

Dr. Harold Brown Talks About Caltech's Future

by Joseph Rhodes

During a recent trip to Washington I had an opportunity to visit Dr. Harold Brown, our newly appointed President and presently the Secretary of the Air Force. I was asked by the editors of the California Tech to ask Dr. Brown a few questions. He was happy to discuss these questions with me and invited me to his Pentagon office. The interview was held on December 19 for about an hour in Dr. Brown's office. A report of Dr. Brown's answers to the questions prepared by the Tech editors follows:

Q. Do you think Caltech should make special efforts to increase minority admissions?

A. Our first move should be to

get the local area schools together and from this input determine a proper program.

Q. Should the Caltech Academic attitude show an increased emphasis on humanities and social science?

A. For science and technology to find their full expression they have to be properly set in a context of society. I foresee some changes in emphasis.

Small Chuckle

Q. If you are familiar with the Caltech drug policy, what do you think of it?

A. I think it's as good as any I've seen. It strikes the right note of student responsibility.

Q. What do you think the role of women is at Caltech?

A. (After a small chuckle) I'm

all for the decision to admit women undergrads. This certainly reflects a proper desire to be in a more normal environment.

Q. What do you think about secret research on campus?

A. It doesn't belong on campus. The university community should engage in defense research of this nature only in the event of a national emergency; when the very existence of the nation is at stake. World War II was such an emergency. Our present situation is not.

Military-Industrial Complex

Q. What should the relationship of the campus be toward the Defense Department?

A. The campus community should accept grants with no

strings attached. The bulk of research grants should be non-defense. Remember, the seeking of research grants is largely a faculty matter.

Q. What do you think of the present draft situation with regards to students?

A. A lottery system would be better.

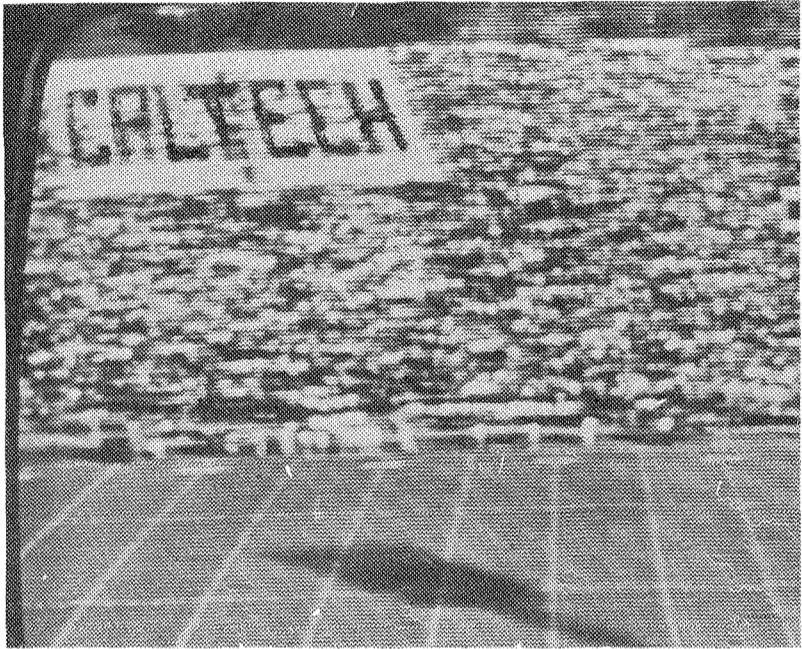
Q. Do you see yourself as an innovator or a mediator?

A. If I had to classify myself as one of these types, from my experience and personality I would describe myself as an innovator.

(At this point I asked Dr. Brown if he had any brief statement he would like to make to give us some idea of his initial plans as our next president).

Open Lines

A. I look forward to working with Caltech students, faculty, and administrators because they are of such high quality, and because of the opportunity it provides to participate in the solution that we're jointly going to come up with of how Caltech is going to relate to modern society and education. How we move is not clear, now. My feelings would be that we first establish lines of communications. I feel very strongly that open lines of communications lead to correct assessments and viable solutions. I plan to spend a lot of time at first just learning, through small groups and large groups of faculty and students. I don't, however, intend to establish committees to formalize this.



"And for our next trick . . ." Caltech's last New Year's prank made network television when Lloyd House members switched 2232 display cards in the 1961 Washington cheering section.

Megawatt Xformer Burns; Three Mice Blow Minds

A failure in the electrical transformer system of Caltech's Physical Plant resulted in an interruption of compressed air, steam, hot water, demineralized water, and chilled water to the entire Caltech campus early Christmas morning.

