

HMMMMM

THE CALIFORNIA TECH

KRYAXXX!

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Watson Lecture

Neural Networks

by Glenn Tesler

The human brain can perform one quadrillion operations per second through parallel processing. It has ten trillion neurons, each connected to ten thousand others. In contrast, the fastest modern digital computers operate at only one ten-millionth the speed, in part because the operations are performed sequentially.

Terrence J. Sejnowski, Caltech Visiting Professor of Neurobiology and Johns Hopkins Associate Professor of Biophysics, models neural networks on digital computers and thereby simulates the parallel processing of the brain. He described his research in the final Watson lecture of the season Wednesday night in Beckman Auditorium.

All the neurons simultaneously receive stimuli of various strengths from all the neurons to which they are connected, and react, in turn, by returning stimuli to these neurons. In contrast, the fastest modern digital computers can perform only one hundred million operations per second, about one ten millionth the number of the brain. These operations must be carried out sequentially in a precise manner.

In collaboration with Professor Charles Rosenberg of Princeton, Sejnowski has developed a neural network designed to learn how to pronounce words given their English spellings. It consists of a network of "neurons" which initially have no knowledge of how to associate the spellings of words with the phonemes required to pronounce them correctly.

A "teacher," consisting of a transcript of children learning how to speak and the phonemes associated with the words in the transcript, was used to teach the network how to speak. The neural network was given the transcript of the children's speech, and at-

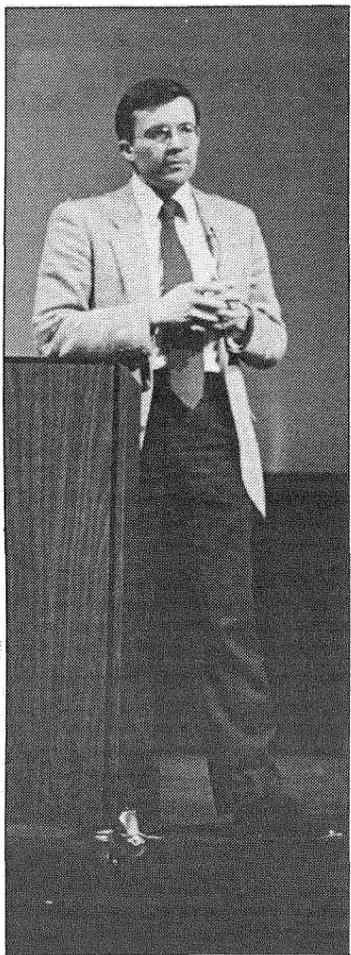


photo by Pei-hsiu Suen

tempted to translate it into phonemes.

The strength of the neural connections was changed until the neural network produced phonemes similar to the teacher's. This transcript was fed through the network repeatedly, and gradually the network's performance improved.

Babbling... Then English

Sejnowski played tapes showing the progress of the network over a several-hour period; the network babbled at the beginning, but eventually produced recognizable words. The network was then fed more documents, and was able to apply the rules it had developed to new words, as well as learn what

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US Representative Speaks Out: Militarization of R&D Must End

by Huy Cao

"The development part of the equation has been receiving an increasing proportion of federal funding, particularly for military programs." Congressman George E. Brown, Jr. spoke at Caltech in a speech entitled "The Militarization of Federal R&D, With an Emphasis on the D." The Space Weapons Study Group and the Distinguished Speakers Fund sponsored the talk.

Congressman Brown is a Democrat representative from Riverside. He is a member of the Congressional Technology Assessment Board and is also the ranking Democrat member of the House Science, Space, and Technology Committee. He holds a B.S. degree in Industrial Physics from UCLA.

The Congressman's basic thesis was that R&D has changed under President Reagan. There is now a shift away from pure and applied research and toward development, testing, and evaluation of weapons systems.

"Part of the shift toward development," said the Congressman, "is a reflection of the growing complexity of modern weapons systems, which must be prepared to meet ever more sophisticated battle environments and active enemy countermeasures."

But he attributed most of the increase in the budget for development to President Reagan's emphasis on defense programs. "Under the Reagan Administration, the predominance of development in military R&D has reached even greater proportions than ever before. R&D has become a shorthand for RDT&E: Research, Development, Testing, and Evaluation... Research receives less than 10 percent of military RDT&E funding."

Sacred Cow

"Research is the sacred cow of U.S. defense efforts. Not even the most severe critic of President Reagan's defense policies will

claim that basic research is detrimental to our national security."

But, says Congressman Brown, the public image of defense research is not accurate. "Newspapers cover, in their science sections, military reports of scientific progress on weapons-related systems. The Pentagon will also invite the press to carefully staged technology demonstrations. Often the significance of the progress is overstated."

The defense aspect of R&D has altered scientific research at the university. Congressman Brown believes that "the nature of military research, particularly as it has become dominated by development, testing and evaluation, is antithetical to the academic research ethics of openness and internationalism."

Citing one case of restricted freedom having to do with JPL, he said that some researchers there have stopped sending reprints to the Eastern Bloc. But he said that, "Even in the absence of military restrictions, academic researchers are becoming conservative to the point of self-censorship."

He later added, "Most military RDT&E work is incremental development based on conservatism and redundancy rather than innovative leaps in technology."

A major object of the Congressman's criticism is President Reagan's SDI (Strategic Defense Initiative) program. The Reagan Administration has "distorted" the meaning of research according to him.

"Despite claims that the SDI is simply a research project, intended solely to evaluate the feasibility of a defense against Soviet ballistic missiles, SDI has a clearly identified goal. SDI is intended to make nuclear-armed ballistic missiles impotent and obsolete." He borrowed the phrase "impotent and obsolete" from one of President Reagan's early speeches on SDI.

"What does this mean for education in science and technology?"

Even if research on campus remains unclassified, and within the realm of basic research, those technologies receiving the greatest emphasis are preparing a generation of students for 'Star Wars' development."

Students Beware

He warned students that if they specialize in certain fields such as non-linear optics, they may find their employment prospects heavily dominated by defense contractors.

"Unfortunately, the militarization of R&D is a larger issue than the decisions facing Caltech as an institution. Let us take a look at the employment prospects facing a student graduating from Caltech, a student who intends to carry his or her campus boycott of SDI research onto industry. Although much is made of SDI spending on university campuses, this money amounts to only six percent of the overall SDI budget."

The Congressman discouraged students and scientists from going into defense jobs. He pointed to fluctuations in defense employment: In California it grew to 600,000 in the 60's but dropped to 150,000 in the 70's and is today at 750,000. "Most of these contracts are politically controversial and could be terminated quite suddenly."

One change which would affect jobs, he said, is if there is transfer of executive power in '88 elections to an administration with different views on U.S. defense. As an aside he said that he hoped there would be such a transfer of power.

Turning to his "alternative vision of national security," Congressman Brown suggested redirecting some of our resources toward such industries as steel, autos, textiles, and consumer electronics so that the U.S. can "regain a strong place in the world market place."

"Federal support for environmental programs can help give us

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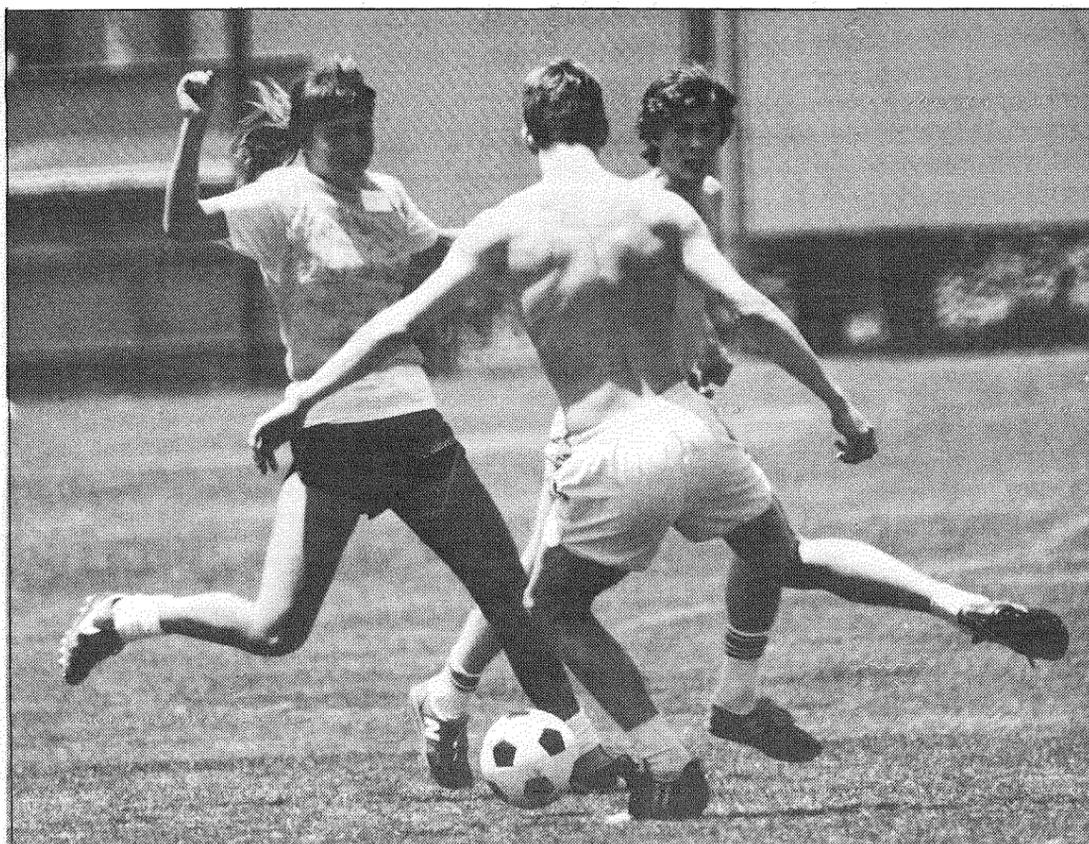


