear is what you should be more concerned about. Because it can prevent you from discovering cancer early when it is most curable. But more often, it simply prevents you from having the peace of mind that comes from knowing you're alright.

If checking your breasts is not a regular part of living for you, contact your doctor or your local American Cancer Society Unit for information.



American Cancer Society

ALL THE NEWS

Get Sick On Sundays!

The Young Health Center is now open on Sundays, from 12 noon to 4 pm. The regular hours are still 8 am Monday to 12 noon Saturday. During those hours, the walk-in clinic is from 1:30 to 2:30, and appointments from 2:30 to 3:30. Same day appointments can usually be obtained.

Fellowships

Seniors interested in Watson, Danforth, Luce, Churchill or Marshall Scholarships should obtain application information in the Deans' Office. Graduate students are eligible for Danforth and Churchill Scholarships and should also enquire in the Deans' Office, 210 Dabney. The deadline for completion of applications is October 20.

Watson Fellow

Ryn Miake will be on campus October 9 at 4:00 pm in the Deans' Office to talk about her Watson Fellowship. All students are invited to attend. Anyone considering a Watson application should receive valuable suggestions. Ryn spent last year as a Watson Fellow scuba diving and studying marine biology in Naples.

Stud Shop

Student Shop will have its organizational meeting on Saturday, October 7 at 1:00 pm in the basement of Winnett. Anyone interested in membership this year should attend this meeting. For more information, contact Dave Sivertsen, x2173.

Park It

Campus Security bids good-bye to lazy, crazy days of summer and now back to reality. Parking enforcement has started. Parking rules in general: Have a parking sticker on your vehicle.

Assigned spaces are for assignees only.

Green Zones are for visitors, Monday-Friday.

Yellow Zones are for loading and unloading—30 minutes only, Monday-Friday.

Red Zones are NO PARKING. Keep clear for emergency use.

Winnett quad area parking is for 30 minute loading and unloading only, 5:30 pm until 8:00 am. (If you want to unload during the day, call Security at x1702, and get them to move the posts.—ed.) Overnight parking in the area is prohibited.

Athenaeum lot parking is restricted to Athenaeum members and guests.

Do repair work at student garage area only.

Visit the campus security office at 367 S. Holliston, Monday through Friday, 8:00 am to 5:00 pm for parking stickers.

Please be particularly cautious riding bikes and motorcycles on campus. The pedestrian is always right but not always alert.

Get Involved!

There will be a meeting of the Caltech Committee for Community Involvement on Wednesday, October 11 at 7:30 pm in the Y Lounge, second floor of Winnett Center. Everyone welcome.

Jobs

Shell Development Company will be collecting resumes for Summer employment in Houston, Texas. All resumes must be submitted to the Placement Office no later than November 27. If you need assistance with your resume, consult the Placement Office Staff, Room 8, Dabney Hall.

AIAA Wants You!

The American Institute of Aeronautics and Astronautics is now seeking applicants for the AIAA Scholarship Program for the 1979-80 academic year. Scholarships are in the amount of \$1000 per year and are renewable. Eligibility requirements state that an applicant's scholastic plan should be such as to provide entry into some field of science or engineering encompassed by the technical activities of AIAA. Recipients must be either U.S. citizens or permanent residents, but financial need will not be a factor for eligibility. Applications are available in the Financial Aid Office, room 208 Dabney Hall.

Dragons Slain, Lowest Rates in Town

If that's what you've always wanted your business card to read, the Caltech Gamers want you! Fantasy and science fiction gaming goes on on Friday and Sunday nights in Clubroom 1 of Winnett Center, starting at 7:30 pm each night. Beginners welcome. Dungeons and Dragons predominates, with others to be scheduled soon, so drop by. Bring your own sword.

And How To Get Them

Students expecting to receive the PhD degree in June 1979 or shortly thereafter and Research Fellows are invited to a seminar on "How To Approach Getting A Job." Candidates for BS, MS, Engr. degrees are welcome; however, a seminar is planned for you in January.

The seminars will be held on October 10 and 12 from 4:00-6:00 pm, in 153 Noyes. Come to one or both seminars! Refreshments will be served. For further information, consult the Placement Office, Room 8, Dabney Hall.

THAT FIT

Wanted!