The 1,000 kilowatt transformer bank blew out at 2:51 a.m. According to O. M. Hardage, senior engineer of utility service of the Physical Plant, the cause of the failure has not yet been determined, and that any number of causes, including "plain unadulterated poor workmanship," could have been responsible.

Hardage estimated the cost of replacement of the unit as \$10,000.

A check of various departments on campus revealed that if the disruption of services had caused any damage to experiments, it was not reported, with the exception of the Biology Department which reported the loss of three mice which were in a decompression chamber at the time the compressed air supply was interrupted.

Hardage said a representative of Booth Computing Center had told him that the Institute was in danger of losing its computers, however. The systems affected by the transformer outage are evidently vital for the maintenance of the large computer systems.

According to Hardage, development plans call for the completion of the second stage of expansion of Physical Plant facilities to be completed by January, 1970. Hardage said that with the completion of the facilities, such an outage would never again occur.

Believe It Or Else

On this day in 1936, Howard Grobj of Saskatoon, Saskatchewan discovered a strange insect in his rootabaga patch. When he sent it to the University of Manitoba for identification, he discovered that the postage rate was more than he had expected. Some time later, his great aunt Lizzie almost died after being bitten by a rabid bushbaby while running nude through the forests of Northern Australia. Howard's family did not know of this until several days later.

California Tech

Associated Students of the California Institute of Technology

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Number 12

Teckers Foiled by Fuse

Rose Board Gets Twice Over

By Jim Cooper

Even the best laid plans of mice and men and Caltech students sometime go astray; but these words are perhaps little consolation to the group of Teckers whose plan to rig the scoreboard of the 1969 Rose Bowl Game went so dismally wrong, thanks to a combination of a faulty diode, poor timing, and President-elect Richard Nixon.

Although the first part of the story must—for obvious reasons—remain purely hypothetical, a fairly clear theory of what happened may be pieced together.

Theoretically, near the end of November, many Teckers had visions of displaying last term's victorious football score on the scoreboard of the 1969 Rose Bowl Game. One of these persons might well have resided in Dabney House.

Perhaps Consulted

Having this idea, this person may have consulted with a pair of electricians in Ricketts House who might have agreed to work on the plan.

Undoubtedly, several reconnaissance expeditions of the stadium and the scoreboard wiring would have been carried out. Finally working out a circuit which would accomplish the desired effect, the installation of the device would have taken place, with Wednesday, Thursday, and Friday nights of finals week (Dec. 18, 19, and 20) being a likely time at which the installation could have occurred.

The installation would probably involve a diode system so arranged that when the polarity of the system was in one direction, the scoreboard would accept normal commands, but when the polarity was reversed, the scoreboard would display "UCSD-31, Caltech-34." The reversal of the polarity for this installation probably would be accomplished by means of a remote-control radio signal.

Some Vision

In the meantime, another group of Tech students whose identity is more certain, also had visions of changing the Rose Bowl scoreboard. There was only one catch, however. This group knew nothing of the other

group's existence.

Thus, this group comprised of Page House residents, designed and built their own mechanism to put Caltech's victory on the Rose Bowl scoreboard.

The scene now switches to Monday, Dec. 30. According to Peter Deimel, municipal facilities manager of the City of Pasadena, a standard check of the scoreboard was being carried out, when a fuse blew, and the stadium's electrician could not find the trouble. The scoreboard manufacturer was notified, and they dispatched an electrician to the scene.

Here They Come

The arrival of the company's electricians coincided roughly with the arrival of the Page House group at the stadium.

The Page House contingent consisted of Terry Lagrone, Larry Lebofsky, and Tom Blascho. According to Lagrone, the group arrived at the Bowl around 11 a.m.

Lagrone said that they immediately noticed many suspicious appearing men around the area, and concluded that they were Secret Service agents detailed to insure the security of President-elect Nixon's scheduled attendance at the game.

An Indian 'Scalper'

Pushing forward, the group—who had disguised their equipment in the guise of a picnic lunch—was confronted with a "scalper" who offered to sell them tickets to the game at \$20. Lagrone said that the "scalper" asked many questions, and Lagrone reported that they saw the "scalper" again on the day of the game as one of the men surrounding President-elect Nixon.

The group then went on to the scoreboard area, where they noted an electrician, what appeared to be a Secret Service agent wearing electrician's tools, and a man wearing a gun working on the scoreboard. They decided that they had better not attempt anything, so they withdrew from the scene.