photo by Robert Paz

Sports' Day: A Big Kick—Alumni from around the globe converged on Caltech for this year's Homecoming Sports' Day. Bibi Jentoft-Nilsen and John Josephson (back to camera) attack the ball in a pas de trois.

IHC Interviews For Committees

by Sam Weaver

Interviews for positions on faculty/student committees will be held next week, starting on Monday, May 11. Preliminary interviews will take place on Monday for those committees with the most applicants. These interviews will take five minutes each, and will be conducted by three members of the IHC. The number of applicants for each committee will be reduced to a shorter list whose members will be interviewed by the entire IHC on one of the next two evenings.

Preliminary interviews for the Freshman Admissions committee will be on Monday, May 11 in the Y lounge beginning at 8:00PM. The Curriculum committee preliminary interviews will be on Monday in the Master's Office beginning at 7:30PM, and the preliminary session for both UASH and Upperclass Admissions will be held immediately afterwards, starting at 8:30PM. People who signed up for any of these committees should

check with their house president or look at the schedules posted on the door of the Master's Office to find out the time of their interview.

Final interviews for all committees with more applicants than available positions will be held by the whole IHC on Tuesday, May 12 and Wednesday, May 13 in the Master's Office, starting at 7:30PM each evening. The remaining applicants for Freshman Admissions and Upperclass Admissions will be interviewed on Tuesday as well as all applicants for Institute Programs and Secondary School Relations.

On Wednesday, those applicants remaining for UASH and the Curriculum committee and all applicants for the Academic Policies committee and the Grievance committee will be interviewed. Anyone signed up for any of these committees should check with their house president for the time of their interview or see the schedules posted on the door to the Master's Office.

LETTERS

Caveat Emptor

To the Editors:

I got insurance through RSA Insurance Services, a one-man organization run by Robert Annis, on August 8 of last year. Mr. Annis asked for a premium of \$1359 for the whole year, which I paid in full then.

In February of this year, I received from American Excel, the company Mr. Annis had placed me with, a "Notice of Adverse Underwriting Decision" and a "Notice of Cancellation" stating that my insurance was to be cancelled on February 21. Nothing had happened with the policy since August (or so I thought), so I called Mr. Annis about what was going on. He said he knew nothing about it, but would investigate. I called him a

few days later, and he explained that American Excel had decided to raise their rates for no real reason after I had signed up with them. He had talked them out of it, but the company was so flaky that they had raised their rates anyway and were going to cancel me for non-payment of the higher premium.

In the mail came two more notices, with two later dates of cancellation. Apparently there was another company involved, SCJ Insurance Services. SCJ is an agency just like RSA, located in Pleasanton, California. Mr. Annis was not being much of a help with these multiple cancellations, so I asked an insurance agent friend of my mother's for help. She noticed several irregularities with the policy. For example, when I got the policy back from American Excel, it showed an annual rate of \$1307; I assumed the rest was a commission

of \$322. She said that agents normally take a kick-back directly from the insurance company, and that the amount is usually much less than the 30% I paid. She wrote two letters, one to RSA and one to SCJ, for me to sign and send in, asking for information. RSA has never written me back, but SCJ sent a packet of papers which revealed Robert Annis' actions.

This packet contained a copy of the policy as SCJ has received it. AFTER I HAD SIGNED THE POLICY, someone at RSA has added a garaging address of Poway, California, which is near San Diego and where I have never been! The cover letter SCJ sent with this packet indicated that they had based their original, lower, rate on residence in San Diego, but when it became obvious that I live here, had changed the rate to that applicable in Pasadena, which is much higher.

Also in the packet were memos of phone conversations between RSA and SCJ, showing that when SCJ had asked for the higher rate, Robert Annis had tried to talk them out of it; when this failed, he asked them to cancel my policy for non-payment of premium. This generated the first cancellation notice WHICH ROBERT ANNIS CLAIMED HE KNEW NOTHING ABOUT.

In addition to all this hassle of finding new insurance, I have found out that when you have a cancelled policy on your record, insurance can cost nearly twice as much! So Mr. Annis has not only stolen from me, had has made it really difficult for me to find insurance from companies other than

From the Editors

Hear the Whisper-Chippers Wail

We take this opportunity to thank B&G for the service that they provide every weekday morning. Promptly at 9:00AM they rouse us sleepy-headed Techers and keep us from the evils of Mr Sleep-Too-Much.

The lively whisper chippers greet us with their melodic hum,

punctuated by a not infrequent rip-roaring snarl. What joy, jubilation to wake up to that cheery note!

Birds chirp, flowers blossom, pendant tree limbs tumble, and our chippers chew them to bits *krxaxx!*

Our pleasure is marred only by the knowledge that when the season passes, the chippers will retire.

RSA. I have written this letter to warn the members of the Caltech community.

-Gabrielle Gordon
Lloyd House, 1-54

General Courtesy

To the Editors:

There is well documented evidence that during World War II prisoners in a wide variety of torture and death camps were tormented with the blood-curdling din of incessant piano playing. In fact, the secret diaries of Adolf Hitler revealed that Rhapsody in Blue and Pachelbel Canon were among the favorites in Nazi melo-torture techniques.

In Blacker lounge the war has never ended. Day after night the Blacker pianos resound with constant tumult. We, the prisoners of the South houses, have become victims of war crimes. Let it be no more.

Here is a peace pact. Caltech possesses at least six pianos on campus which are infinitely far from any listener's ear (Baxter,

Dabney Hall, Winnett). Whenever the virtu-mole-sos feel that late night arousal to tinkle the ivories, perhaps they could employ one of these secluded instruments. Or perhaps they could finish their practice sessions before four o'clock in the morning. At bare minimum they could seal the doors of the lounge.

General courtesy is the topic of this war. Let's win it for the Gipper.

-Rus May
Dabney House, 1-58

THE ASCIT FORMAL
THE DATE REPLIES:



Check out the size of his... Shoes.

YIKES! It's Mr. and Mrs. Parkinson.

GOSH, There is some food leftover on that table. I wonder if I could have some.

9, 10, 11, 12, 13... - That makes fourteen guys I've danced with. WHO'S NEXT?!

YO, DUDE, Why don't you come over here and GIMMEE SOME!!

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ENTERTAINMENT

Instrumental Music Program

Final Concerts Approach

by Bill Bing

It's been another busy year for the Caltech instrumental music program. The musicians have, fortunately, quite a few performances left in the schedule. Here's a run-down of the final concerts for the year.

Chamber Music Concert #1
Saturday, May 9
8:00PM Dabney Lounge

This concert will include some particularly interesting compositions. You will hear a quartet for piano and strings written by Mendelssohn at the age of thirteen, and a very early trio for flute, bassoon, and piano by Beethoven. In addition, there will be a divertimento by Mozart based upon arias from "The Marriage of Figaro," but arranged for two clarinets and bassoon. Finally, the program will include a trio sonata by Handel and the original version of the celebrated "Canon in D" by Pachelbel. Come to the concert and find out what instruments Pachelbel intended to perform this work.