Hand calculators, cameras, bikes, jewelry, spare cash. Yours. Secure your belongings, lock your doors—please!

Report to security, x1701, or question yourself all strangers in your area.

Campus Security thanks you.

"I Could Have Danced..."

New dancers are invited to join with the Ballroom Dance Club for instruction followed by free dancing, starting every Friday night at 8 pm in Winnett Lounge. For more information call Jack Wisdom at 795-6425.

**Unbelievable Savings
CALCULATORS & STEREO**

Calculators

Texas Instruments

	WAS	SALE
TI-59	\$300	\$219.95
TI-58	\$125	\$92.95
TI-57	\$60	\$45.95
PC-100A	\$200	\$149.95
MBA-FINANCE	\$70	\$52.95
TI-55	\$50	\$38.95
SR-40	\$25	\$19.95
BA-BUSINESS	\$30	\$23.95
TI-5040	\$110	\$78.95
TI-25	\$33	\$23.95
TI-1750	\$25	\$17.95
PROGRAMMER	\$60	\$44.95
SPEAK & SPELL	\$55	\$44.95
MODULE LIB. FOR 58, 59	\$	\$29.95

HEWLETT-PACKARD

	WAS	SALE
HP-10	\$175	\$144.95
HP-19C	\$275	\$222.95
HP-21	\$80	\$49.95
HP-25C	\$160	\$130.95
HP-29C	\$175	\$144.95
HP-31E	\$60	\$49.95
HP-32E	\$80	\$69.95
HP-33E	\$100	\$81.95
HP-37E	\$75	\$65.95
HP-38E	\$120	\$97.95
HP-67	\$450	\$359.95
HP-92	\$495	\$395.95
HP-97	\$750	\$599.95



- Above prices include A/C Adaptor-Charger & Carrying Case. \$12.95 extra for 110/220V Adaptor.
- All above calculators have full one year factory warranty.
- Enclose payment in full with order, or remit \$20 with order, balance C.O.D.
- Shipping charges: Add \$3.00 for calculators and 4% of price for receivers and 5% for speakers.
- FAST DELIVERY GUARANTEED only with M.O. or certified checks. Personal checks will delay the order until it clears banks.

Receivers

	LIST	OURS
PIONEER SX-580	\$225	\$166
PIONEER SX-680	\$275	\$195
PIONEER SX-780	\$350	\$248
PIONEER SX-880	\$450	\$313
PIONEER SX-980	\$600	\$418
JVC JR-S61W	\$200	\$155
JVC JR-S81W	\$300	\$232
JVC JR-S201	\$360	\$270
JVC JR-S301	\$480	\$360

Speakers

	LIST	OURS
JBL L-19	\$175	\$121 ea.
JBL L-36 (3-way)	\$240	\$169 ea.
JBL L-40	\$250	\$173 ea.
JBL L-50	\$325	\$225 ea.
JBL L-100	\$400	\$289 ea.
JBL L-110	\$410	\$283 ea.
ADVENT LARGE	\$140	\$116 ea.
EPI 100V	\$109	\$79 ea.
ESS LS-8	\$179	\$143 ea.

PHONE ORDERS ACCEPTED ONLY WITH CREDIT CARDS
814-237-5990
(Add 3% for Credit Card Orders)



SEND FOR FREE CATALOGUE

STEREO WAREHOUSE

110 NEW ALLEY, STATE COLLEGE, PA. 16801

Expand your horizons with TRW VIDAR

We're expanding our horizons... and we'd like to invite you to play a significant role in our continuing growth!

Vidar, a major Division of TRW, is engaged in the development, manufacture and marketing of digital telecommunications products and systems for the telephone industry — worldwide.

Because of significant product expansion, we have current opportunities for bright, enthusiastic Electrical Engineers and Computer Scientists with a BS, MS or Ph.D.

Our benefits program is among the best — you'll find our educational assistance program extremely attractive: 100% reimbursement for tuition, fees and books for work related courses. In addition, we have a unique Work/College Program which allows continuing education while on a reduced work schedule.

Interested? Let's talk about it!

WE WILL BE INTERVIEWING ON YOUR CAMPUS Monday, November 6

Please Contact your College Placement Office to arrange interview.