Wouldn't Give Up

They would not give up, however, and returned to the Bowl around 4 p.m. that same day. By this time, the nature of the device had been discovered, and suspicion had fallen upon the Page House group from their visit—which had been duly noted—earlier in the day.

The group, however, knew nothing about this and, evidently deciding on a bold approach, went to the office of stadium

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Waddy Mean Somebody Else???



Larry Lebofsky, Terry Lagrone, and Tom Blascho are escorted (??) off the field by invisible Secret Service men.

Notices

ASCIT CARDS

The ASCIT cards will be here on Monday. On-campus people should pick them up from their house secretaries, and off-campus people should get them from Louise Hood (in 105 Winnett Center).

RAGNAROK IS ALMOST UPON US!

Prepare.

SAN FRANCISCO MIME TROUPE

Sunday, January 19, 2:00 p.m., on the Atheneum Lawn. Tickets \$1.00, available from house social chairmen and Beckman Ticket Office. They will perform "The Farce of Pateline."

PARTIES**SEX**ORGIES

There will be an organizational meeting of the Caltech Model United Nations today in Club Room 2 at 8:00 p.m. Find out the true meaning of the above title.

Editorial

A Plea for Unity

Our fellow Teckers: Come, let us reason together.

The events described in this issue involving the Rose Bowl Game, illustrate two facts of life about Caltech.

For one thing Teckers are going to attempt to perpetrate practical jokes on a grand scale. For another thing, Tech is such a hotbed of rumor mongers that what actually is happening on campus is sometimes obscured by random, conflicting rumors — especially those published in the **Tech**.

Since Teckers are going to undoubtedly continue to attempt to "RF" things, we believe that a group should be formed on campus to coordinate these attempts, so that such phrases as "Whaddaya mean, someone else has already done it?" will never again have to be uttered by humiliated Teckers.

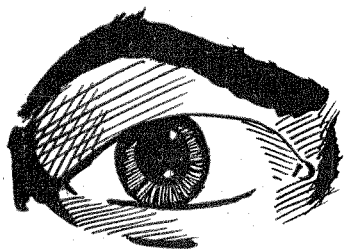
After all, we have the Research Project on campus to help students familiarize themselves with the workings of a bureaucracy which we will all face when we attempt to do a research project outside of Tech's sheltered environment. A similar coordinating organization for "RF's" would serve a similar purpose — acquainting Teckers with the bureaucracy of planning military-like operations, something else we seemingly have to look forward to.

Therefore, we urge some student to take upon himself the task of coordinating Tech "RF's," and end forever the myriad of conflicting rumors which only serve to foul up Teckers, and not their intended prey.

(P.S. We have heard rumors that such an organization is being organized. Watch next week's **Tech** for the notice.)

(P.P.S. Does anyone know how the L. A. Coliseum scoreboard operates?)

Jim Cooper
Alan Stein
Dave Lewin



Towering Eyeful

'George' Is Knocked Up

by Alan Stein

This year, it is "in" to produce a picture about lesbians. Unfortunately, it is not "in" to produce a good picture about lesbians. The producer of **The Killing of Sister George** has attempted to be "in" and has succeeded.

The movie deals with the collapse of a "marriage" between June "George" Buckridge (Beryl Reid) and Alice "Childie" McNaught (Susannah York). Their relationship has been poor for some time; when George finds that she is being written out of a TV serial she stars in, the relationship falls apart entirely. The portrayal of this collapse should be very moving. It isn't.

The failure does not seem to be the fault of the two stars. Both are accomplished actresses. Rather, the fault seems to lie with the parts given to the ladies. Beryl Reid is talented, but

her performance is far less moving than that of Miss York, the supporting actress. The initial relationship between George and Childie is quite well described but by the end of the movie, one has no feeling whatsoever for the characters which are so mechanically portrayed.

I feel that a more talented scriptwriter could have produced a very moving screenplay. The story chosen had great potential, but this was destroyed by the unimpressive characters.

Some credit should be given to the movie, as it is the best of its kind. But in this case, the best is quite poor. The only thing that the movie from being a total failure is quality of Miss Reid's and Miss York's acting. This is good, even though their parts are poor. I hope they have better roles in the future.

'Minsky's' Covers Up

by Nick Smith

"One night at Minsky's, this real religious girl invented the striptease. This real religious girl." With that opening statement by Rudy Vallee, a really different movie begins.

The Night They Raided Minsky's, starring Jason Robards, Britt Ekland, Forrest Tucker, Bert Lahr, and Norman Wisdom, is a very warm and funny movie about the old style of burlesque. It was filmed at the old Minsky's Theatre at 23rd and 3rd in New York, and used the people of New York for the crowd scenes.