Chamber Music Concert #2
Friday, May 15
8:00PM Dabney Lounge

This promises to feature outstanding performances by some of Caltech's finest student musicians. Program highlights will be the beautiful "Trio in D Minor" for piano, violin, and cello by Mendelssohn, as well as a delightful trio for flute, viola, and piano by Martinu. In addition, there will be a performance of Ingolf Dahl's exciting "Music for Brass Instruments," a quartet by Teleman and trio by Damase.

8th Annual BANDORAMA
Friday, May 22
8:00PM Ramo Auditorium

Bandorama is always a spectacular finish to the year for Caltech's Wind Ensemble and jazz bands. The eighth Bandorama will be no exception. This year's guest soloist is Jim Self, virtuoso of the tuba. He will perform Richard Strauss' Horn Concerto with the Wind Ensemble, and several pieces

on the EVI (electronic valve instrument).

The Wind Ensemble will also perform "Jupiter" from Holst's suite "The Planets." The music will be accompanied by a show of appropriate photos, courtesy of band member and JPL computer graphics expert Dr. James Blinn.

A newly arranged version of the "Throop Polytechnic Institute March" will make its debut at this concert. This is always one of our most popular concerts, so arrive a little early for the best seats!

Chamber Music Concert #3
Saturday, May 23
8:00PM Ramo Auditorium

This final chamber music evening will have something for everybody. Mozart's masterpiece, the "Quintet for Clarinet and Strings," will be performed, as well as a less familiar quartet for oboe and strings by Benjamin Britten.

There will be music for brass quintets, a movement of Dvorak's "American" String Quarter, and the playful "Suite for Violin, Clarinet, and Piano" by Darius Milhaud. Chamber music students at Caltech rarely have the opportunity to perform in Ramo Auditorium, so they particularly appreciate a large audience in this concert hall.

It would be a pleasure to see you at these concerts.

Ballet Achieves Mixed Results

by David Bruning

Last Sunday night's performance by the Joffrey ballet was a mixed bill of three ballets, all choreographed by Frederick Ashton. The results were also mixed with the ballets ranging from passable to very good.

notones II was a pas de trois of two men and one woman. Both parts showed off the intricate moves of the dancers and the coordination between all three performers. The second was the better of the two and provided some of the most intricate dancing of the evening.

The third ballet was called *Les Patineurs*, and represented a Victorian ice-skating party. This was the most entertaining work of the evening and also contained the most difficult maneuvers by the dancers. The ballet alternated solos or duets with the whole group of skaters. The solos and duets contained very difficult moves, while the group scenes used intricate interactions between all the skaters. Although the "skaters" were actually dancing, it was very easy to visualize a 19th-century ice-skating party.

The first ballet was called *Iluminations*, and was a sequence of danced pictures of the images evoked by the poetry of Arthur Rimbaud. Maybe if you knew the poems and what the scenes were supposed to portray this would have been more entertaining. As it stood however, the ballet was very difficult to follow and not even very interesting.

The second ballet consisted of two parts, *Monotones I* and *II*. *Monotones I* was a pas de trois by two women and a man, while *Mo-*

The Inside World

Blacker: 100,000 ways to kill yourself:

1. Drive off the Angeles Crest Highway.
2. Slash your wrists.
3. Break a thermometer and eat it.
4. Drop your hairdryer in the bathtub.
5. Lick a scurve's foot.
6. Take cyanide.
7. Like the BTE guy.
8. Dive to 100 feet and hold your breath coming up.
9. Shoot yourself in the face.
10. Steal Tom Wahl's parking spot.
11. Jump off a tall building.
12. Hit the registrar.
13. Overdose in the steam tunnels.
14. Jump onto the 210 from the Lake overpass.
15. Suicide bridge.
16. Stick firecrackers up your nose.
17. Light them.
18. Cut off your head.
19. Cut off your body.
20. Knife into stomach; up and across.
21. Plutonium sandwich.
22. Hang yourself from your skybed with speaker cable.
23. Hang yourself from 5A balcony with a CITNET cable.
24. Hit the registrar.
25. Write Inside World under an assumed name.

-Arex

Dabney: One palm tree. One nest. Three baby mockingbirds. Five cats at its base. Skitter, the vertical cat. Two baby mockingbirds, one flurry of mockingbird feathers. Two angry adult mockingbirds. One slightly pecked cat.

One Dukovrosh. One ladder, one newspaper with one slightly clawed baby mockingbird. One heroic rescue, one startled parent mockingbird. Five hackled cats. One metal palm tree girdle. Skitter, the 9.8 m/sec/sec cat. Skitter, the slightly damaged cat. Bill, the clawless and clueless cat for no apparent reason in the middle of an otherwise coherent story.

Three eventless hours. One cautious adult mockingbird. One beakful of food. Two fed chicks. One happy ending.

Ninety-five. Bad. Wu Headrest, the man of "that's a g-g-g-g-good qu-qu-qu-question. Why don't you fig-fig-ure it ou-ou-out? Ninety-five. Bad. Ninety-five differential equations. Write on down, pass it around, ninety-four differential equations to solve....

Ninety-five midterm. Real bad. Flames. Late nights. "It's a three hour and fifteen minute test, due at 3PM today. It's 11:40 now. That means I don't have to start it for another...."

continued on page 4

Attention, Formal Couples

The final (we hope) seating chart for the ASCI formal is posted at the MOSH's O'ce. If there are any terrible (ie, life-threatening) problems with the table set-ups please call x3691 and beg Nancy to change your seating. Bribes would be helpful.

Representative Brown

from page 1
more confidence in the water we drink and the air we breath. This would be real national security. Because of the global consequences of pollution, and man's impact on the environment, to say nothing of nuclear war, we cannot afford to think only in terms of national security."

Congressman Brown concluded, "Restoring the balance between military and non-military R&D, and re-emphasizing the importance of basic research will benefit the health of our economy, and make our world and more secure place in which to live with all our neighbors. I hope you will join me in my efforts to support basic science, and the responsible use of technology, to build a stronger and more secure world."

**Correction:
Evans Not the Man**

The *Tech* calls your attention to the "What Goes On" section of last week. William Joseph Evans was mistakenly given credit for opening nominations for elected positions with the Society of

Physics Students. T. Gould, his neighbor, should have received credit. The *Tech* apologizes for any inconvenience that we might have caused with the mistake. See Mr Evans for details.



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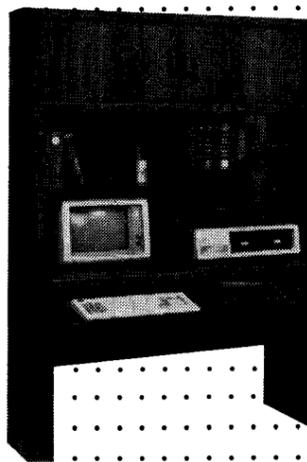
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More Inside World

from page 3

Tomorrow. Ditch Day. Wise up, frosh. Sheets are for north houses. Sentence fragments. Good literary devices. Forth playing jai-alai (spelled HI-LIE). Tournament. Congrats to Lyle Tallfrosh. Brave and valiant defeat of Ami Shortfrosh in antepenultimate round. Ringers? What ringers? You may call them ringers; I call it Art.

RA barbecue followed. Karen tasted good, though Pat was slightly stringy. Nominations for new RA's start immediately.

Darb serenity severely taxed. Screaming flems, drunken scurves. New gossip, not fit for inside worlds. This writer not scum. Not like certain others.

Excomm meeting Thursday. Frosh, better plan to have shown up. Important. Walls and Rotations and \$\$\$ to spend. Inside World writer's roompick moved to top of the senior class, just above president and below raunch librarian.

Claim Alan Moore and DC made me look like fool. (Not hard.) So it's delayed a month. More anticipation. Good.

Seniors. Wimps. Waterbeds. Good. Ditch Day. Tomorrow. Ciao.

—Yo. Editors. Get it right this time.

Fleming: Believe it or not, as complete as the course-offering list for next year looked, a few courses were left out. These omitted courses are reprinted here.

Ae/Bi/Pe 40. Mechanisms of Lawn Dart Fatalities
It was originally thought that a person would have to put forth a great deal of effort in order to receive a mortal lawn dart wound, but now evidence is producing some startling conclusions.

Art 107. Underground Art
Previously unknown works such as Perkins' "Children in a Shark Frenzy," Leather-face's "Making Chili," and "Hit and Run" will be discussed.

Pa/Ph 4,5,6 and 11 Science for TV News
Learn how to take a complex problem, pull some dramatic conclusions out of thin air, and make everything understandable to the members of B and G.