If you are unable to schedule an interview the day of our visit, we'd be happy to receive your resume. Send it to Richard M. Duncan, Senior Personnel Representative:

TRW VIDAR
77 Ortega Avenue
Mt. View, CA 94040
415/961-1000.



TRW VIDAR
TRW VIDAR
TRW VIDAR
TRW VIDAR
TRW VIDAR
TRW VIDAR
TRW VIDAR

ROMA GARDENS

**BEER & WINE
ITALIAN CUISINE**

PIZZA SPAGHETTI RAVIOLI

**OPEN 5-11 p.m. Sun-Thurs
5-12 p.m. Fri-Sat**

Now open for lunch 11-2. Buffet lunch \$2.95. All you can eat Thursdays for \$4.25

10% off on italian food to all CIT students (buffet lunch excepted) 7 days/week

Use new back entrance for picking up orders

1076 E. Colorado 449-1948

ODD BODKINS by Dan O'NEILL



Memorial Tech

Second-Class Postage paid at Pasadena, California. The California Tech is published weekly except during examination and vacation periods by the Associated Students of the California Institute of Technology, Inc., Winnett Student Center, Caltech 107-51, Pasadena California 91125.

HEWLETT-PACKARD INTRODUCES PROFESSIONAL CALCULATORS FOR A STUDENT'S BUDGET.

THE PRICE OF EXCELLENCE NOW STARTS AT \$60*

They're here. Hewlett-Packard's new Series E. Five professional calculating instruments designed for a student's needs and budget.

NEW FEATURES.

- Easy-to-read display.** Larger, brighter LED display with commas to separate thousands.
- Built-in diagnostic systems.** Tells you: 1) when you've performed an incorrect operation; 2) why it was incorrect; 3) if the calculator isn't working properly.
- Accuracy.** Improved algorithms give you confidence that your answers are more precise and complete.

FOR SCIENCE AND ENGINEERING.

- The HP-31E—Scientific. \$60*** Trigonometric, exponential and math functions. Metric conversions. Fixed and scientific display modes. Full 10-digit display. 4 separate user memories.
- The HP-32E—Advanced Scientific with Statistics. \$80*** All HP-31E functions plus hyperbolics, comprehensive statistics. More math and metric capabilities. Decimal degree conversions ENG, SCI and FIX display modes. 15 user memories.
- The HP-33E—Programmable Scientific. \$100*** Scientific, math and statistics with programmability. Editing, control and conditional keys. 49 lines of fully merged key-codes. 8 user memories.

FOR BUSINESS AND FINANCE.

- The HP-37E—Business Management. \$75*** Basic business/finance. Gives Present Value, Payments and Future Value calculations simultaneously. Discounts,

%s, mark-ups, and amortization schedules. Statistics with trend-line forecasting. 5 financial and 7 user memories.

The HP-38E—Advanced Financial Programmable. \$120* Solves routine and complex problems at the touch of a key—no previous programming experience necessary. Internal Rate of Return and Net Present Value for up to 1,980 cash flows in 20 groups. 2000-year calendar. 5 financial and 20 user memories. Up to 99 program lines.

HEWLETT-PACKARD IS WITHOUT EQUAL.

All Series E calculators use RPN logic exclusively. If you've never tried it you're in for a big surprise. It lets you solve problems the way you naturally do in your mind. Straightforward. Logical. No worrying about complicated hierarchies or parentheses. RPN is the shortest possible distance between the question and the answer.

SEE FOR YOURSELF.

To help you select the calculator that's right for you, we've prepared a booklet entitled, "The Student's Choice... the Logical Choice." Pick up a free copy at your bookstore or nearest Hewlett-Packard dealer when you stop by to see Series E. For the nearest dealer, **CALL TOLL-FREE 800-648-4711** except from Hawaii or Alaska. In Nevada call 800-992-5710.

While you're there, be sure to see our advanced programmable HP-29C and HP-19C with printer and HP-67 mag-card programmable.

Do it soon. A Hewlett-Packard professional calculator starting at just \$60* is something you can't afford to pass up.

HEWLETT PACKARD

Dept. 0000, 1000 N. E. Circle Blvd., Corvallis, OR 97330
*Suggested retail price excluding applicable state and local taxes
— Continental U.S.A., Alaska and Hawaii.
Displays are photographed separately to simulate actual appearance.