Britt Ekland plays an Amish girl (Rachel Schpitendavel) who has run away from home to become a dancing girl. Jason Robards and Norman Wisdom play a comedy team in Minsky's Burlesque Revue, run by Elliot

Gould, the younger Minsky. Forrest Tucker is a local "big man" of sorts, and Bert Lahr is a retired top banana.

12 Hour Story

The entire story covers about 12 hours, which is a weakness, since it is very difficult to accept the number of things that happen in one day. Trouble for Minsky's Revue comes from several sources, since the elder Minsky, Rachel's father, and a censor of some sort all consider burlesque to be obscene. The younger Minsky and the two comics devise a plan to draw crowds, and at the same time to make a fool of the censor. The plan backfires in one of the wildest ways imaginable.

The movie took over a year to edit, due to the fact that many

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Hope Seen for Black South Africans Munger Outlines New Political Direction

Pasadena, Calif. — Changes in politics and business are raising hope for significant progress in South Africa's explosive racial predicament, an expert on African affairs reports.

There is reason to hope "in the next decade for an increase in social and political opportunities for Africans, Colored, and Asians in South Africa," declared Dr. Edwin S. Munger, professor of geography. Such increases would "match their domestic economic advances and the new flexibility in foreign affairs."

Munger, who has done extensive studies in Africa, was mentioned in the British publication **Africa Confidential** as a strong possibility to become Assistant Secretary of State for Africa in the Nixon Administration. The report has not been confirmed.

Munger explained that the Union of South Africa has been called "a time bomb with a shortening fuse, but developments now point to the possibility of a peaceful transition to a more just South Africa."

Hard Image

In an article written for the January issue of **Foreign Affairs** magazine, Munger declared that "Today, the hard image of

(Prime Minister) John Vorster within South Africa has been tempered by the moderation, pragmatism and outward-looking flexibility he has displayed in his two years in office. This 'reversal' has rankled the right-wing politicians."

Munger pointed out that Vorster, when he took office, was reputed to be hard and intimidating, was viewed as the most extreme, most ruthless, most totalitarian leader in the National Party.

However, the geographer added that "John Vorster has now undergone a metamorphosis is doubtful. A sounder speculation is that the image of him in the minds of his supporters and opponents was incomplete."

"What is causing change in South Africa is not the rise of verligtes (enlightened ones) in opposition to the government, but the movement of the National Party to a verligte position on key issues.

Dramatic Changes

"The most dramatic changes of the last two decades were made within the National Party last August and September, and the effects are seen in Afrikaans universities, literature and press," Munger said.

"Fourth?"

The qualifying round of the 1969 International Intercollegiate Bridge Championship will be held at 7:30 p.m., on Wednesday night, January 15, in Clubroom 1 of Winnett. The first six pairs will continue to the Pacific Regional Playoff, to be held February 14-16 at Stanford. The con-Donnell. The entry fee for this event is \$1.50 per player. The contest is open to any registered student at the Institute who has competed in the Intercollegiate

less than four times. In addition to the possibility of going to the Regional Playoff, players will be competing for master-points, which will be awarded in accordance with the standard ACBL club tournament schedule.

This year's Intercollegiate represents a departure from the past, since in place of the par hands which were previously used, will be hands dealt at random by computer. Following the event, players will be given hand analyses prepared by an expert panel. As usual the Caltech qualifying round will be directed by Pasadena Life Master Bob McDonnell.

Knockout Teams

The first round of the Caltech Knockout Team of Four was completed last November 20. In the straight knockout matches **McDonnell** beat **England** by 75 international match points, while **Unger** beat **Karnicky** by 27 imps. In the three team round-robin **Dejaney** beat **Ballard** by 30 imps and **Carter** by 22, while **Ballard** beat **Carter** by 9 imps. In yesterday's semi-final, **Ballard** played **McDonnell** and **Dejaney** played **Unger**.

Play Problem

An interesting play problem came up at the recent San Gabriel Sectional Tournament. If you disagree with the bidding, that doesn't matter, because this is a play problem. Just plan your line of play after West leads the king of diamonds and shifts to the jack of hearts at trick two.

North

S K 6 2
H A K 8 7
D J 7
C Q 7 6 4

South

S A Q 10 9 3
H 6 5 4
D 5 2
C A J 8

East-West Vulnerable

The Bidding:

South	West	North	East
1 S	Pass	2 H	Pass
2 S	Pass	3 C	Pass
3 H	Pass	4 S	Pass

(Continued on page 4)

Letters

Perasso OK's Faculty Group On Pollution

Dear Eds:

In the December issue of **Engineering and Science**, Dr. H. C. Arp invited any interested members of the faculty to join him in forming a faculty group on air pollution. It is my opinion that a well informed faculty group could have an enormous effect on the air pollution problem.