Ps 1000 Lynch Mob Politics
The Sticks and Stones theory, cooperative and some non-cooperative lynchings will be discussed, the "Hangman's Dilemma," and other models.

Casino Night on Saturday with Page! Dress is semi-formal (i.e., no cheesy mustaches) and there'll be a live band in front of Alley 5. (so Sue—you'll have to pull yourself away from studying and party just this once.) There's a rumor going round that ED has a nevus fetish, so if you hear it—realize that it's only a rumor so don't believe it (except for the part about ED dating a girl with a hairy nevus the size of a sweatband on her wrist.) Finally, an alley challenge—between two alleys that smell alike. Way to go! Everyone who organized, officiated, participated, and kicked butt from Fleming House at Sports Day. Well, the scurves dropped by and although they (the dry ones) were promptly whooshed, they did give our shower drains quite a workout. (Can you say filth?) By the way, Barry, don't think that the antics (shit) you did in your drunken stupor last Thursday has been forgotten....

—The Poet Laureate!

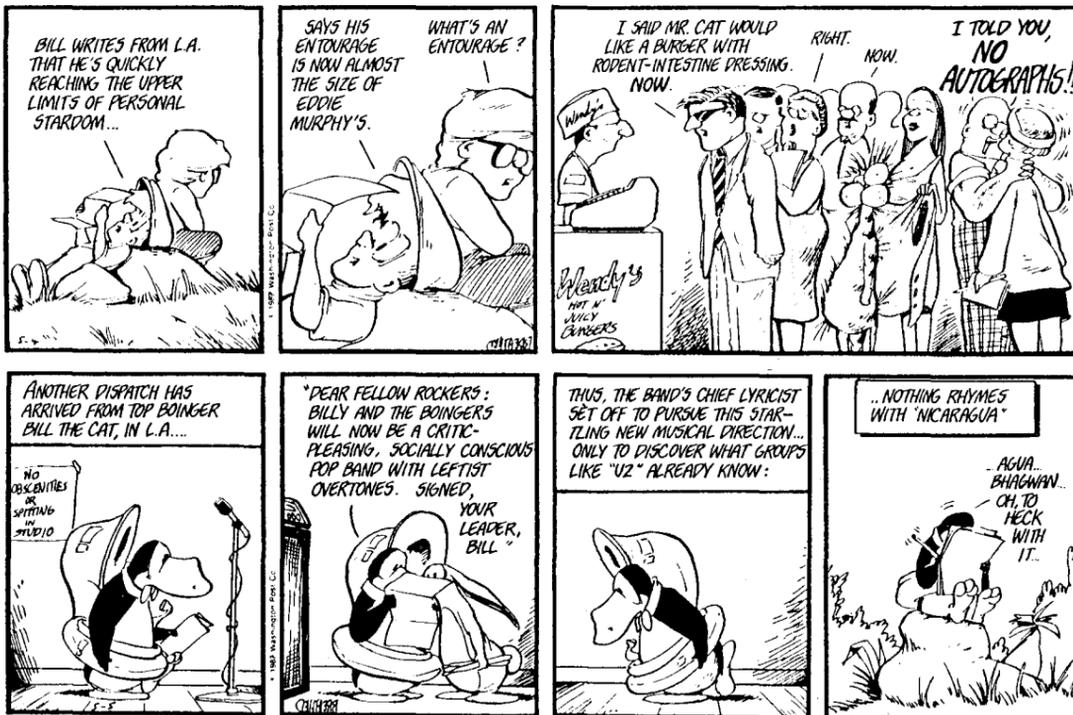
Lloyd: Kahn and Mindy
[Mindy walks into apartment carrying groceries]
Mindy: Kahn! Kahn, are you home?
[Kahn crawls out from underneath the couch]
Mindy: Kahn! What are you doing under the couch?
Kahn: I am such a wise guy! I am hungry, so I was thinking "Kahn, you are so wise. Where can you get the food?" So I go bravely in the couch to find the treasure of the lost potato chips where no man went before! I am in frontier.
Mindy: Let me make you a sandwich.
[Doorbell rings and Mindy opens door]
O'Neil: Hi Mindy. Is Kahn here?
Mindy: Yeah, he's...
O'Neil: Bye. [slams door]
Kahn: He is afraid because I am such a God. Like a knight wearing the armor. I stride to...
[Doorbell rings again. Mindy answers.]
Jeitner: Hi Mindy. Is Kahn here?
Mindy: Yes, but...
Jeitner: See ya. [picks up skateboard and slams door]
Kahn: [still ranting and raving from last time] ... the ogres and dragons will cringe in my fear! I am impeevious! With I am so wise, I trick them...
[Doorbell rings again.]
Doug: Is Kahn here, aaaaah?
Mindy: What is it with you guys! Why don't you just leave us alone and...
Doug: You're just mad 'cause you didn't get laid!
[Mindy slams door]
Commercial Break
[Scurve and Lloydie are talking in lower crotch]
Scurve: How do you get your shirts so clean, Mr. Lee?
Lloydie: Sssshhh! Ancient North House Secret.
[Cut to Lloydie's girlfriend]
Girlfriend: My Boyfriend! Some hot shot! Here's his Ancient North House Secret: He washes them!
[She turns to boyfriend]
Girlfriend: Hey! It's laundry time!
Scurve: Ancient North House Secret, huh! Now if I could only get my hair clean...

[A sweeping symphonic melody starts, and a rainbow appears on the screen]
Join us here at the FOX network every Saturday morning starting at 6:00 with the "Cute Cuddleywumps", followed by "Kissie Bunny and her Doggie Pals". Starting at 7:00, we have "Painful Pete and the Nazi Death Squad". Next, it's the "Careless Bears" who will be showing us this week why we don't play with matches or plastic bags. Wheezy Bear and Near-Sighted Bear get into real trouble.... At 8:00, it's the "Intergalactic Dino-Mega-Deth-Hell-Bot-Trons / Bugs Bunny Hour". At 9:00, we have "Pei-hsiu Herman's Playhouse", and at 10:00, we have our Saturday Morning Special: "Nobody Likes Me, Because I'm a Hell-Geek". Yes, it's a fuzzy, happy, death-killer time here at the FOX broadcasting network every Saturday morning.

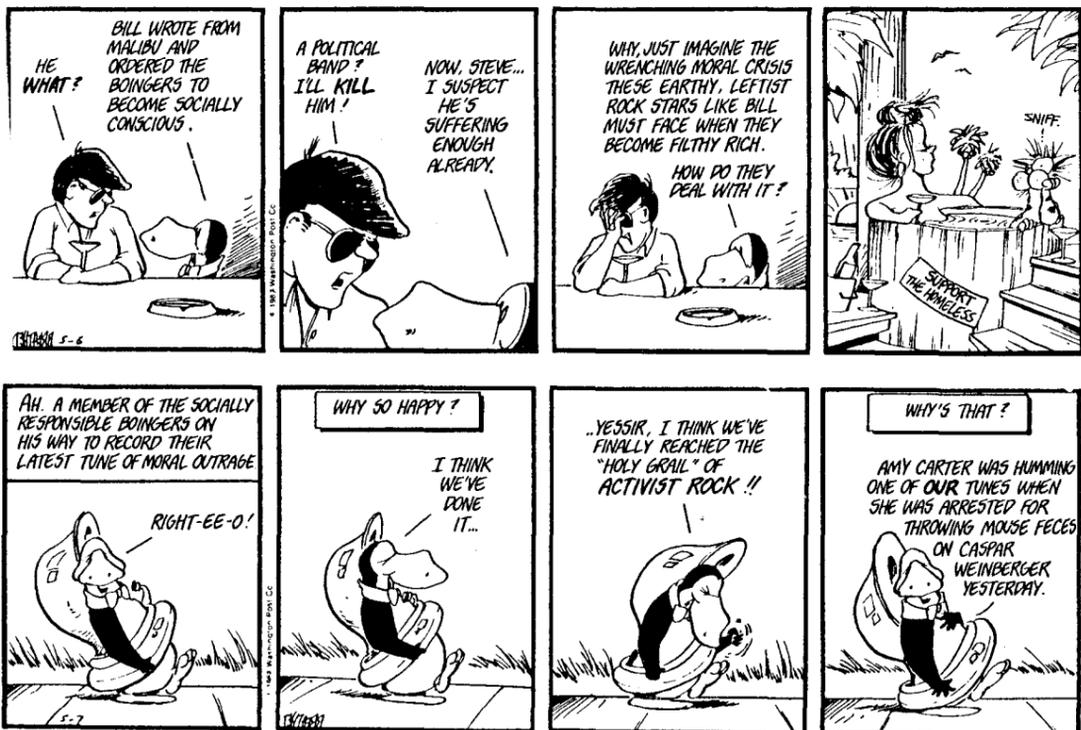
[back to our program]
Mindy: Come on, I'll show you how to use the washing machine. You've been on this planet for a month now, and you've only been wearing four shirts.
Kahn: Oh NO! When I am young on Ork, my parents were such wise guys that to teach me when I was bad, they put me in dryer, and I kept falling on my head. Because of that, I am wise and god-like like them. I do not need what the dryer can teach! I am impeevious! Alone in my quest! To be god-like among the peoples! To be...
Mindy: No, you use the washer and dryer to get clothes clean.
Kahn: No, that is not necessary. I will go forth, in the world, with only my four trusty shirts. They are like my friends. We will vanquish the evil and free the beautiful maiden. We will put red paint and make them think they bleed...
—Skeeter, Jethro, and Enos