Public hearings will soon be held on allowing the Los Angeles Power Department to construct another fossil fuel power plant in the Los Angeles air basin. Hearings will be held in Washington to determine whether or not the federal government will allow California to set stricter automotive emission standards. A faculty group could perform an invaluable service by studying the technical ramifications of these decisions and presenting the facts clearly and simply at the hearings.

Also, this group could study other steps that should be taken and by contacting the appropriate legislators, make valuable suggestions to legislative bodies. As Dr. Arp suggests, this could be followed up with testimony given before legislative subcommittees, articles in newspapers, television appearances, and con-

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Fault Forecast for Fun and Profit

Movement of the ground along a major earthquake fault has been successfully predicted for the first time by seismologists at Caltech. They also forecast that the fault will move again next spring.

The researchers have discovered that episodes of movement along a restless section of California's notorious San Andreas fault occur quite regularly. They say the next movement will probably come in the first eight days of April.

"This does not mean, however, that we can predict earthquakes," emphasized Max Wyss, a graduate research assistant in geophysics.

The motion he and his colleagues predict is called creep, the gradual movement that may occur along a fault, usually over a period of several days. It is not the sudden, violent displacement associated with earthquakes.

Correct Prediction

"We were right when we said the section of the fault near Parkfield would show creep last August, and our calculations indicated that creep would occur this month, although it came a little earlier than expected," Wyss said.

He explained that the episode in August came within a week of the prediction, and that the occurrence of creep this month had been predicted for around Christmas Day. Due to a small error in a field report, however, the prediction was only accurate to within three weeks. The creep occurred in the first week of December.

"These periodic episodes of creep along the fault began with an earthquake of 5.6 magnitude two years ago, and since then the western side of the fault has moved north 25 centimeters in relation to the eastern side. This has become very regular in time, showing movement of about two millimeters every few months," said Wyss, who works on the study with Dr. Stewart W. Smith, associate professor of geophysics.

Wyss and Smith do much of their research work at Caltech's seismological laboratory.

Land Moving

The object of study is the San Andreas fault. Land on the west side of this crack has been moving north in relation to the eastern side at about two inches per year for millions of years. The stress created by this movement—and the sudden release of such stress when rock layers break and slip—results in earthquakes, some as large as the disastrous temblor that struck San Francisco in 1906.

In a report on earth movements along the fault in the Parkfield area, Wyss, Smith, and Dr. C. H. Scholz, a research fellow in geophysics, concluded that the fault "is an extremely weak, low-friction surface, with a strength far less than the surrounding rock. This can explain the high concentration of seismic activity along the narrow zone."

Really Studied

They said the earthquake recorded there in the Cholame Valley on June 27, 1966, was one of the best-studied earthquakes in the history of seismology. "One of the most interesting—and unforeseen—observations was that after the main shock, slow slippage of the fault began to occur and still continues two years later."

Wyss said evidence from earthquake recordings indicates that slippage along the fault during the tremor must have been much greater deep in the earth than was evident at the surface.

"All the evidence points to a buried fault that underwent a considerable amount of slip at depth," Wyss said. "Little or no slip occurred in the surface layer immediately during the earthquake, but creep was soon initiated that resulted in substantial slippage over the next few months."

High Stress

"This suggests a casual relationship between the earthquake and the creep that followed it. We think that since the main shock didn't cause immediate slippage on the surface, the layer between the deep region that slipped and the surface became highly stressed. The response at the surface has been fault creep."

Wyss said the creep episodes

occur at very regular intervals, except that each interval is a precise amount of time longer than the preceding one. He added that the amount of creep in each episode—less than one-tenth of an inch—remains relatively constant and the creep continues for up to five days.

"This pattern is most regular at Carr Ranch, a station near the center of the fault break. We've found that the starting and stopping of the creep episodes occur with amazing regularity. This makes it possible to predict the occurrence of creep episodes with high confidence."

First Success

"On this basis," Wyss said, "the creep episode that occurred last August 22 had been predicted for the middle of the month. This represents the first successful prediction of ground motion on the San Andreas fault."

Besides the creep phenomenon, he added, investigators have shocks, some of them strong enough to be detected without instruments. He said these creep and aftershock episodes seem to be related, but that the relationship is not obvious.

An interesting point is that the areas showing the greatest amount of creep are the places where aftershock activity is least, while the areas of greatest aftershock activity show the least creep. These aftershocks

(Continued on page 4)

Teckers Teach Poor Students at Local Jr. High

Many Caltech students and faculty have for a long time been interested in the teaching of science and mathematics in junior and senior high schools. Over the past few months, several students have begun to organize a research project in this area. Students working in the project will try to discover new techniques in teaching science and math to disadvantaged students in nearby school districts.

The administration and faculty of Wilson Junior High, a largely Mexican-American school in L.A., have agreed to let Caltech students teach in 7th and 8th grade classes once a week on an experimental basis. Several other local schools have expressed enthusiasm about similar programs.

Because many junior high students in disadvantaged areas are perhaps at only a third grade level of achievement, it is necessary to find new ways of stimulating their interest in learning. Perhaps logic or topology might be studied rather than addition and multiplication. Sensitivity and creativity ideas might be tried.

There will be a meeting of people interested in participating in the program at 10:00 p.m. tonight, Clubroom 2. There are many more opportunities to teach in local schools than there are students who have volunteered to try so far, and the need to do something is very great.

Towering Mouthful

by David Lewin

Recently a book came into my possession which is a veritable treasure trove of recipes for the starving, off-campus student. Or even the unstarved ones. This book is *College Cookbook, or After Hamburgers, What?* by Ruth Horowitz and Gertrude Khuner. The two authors were inspired to put their book together by the questions of Berkeley students

they boarded over the course of several years. Students, both male and female, they found knew little of cooking beyond the arts of hamburger making and TV dinner cooking.

Live Better Eclectically

Recipes are rather eclectic in their origin, ranging from baked lasagna through hot beef borscht (beet soup) to Japanese chicken. There is a definite ethnic bias in the choice of recipes, the majority falling in the Jewish-Italian mileu. Many of the dishes are our old standbys for my own cooking—Chinese pepper steak, roast chicken, and kasha (a European cereal: buckwheat groats). Generally, the recipes are good, and the authors helpfully note how many are served and preparation time, for each dish.

Raisins??

A section on how to store meats and vegetables is invaluable for the novice chef; a glossary of cooking terms is another aid, and the book includes tips on buying meat and vegetables. Most of the seasoning patterns in the recipes agree with my palate, with one exception. The authors tend to put raisins in dishes where they are unwarranted, especially their stuffed green peppers and rice pilaf. On the last recipe, my Syrian landlady objected strenuously to raisins in the pilaf, and I tend to agree.

However, this book is well worth your money. So kiddies, rush right out and buy, steal, borrow, or pilfer a copy, but remember to turn over the hamburger before you leave.

"Minsky's"

(Continued from page 2)

last many changes were made after Bert Lahr died during the filming. This caused parts of the story line to be cut abruptly, due to scenes in which Bert Lahr would have to have appeared.

Go see *Minsky's*. There have been better movies put out this past year, but none quite like this one.

Beckman Opens With Plays By British Bards

For its opening event of an exciting new series at Beckman Auditorium, two one-act plays by contemporary British playwrights Harold Pinter and N. F. Simpson, will be performed, on Saturday, January 18 at 8:30 p.m.

Three veteran actors from the Hollywood area: Karl Swenson, his lovely wife Joan Tompkins, and Philip Bourneuf will perform "A Slight Ache," by Harold Pinter (an ARTIS production), and "A Resounding Tinkle" by N. F. Simpson. Both plays depict a rollicking, eccentric suburbia, and both playwrights manage to turn a disconcerting eye on all of us. Pinter's "The Birthday Party" and "The Caretaker" are both Broadway and London stage successes and films. Swenson was recently seen in the Mark Taper Forum production of "In the Matter of J. Robert Oppenheimer" (as Edward Teller), Joan Tompkins in "Spinn River Anthology," "The Trojan Women," and Philip Bourneuf as Pope Pius XII in the Theatre Group Production of "The Deputy".

Uncle Sam Cuts College Beard

Federal support of scientific activities at colleges and universities is being severely curtailed.

Here are some of the results: National Science Foundation spending at about 550 institutions this fiscal year will be reduced 20 to 25 percent from the amounts the institutions thought they would be allowed to spend. The National Institutes of Health are reducing their existing grants by an average of 14 percent and expect to award about 600 fewer grants than originally planned.

Commitments to colleges and universities by the National Aeronautics and Space Administration this year will be about 30 percent below the level of three years ago.

Fewer new federal fellowship awards were made for this fall than in 1967-68 or in 1966-67.