Page: THE BOOK OF SEX
In the beginning at Tech there were ten boys, a girl and moral fibre. And God saw that it was bad. In fact, He thought it sucked. Actually He was just annoyed because Mrs. God had had a lot of headaches recently. Anyway, in his infinite wisdom, he appeared before the womenfolk in a vision.
"Oh hear me, children. Thou art endowed with moral fibre but nine out of ten boys are getting frustrated. Me thinks 'tis time to make a deal."
And the women replied:
"Oh my, you are so big and mighty. We hear thee and obey. What should we do?"
"Firstly, you must give up your moral fibre. In return I shall raise the hormone level of each and every boy here—excepting those in red shirts, who have discovered the evil ways of two men releasing each other's frustrations. I shall then teach you the ancient arts of oral, manual, mental, and emotional manipulation so that thou might deceive, lie, act two-faced, say "no", and get headaches at will as you toy with the minds of mortal boys. In your own minds you shall be raised to the unprecedented level of sexual goddesses."
continued on page 5

BLOOM



COUNTY



Neural Networks

from page 1
words were exceptions to general rules.

When Dr Sejnowski altered the strengths of connections between different neurons he found that even a large amount of damage didn't impair the performance of the network significantly.

Other experiments were performed to determine the roles each neuron played in the network. As a result of other experiments, Sejnowski discovered that one neuron was a "vowel detector" that fired whenever a letter corresponded to any vowel sound, and that other neurons, or combinations of neurons, responded to specific vowel sounds.

At Caltech, Sejnowski has programmed a network with the rules of backgammon, but without any strategies. The network learned to play extremely well after playing games against both conventional computer programs and humans. Occasionally, however, it made moves that even a human novice would not have made.

Sejnowski received his PhD at Princeton, and currently is a professor in four departments at Johns Hopkins University. He has visited Caltech for the last four months.

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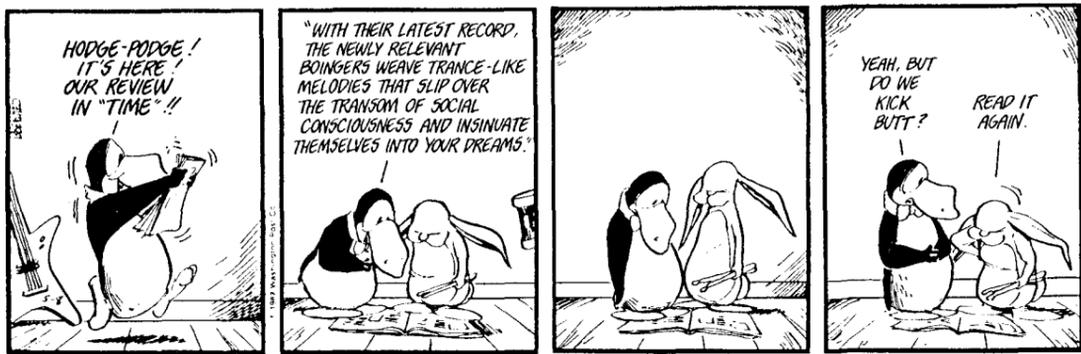
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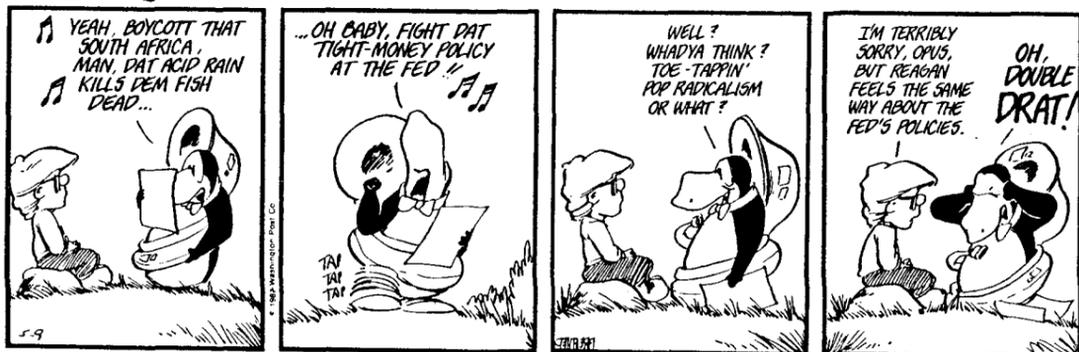
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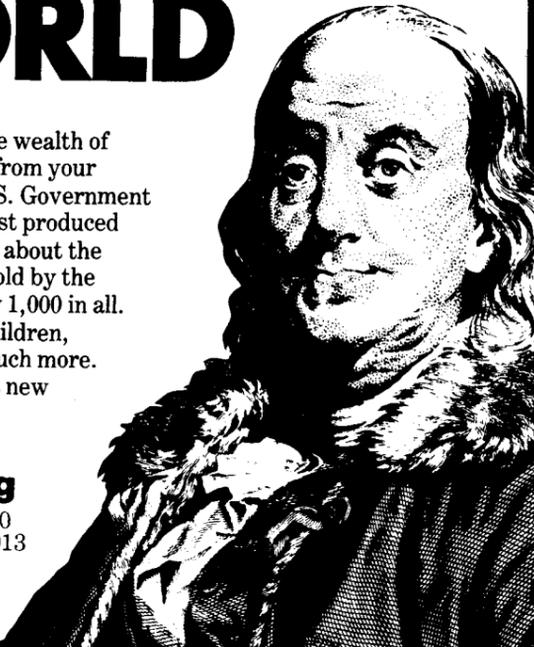
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By Berke Breathed



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More Inside World

from page 4

The womenfolk thought about it and replied: "Thou hast a deal if, and only if, their hormone levels are raised to such an extent that even with strings tied to their genitalia they will remain in blissful ignorance of our antics."

"So it shall be. But heed me this warning, women. If thou dost ever venture into the real world there shalt be a rude shock awaiting thee. For there, boys are boys and women only receive the attention they truly deserve."

And so it was for many years. But as the years of humility passed, boys, who were of course unaware of their plight, began to feel strange and wonderful feelings. Customs and ideas that had been lost in prehistory were aroused once more. No longer unclear of the concepts of self-respect and pussywimps, of shared relationships and love, more boys began to see the light. They spent a lot of time with other female members of the same family; and they learned to laugh at the incredible arrogance of their womenfolk. But most of all, they learned how to stand up proud of their celibacy and say: "Yo, bitch! Why don't you c'mon o'er here and gimme some!" Reality was restored.

So endeth the first book of sex. Today's reading was taken from the gospel according to random people. Amen. Okay, people. Having indulged in a little philosophical thought it is now time to get really silly for the weekend. Everybody turn to the person next to you and say: "I've always loved you. Voulez-vous te coucher avec moi ce soir?"

Now that wasn't too difficult, was it. Orgy this Saturday night in Fleming courtyard so be there or be gay. Now come on guys, it's getting towards the end of the school year and I don't want anyone going home to mummy and daddy a virgin still. They're paying a lot of money for you to go to college so let's keep our end (of the bargain) up. For crying out loud, let's git down, git funky and git laid. (Yes, you too can become a serious party animal. For more details send a blank check, no obligation, to:

Perverts Anonymous
c/o Richard 'See-You-Later-If-I-Screw-Up-Once-More' Mgrdechian
New York, New York.)