All this is happening despite claims that federal spending for academic science this year will be about the same as last year—around \$1.3 billion, according to the Bureau of the Budget.

The acute financial pain in the academic community is the result of actions by Congress to hold down spending.

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Rose Fuse Ruse

(Continued from page 1)

manager Nick Sylvester with the intention of being innocent tourists who were "just curious" about the security arrangements.

According to Lagrone, Sylvester said, "Hold it, I want to talk to you," and he took them out of his office and turned them over to the police.

A Good Thought

When questioned, members of the group admitted that they had thought of rigging the scoreboard, but they had not actually done anything. Since—in fact—they hadn't done anything, they were released without further incident.

Deimel reported that the scoreboard blow-out resulted in very little physical damage, but that it did cost some time. He did say, however, that the installation was "very ingeniously done," and that although no one could ever prove who had done the installation, "the fact that one group of Caltech students were caught trying to do the same thing, we surmised that just perhaps another group of Caltech students were responsible." Deimel said that as far as he knew the City of Pasadena contemplated no further action in the incident.

A friend of a Caltech student, who just happened to be the electrician called in to repair the board, said that the overload in the circuit was being caused by a faulty diode.

Fault Frolics

(Continued from page 3)

were found to occur mainly toward the ends of the 25-mile-long fracture zone.

Independent Process

"From these observations," Wyss said, "we concluded that the aftershocks and creep are almost independent processes for relieving stress on an existing fault surface."

"We believe the creep episodes are certainly not entirely the result of the aftershocks, but if a correlation between aftershocks and creep episodes is real, a possibility is that the shaking during an aftershock triggers the release of strain in the creep layer."

"This is quite a real possibility. The April 8, 1968, earthquake at Borrego Mountain in Southern California serves to illustrate this point. The shaking during that earthquake seems to have caused displacements on faults miles away from the earthquake epicenter. It was the first documented case in which an earthquake produced movements on faults miles away."

Doctor Why Is the Table Spinning?

An experimental ultra-steady operating table—mounting microscopes, television equipment, and special intense lights — is now ready for use in blood flow studies at Caltech.

"Our main goal with this new instrument," said Dr. Harold Wayland, "is to take a long, close look at the microscopic circulation of blood through living and artificial systems."

Wayland, professor of engineering science, said the 3,500-pound instrument was developed in a joint venture with the Los Angeles County Heart Association-University of Southern California cardiovascular research laboratory.

New Rheology

"We specified a table of this size and weight because we require that it be extremely steady for our work," Wayland said. "We are studying the flow properties of blood, particularly with respect to the properties important in blood flow in the smallest vessels, where the vital physiological exchange processes take place."

"We have developed methods for measuring flow velocity in vessels from 10 microns in diameter up, and the new table allows us to study the microcirculation at the capillary level," Wayland explained.

Eighteen Months

Details of design and construction were handled in Caltech's engineering shops.

"It took us a year to design the table," Wayland said, "and it took another six months to build it in the shops here."

Funds for construction of the table came from the Alfred P. Sloan Foundation under a general grant for the support of new ideas in basic research. Experiments are carried on under a \$300,000 five-year grant from the National Institutes of Health.

More Letter

(Continued from page 2)

ferences with public officials. Such a program, properly planned and executed, would be remarkably effective.

Thus, there is much that a faculty group could do toward the eventual control of air pollution. I urge the faculty to step into this challenging field.

Dave Perasso
Executive Director
ASCIT Smog Project

4th?

(Continued from page 2)

Pass	Pass
North	
S K 6 2	
H A K 7 2	
D J 7	
C Q 7 6 4	
West	East
S 7 4	S J 8 5
H J 10 9 8	H Q 3
D K Q 10 8	D A 9 6 4 3
C K 9 2	C 10 5 3
South	
S A Q 10 9 3	
H 6 5 4	
D 5 2	
C A J 8	

In playing the hand you must realize that you have two certain diamond losers and an almost certain club loser. You must plan the play to establish the fourth club for a heart discard. This can be done if clubs split three-three, or if the club finesse works and you can drop either a doubleton ten or nine. If the club finesse works the hand can be played in a leisurely fashion, and there is even time to take a safety play in trumps. But if the finesse loses, a heart will come back immediately, leaving nothing outside of the trump suit for an entry. So the club finesse must be tried upon winning the heart lead. You must lead **queen** of clubs for the finesse. In the hand shown above it makes no difference, but if East has something like K 10 x x in clubs, leading the queen is the only winning play.

In the hand shown above, after the finesse loses, a heart is returned and the king wins. Now you need a three-three club split and a three-two trump split to make the contract. So the ace and queen of spades are cashed, then the ace and jack of clubs. Now the king of spades is an entry to the board's high club. If you took this line of play, you would have received eleven out of a possible twelve mps. for making four spades.

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It's How You Play the Game

by NNSTEIN

The collegiate football season is finally almost over, and three items have developed. First, Ohio State won its first of a probable three straight national championships. Second, Caltech won a game. And finally Kansas coach Pepper Rodgers proved the old adage, "It's not whether you won or lost, it's how you played the game that counts." The latter statement warrants some clarification.

Kansas was leading Penn State 14 to 7 near the end of this year's Orange Bowl game. The Jayhawkers had the ball, fourth and two yards to go on the Penn State five yard line, and a field goal would have put the game on ice.

But the coach had decided before the game, his boys were there to have fun, and what could be more fun than gambling

the game for a few extra points. The gamble lost, as Penn State held, but the "fun" was not over yet.

Scored Finally

Penn State scored in the final seconds to bring the score to 14-13. Penn State went for the two-point conversion, and Kansas thwarted the effort with a "fun" 6-3-3 defense.

Unfortunately, the referee noticed the extra man, and Penn State was given an extra chance. Keeping with the fun, this time Kansas tried a 5-3-2 defense, but Penn State scored and won, 15 to 14.

Notable in the other bowl games was the success of the Southeastern Conference: Texas' 36-13 victory over Tennessee, Arkansas' 16-12 win over Georgia, SMU's 28-27 win over Oklahoma, and Alabama's 35-10 loss to Missouri.

Good Views

Good viewing is on tap for the sports fan this weekend. Boston should clobber the Lakers, who may be without both Jerry West and Elgin Baylor, Friday on Channel 5. Later that evening look for Oregon State to edge USC in the best basketball game of the weekend. The last major bowl game, the Senior Bowl, is on NBC Saturday. Take the North and give nine points, and you'll still come out ahead. UCLA will roll over Oregon State both at 2:30 and 11:00 p.m. Saturday on Channel 5.

Finally, the Baltimore Colts should defeat the New York Jets 31-7 in the Super Bowl Sunday.

Be sure to get out and watch the Caltech basketball team take on Claremont Saturday and LIFE Tuesday. We should beat LIFE, and an upset of CHM would be our first league win in no one knows how long.

Soccer Sockers Reap Win

Thus the season is over, and it's wrap-up time. Looking back into records of past years this was the best purely undergraduate soccer team in Caltech history. Not counting the Belmont game, which was primarily an exhibition game, Caltech only allowed 26 goals over a ten game schedule, a record low, while scoring 16, a new high. The worst defeat was by four goals, while in past years Caltech has lost by seven or more at least once per season. There was an even distribution of the 16 goals, with Ralph Graham, Dick Burton, and Andy Chow each scoring four, and Jerry Eisman scoring three. The one remaining goal was scored by Nelson Brice.

Jon Hall, Joe Templeton, and team captain Dick Burton all played every minute of every varsity game. Forwards Andy Chow and Jerry Eisman rested for only a few minutes of the season, and backs Mike MacLeod and Vesa Junkkarinen were out only for injuries plus a few minutes. Also to be commended are freshmen Ron Stevens, Dennis Noe, Dave Holmes, and Dave Luippold, who were the top substitutes and occasional starters. Ralph Graham, Bruce Penrose, and Milt Johnson missed much of the season on injuries, but still were of importance. The loss of senior starters Steve Hadler and Harvey Butcher will be missed next year, but with the rest returning, next year promises to be even better.

Goalie Joe Templeton was honored for the second year in a row by being named to the all league soccer team. He allowed an average of between two and three goals per game. Teammate Dick Burton was mysteriously passed by in all league honors, but was named to the all NAIA honorable mention list. Both played every minute of every varsity game, as did defensive player Jon Hall. Two others, Jerry Eisman and Vesa Junkkarinen, missed only a few minutes during the season. This sort of stamina is rare for the college version of this fast-moving sport. These five deserve special praise.

Every Minute

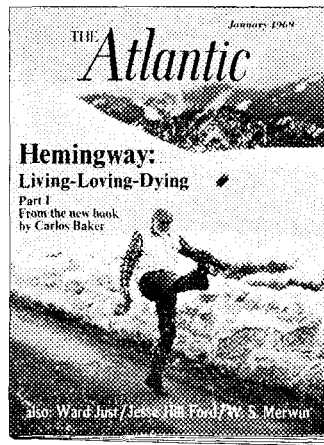
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