In other world news, that smell in Upper Arlington isn't the rat it's just the aftermath of fifty smelly, asexual, bisexual, 'I'll-take-anything-in-pants-sexual', faggish, boring nerdy, rabid beasts that constitute the cream of Ricketts. PCD was Wednesday. Thanks go to the boys in red for helping out. Maybe you guys aint so bad after all. But then again...

Have fun at the formal, kiddies,

—Bruce.

Ricketts: This has been a week of debauchery, drunkenness and general moral filth in Ricketts Hovse. The screwdriver orgy was a resounding success, with screwdrivers in Snatch and Lisa in Broken Cherry. (More on Lisa later.) Dave Lomax gets the prize for highest delta p (at least on the test pre-Alex). (I was told not to mention Gaby in the last sentence.) It is rumored that many frosh were avoiding wet spots that night. A new experience, I'm sure.

Caltex barely survived that most hallowed of Ricketts traditions, PCDE. It all began with two minutes forty-one seconds of the golden purity that is Kaluzniakiski. Then on to the three-inch Blacker Moles, where Lisa's true spirit came out... both of them. Dabney offered no resistance, and Fleming, uncharacteristically, did little more. The North Houses were the North Houses, of course, with Page being especially wimpy. Vito did throw himself at the spectators. Kori was not pleased. (Note to Blacker Moles: fire hoses should not be used outside the house.)

Now for one paragraph without mentioning sex. Whoops, try again. Leopold. Ross. Joe. Shroom. Mike. Samer. Hoover. Dan and Laura (still). Alex (but he tries). Gaylon. Glen(n). Bill (there's always one senior). And, unfortunately... but for the sake of Mr. and Mrs. Wiese, I won't give her name. Oh, yes, we can't forget Vito.

But enough of that. Lisa's new pussy, fondly known as Muffin (yum, yum), was displayed in the courtyard. After much petting and stroking, Muffin was voted into the Hovse. By the way, Richard has one, too, although he may prefer hers.

Other naughty bits: Jerry claims that his weekend on the beach at Santa Monica resulted in no tan lines. Sun burns down there can be really painful, Jer. Speaking of Jerry, he wants me to say "hi" to his parents. Hi, Mr. and Mrs. Hauck. Don't worry, your son has been very good, keeping older women company at night when they would otherwise be alone. (But she did complain about his cold floor.) Samer says he has been having 95 problems, but we think he can lower his purity score. An interesting silhouette in Satomi's window drew a lot of attention. The obedience school paid off for the Flems. They followed us through all the North Houses during PCDE, six paces behind and two to the left. Mark's love life is obviously in a shambles. It has been two whole days since his girlfriend was last seen in L.D. Inside sources, who ask that their names not be revealed (Sam), say that Gaby "loves that feather duster." Jeff Greason and Diana Chu have never been mentioned in this section. What's the connection? We want to know.

One more thing: Tylis says, RETAKE PICTURES ARE AT 4:00 PM ON SATURDAY IN THE COURTYARD. You're welcome, Tylis. That's the second easiest five bucks I've ever made.

Hey, everybody! Brian needs a pseudonym! Until you write in with a better one, it'll be this—

—The Great Neck Strangler and The Lil' Cook-Man



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SPORTS



Sports Day Excitement— Sprinters participating in the fun of Sports day get off to a good start in this race last Sunday. Participants in the events included students, RA's, Professors, Deans, the MOSH, and even Alumni.

Caltech Hosts SCIAC Tourney

by Tung Yin

The Division 3 SCIAC tournament in men's tennis concluded at Caltech Saturday afternoon.

When it finished, it determined the final order of the seven schools in the division: Claremont, Redlands, Occidental, Pomona-Pitzer, Caltech, Whittier, and La Verne. Caltech did reasonably well in the tournament, earning as many points as Pomona Pitzer.

In the A bracket, Raleigh Chiu beat Doug Abbott of Pomona in straight sets and then drew a default because #1 seed Frank Hinman of Claremont was injured. Then in the semifinals, Raleigh lost to Ben Junta of Oxy, but he managed to score two points for Caltech.

Mark Holdsworth played exceptionally well against Paul Scholz of Claremont, but couldn't quite take the second set. Scholz,

the #3 seed, later won the A singles.

In the B bracket, Steve Roskowski and Tom Nolan both had difficult draws. Steve played well but lost to finalist Andrew Chekian, of Claremont.

In the C bracket, David Garza outlasted his first round opponent, Chris Perkins of Whittier. He then lost to the #1 seed, Matt Gleason of Claremont. In Doubles, Dave and Gene Pottenger beat the Whittier C team and lost to the Claremont team, which went on the win in that bracket.

The team finished the season with a 4-8 league record, with numerous 4-5 losses during the season.

SCIAC scores follow:

"A" Bracket: 1st Round: P. Scholz d. M. Holdsworth, 6-1, 6-4. R.

Chiu d. D. Abbot, 7-5, 6-3. 2nd Round: R. Chiu d. F. Hinman, def. 3rd Round: B. Junta d. R. Chiu, 6-1, 6-2. Final: P. Scholz d. B. Junta, 6-3, 6-3.

"B" Bracket: 1st Round: A. Chekian d. S. Roskowski, 6-2, 6-3. S. Hilty (Oxy) d. T. Nolan, 6-3, 6-0. Final: J. Rende (CMS) d. A. Chekian, 7-5, 6-2.

"C" Bracket: 1st Round: D. Garza d. C. Perkins, 1-6, 6-2, 6-2. T. Whitmore (P-P) d. K. Nguyen, 6-3, 6-3. 2nd Round: M. Gleason d. D. Garza, 6-1, 6-3. Final: J. Kranz (Red) d. R. Skanse (Red), 6-4, 6-4.



Raleigh Chiu is seen here stretching his body out to reach a difficult shot in the SCIAC tournament last Friday. Raleigh managed to make it to the semifinals of the difficult "A" level.

Tech Sluggers Strike Out

by Doug Oute

The Caltech baseball season ground to a halt last Saturday with two heart-breaking losses to those pesky Baptists at Pacific Coast Baptist Bible College (PCBBC). This ended our season at 2-27, which is not indicative of the way the season actually went.

Senior Brett Bush pitched the first game. Jim Burleigh crushed his first homer of the season, which might have been a grand slam if a Caltech base-runner had not been picked off of third on the last pitch to Burleigh to end the previous inning.

The second game was much closer. PCBBC squeaked passed the Beavers by only one run, 7-6. In a heretofore unheard of move, Bush started both games of the double-header on the mound for Tech. Bush hoped to obtain one more victory before his graduation.

The game started off well with Caltech jumping out to a 1-0 lead. But Tech gave the lead back to PCBBC through an occasional mistake here and there. Jim Burleigh hit another baseball out of the park in the second game. Alas, a minor technicality interfered and the home-plate umpire called Burleigh out.

Brian Colder relieved Bush after five strong innings by the starter. Colder continued the strong pitching. It was in vain, however, as the Beavers came up one run short.

Two impressive individual performances should be noted here. Doug Roberts got his 19th and 20th stolen bases of the season to top the single-season record held previously by Michael Keating. Keating still holds a slim lead in career thefts. Also, Jim Bob Coykendall went four for eight, to end up leading the

team in hits and in batting average for the season.

The Batting Beavers thank all the fans who supported us at our games this season. The team members hope to see you all next year.

CALTECH public events

PIANIST PETER MACK MAKES CALIFORNIA DEBUT

Pianist Peter Mack will give a recital Saturday evening beginning at 8 p.m. in Ramo Auditorium. Included on Mr. Mack's program will be Haydn's Sonata No. 62 in E-flat, Hob. XVI:52; Beethoven's Sonata No. 21 in C Major, Op. 53 ("Waldstein"); Janacek's Sonata 1.X.1905; Rachmaninoff's Liebesfreud.

Mr. Mack's numerous accomplishments include first place in the 1985 Sherman Clay Competition in Santa Ana. He has also recorded a series of programs for Radio Telefis Eireann in Ireland, which broadcast a documentary film of his life.

CIT student tickets to this recital are are priced at \$6.25; \$6.00 rush tickets go on sale the day of the show. The CIT/JPL faculty and staff ticket price is \$10.50. They can also purchase TECHTIX, for the same price as CIT student tickets, today between noon and 4:30 p.m. at the Caltech Ticket Office.

The Mysterious World of Magic and Illusion is returning by popular demand Saturday, May 30 with performances at 2 p.m. and 8 p.m. Magic, sleight of hand and legerdemain will be showcased in this spectacular show.

Featured will be Kevin James' "Magic of the '80s," Glenn Falkenstein with E.S. Pecially Yours," the Magic Castle's "Parlour Magician of the Year" Tom Ogden, Frances Willard's "The Spirit Cabinet," and "Master Magician and Illusionist" Chuck Jones and Company.

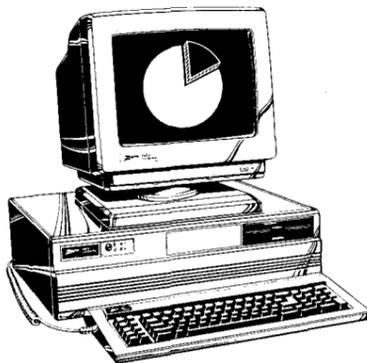
The 2 p.m. show has been specially designed for children as part of Public Events' Family Faire series. This performance will be approximately 70 minutes in length.

CIT student tickets are priced at \$4.00 for the matinee and \$6.25-5.00-3.73 for the evening show; \$6.00 rush tickets go on sale the day of the show. The CIT/JPL faculty and staff ticket price is \$6.00 for the matinee and \$10.50-8.00-5.50 for the evening performance. They can also purchase TECHTIX, for the price of CIT student tickets, Friday, May 29 between noon and 4:30 p.m. at the Caltech Ticket Office.

Also appearing on Saturday, May 30 will be the Royal Lichtenstein Quarter Ring Sidewalk Circus. Performances will be held at noon and 3:30 p.m. in Ramo Auditorium. A potpourri of magic, juggling, small animal acts and more will be featured. Ticket prices and discounts are the same as those for the matinee performance of The Mysterious World of Magic and Illusion.

Tickets to all Caltech Public Events can be purchased at the Caltech Ticket Office, located just north of the Beckman Auditorium parking lot. For further information about the exciting Public Events scheduled this season, call campus ext. 4652.

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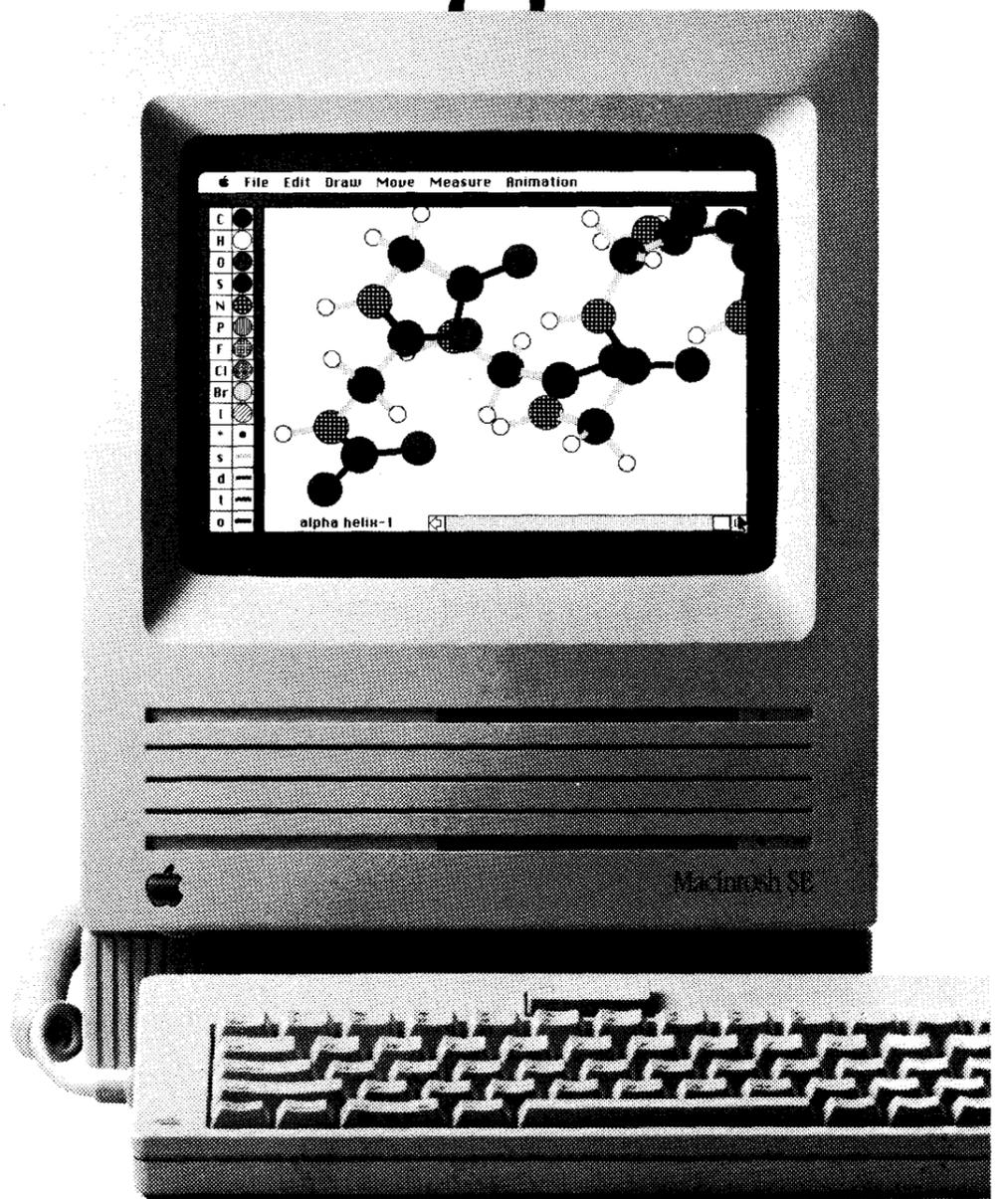
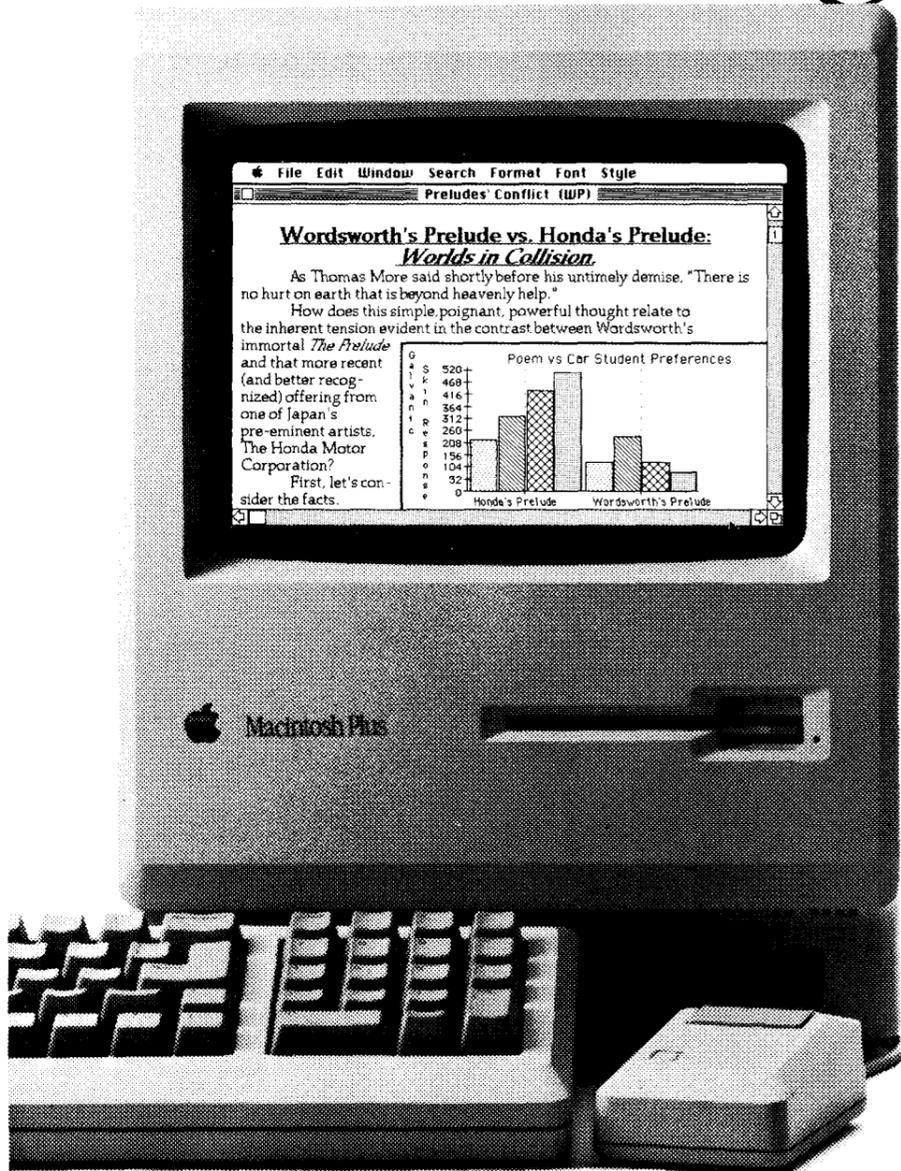
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Announcements must be received by the Tuesday prior to publication.

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Master's Tea

All undergraduates are cordially invited to the Third Term Master's Tea on Thursday, May 21 at 3:00pm, outside the Master's Office. Tea and coffee will be served with luscious cakes—come and enjoy!

Be A Part Of The Fun

KELROF's coming once again! KELROF is a race with 10-person teams which compete by running consecutive miles for 24 hours. This year's KELROF will be from 9:00 am May 16th to 9:00 am May 17th. Get together with your 9 favorite runners (or people) and give a list of your team to James Shih (1-60, 578-9370). All members of the Caltech community are encouraged to participate. It's real, it's fun, it's exciting!

Caltech Vice?

The GSC is sponsoring a public discussion of present and future campus security issues. The meeting will be held in 153 Noyes at 7:30 pm on Tuesday, May 19th. James Mingos, Director of Business Services, and Harold Ginder, Security Office head, will be present to speak and answer questions, along with ASCIT and GSC representatives. The new parking structure, parking lot security, lighting and campus rekeying are among the topics to be discussed. Please attend and help contribute to the improvement of campus safety. For further information, call Craig Steele, x4840.

Student Space Group Meeting

On Tuesday, May 5 at 7:30 pm, Caltech SEDS will be showing Apollo 17 and Shuttle 61-B movies in the Y Lounge. We will discuss our upcoming star party and possible tour of JPL. All members of the Caltech community are welcome to attend.

Aloha Oe

Howzit brah. No forget da meeting dis Saturday (5/9), 1:00pm for da Hawaii Club. Goig be in Ruddock dining hall wit ono grinds, so no miss em. Latahs. (Note to non-members: It's not too late to join. Just come to the meeting or contact John Kubodera or President Biff Yamazaki at 578-9079.)

Help Memorial Day

Please contact Nancy Drehwing (x3691) if you are interested in helping with a Memorial Day Picnic at the athletic field on May 25. (when else?) Duties to be assigned include organization and officiation of soccer, softball, inner tube water polo, and clean-up.

Attention Graduate Students

Are you interested in meeting Caltech Alumni? Saturday, May 16 is Alumni Seminar Day! The GSC has a limited number of tickets to the Alumni Seminar Day dinner on the Olive Walk. These tickets will be given away to graduate students who would like to meet with visiting alumni. To request a ticket, please send a note to: Graduate Student Council, Alumni Seminar Day Dinner, Mail Code 218-51. Be sure to include your name and mail code—the ticket will be mailed to you ahead of time!

Be a Polo Man

A meeting of folks interested in playing next fall on the Water Polo Team will be at the P.E. classroom at 5:00PM Tuesday May 12. Swim over and be a Polo Man!

S.P.E.C.T.R.E. Meeting

S.P.E.C.T.R.E., the Caltech Science Fiction Society, will meet at 7:30 pm on Wednesday, 13 May 87, in the Y Lounge (upstairs in Winnett Student Center). We'll discuss the soon-to-be-available library, and our next star party. Free munchies and soda, and the sixth and final episode of *The Hitchhiker's Guide to the Galaxy*. For more info, call Mark Looper at 304-0006.

Medieval/Renaissance Pot Luck

The Caltech Medieval/Renaissance Society will be meeting at 3 pm this Sunday (May 10) in Clubroom 1, Winnett Student Center. As usual, it's pot luck, so bring food!

Quasars

Dr. David Sanders will speak on "Infrared Galaxies and the Origin of Quasars" for next Wednesday's Noon Update. May 13 in Clubroom 1.

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Cooking Class

On Tuesday, May 12 at 7:30 pm the Caltech Y will hold a basic cooking class. The subject—desserts! Pat Robb will lead you step-by-step through some of the most luscious desserts known to man. Learn to make brownies, souped-up chocolate cake, and Becca's Cheesecake. Samples provided, of course, and the cost is \$1.00. Sign up in the Y today!

Grad Student Summer Housing

Graduate Student summer housing applications are now available in the Housing Office. Remember, the current academic year housing contract for the On-Campus Graduate Houses expires at 12 noon, June 19 (Friday), 1987.

Science Of Ill Repute

The Southern California Skeptics and the Caltech Y will present a free public lecture by Dr. L. Pearce Williams entitled "Magnetic Fluids and Bumpy Heads." This lecture, about the scientific controversies surrounding the works of Franz Anton Mesmer and Franz Joseph Gall, will take place at 2:00 pm on Sunday, May 10 in Baxter Lecture Hall. Books and literature will be available.

Bridge Championship

The Caltech Bridge Club is holding a club championship at 7:00 pm on Monday, 11 May in the Red Door Cafe. If you play bridge, BE THERE! Also, we will be electing officers for next year.

B.U.S.A.C. Nominations Open

Nominations are open for representatives to B.U.S.A.C. (Biology Undergraduate Student Advisory Committee) for next year. We need two sophomore, two junior, and three senior reps. All undergraduates in the biology option are eligible. Void where prohibited. Nominations close May 15. Send nominations to Darin Takemoto (1-53). For information on the exciting world of B.U.S.A.C., contact your friendly neighborhood B.U.S.A.C. rep.

Career Discussion

A Career Discussion on "Entrepreneurs" will begin at 7:30 pm on Wednesday, May 13 at the Red Door Cafe. Undergrads and grad students are welcome. Sponsored by the Gnome Club and the Alumni Association. Refreshments will be served.

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CALTECH

PASADENA, CA 91125

The California Tech is published weekly except during examination and vacation periods by Associated Students of the California Institute of Technology, Inc.

Chamber Music Concert

At 8:00 pm on Saturday, May 9, there will be a free chamber music concert in Dabney Hall Lounge. This concert will include some particularly interesting compositions. You will hear a quartet for piano and strings written by Mendelssohn at the age of thirteen, and a very early trio for flute, bassoon, and piano by Beethoven. In addition, there will be a divertimento by Mozart based upon arias from "The Marriage of Figaro," but arranged for two clarinets and bassoon. Finally, the program will include a trio sonata by Handel and the original version of the celebrated "Canon in D" by Pachelbel. Come to the concert and find out what instruments Pachelbel intended to perform this work.

Feynman On Feynman

The Caltech Management Association presents Dr. Richard P. Feynman on Tuesday, May 12 from 5-6 pm in Beckman Auditorium. This talk, also open to Caltech staff and retirees, will include Dr. Feynman's behind the scenes views of the Challenger Commission's investigation of the Shuttle disaster.

Scheer Enlightenment

Robert Scheer, noted author and *Los Angeles Times* correspondent, will speak on Wednesday, May 13 at 8 pm in Baxter Lecture Hall. Mr. Scheer recently visited the Soviet Union, where he interviewed many highly-placed Soviet officials, as well as visiting the Chernobyl disaster site. He will discuss recent changes in the U.S.S.R. in an address titled "Mikhail Gorbachev's Foreign Policy and the End of the 'Cold War'".

Mr. Scheer has spoken at Caltech before. His presentations have always proven informative, provocative, and entertaining. His latest visit is sponsored by the World Affairs Forum and the Distinguished Speakers Fund. For further information, call Craig Steele, x4840.

Lost Book

I've lost a book (*L'Education Sentimentale* by Flaubert) that is very important to me—it was a gift from my husband. Please call me (Jeanne Noda) at x6351 if you find the book.

Ametek Luncheon

Mr. Dennis Stanfill, who heads Stanfill, Doig & Co., will speak on "Leadership: Can the Force be with You?" at the AMETEK Leadership Luncheon to be held at the Athenaeum on Thursday, May 21 at noon. The hosted luncheon is the first of a series of events, sponsored by AMETEK Corp., aimed at developing the leadership potential of Caltech students. It will be followed by workshops, roundtables and possibly internships.

Please sign up as soon as possible at the Caltech Y as there is room for only 100 students (graduate & undergraduate).

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