

# Regents to vote on tenure in next meeting at UCLA

## Salary hikes proposed for faculty; administrators to share pay raise

By LYNN BAKER  
Day Editor

President Clark Kerr served notice at the Regents' meeting Friday that he will ask for a vote on the tenure issue at next month's session at UCLA.

Administrative decentralization is the prime factor at stake here, for the plan proposed by Kerr would call for the final decision on tenure appointments to rest with the Chancellors of the individual universities.

The current apparatus for the tenure appointments consists of a recommendation forwarded by Chancellor to Clark Kerr. The president then submits the recommendations to the Regents.

Regent members also heard a proposal from the finance committee calling for salary and fringe benefit increases total-

ing 8.1 per cent, as recommended by UC faculty members.

According to reports submitted to the finance committee, University salaries have fallen from fourth to 35th place in recent years in a rating compiled by the American Association of University Professors.

UCLA's Chancellor Franklin Murphy pleaded for higher pay for academic administrators. "Many of my deans make \$22,000 or \$23,000 while their counterparts at Harvard or the University of Michigan make \$30,000 or \$35,000," reported the Chancellor.

Regent Edward Carter, chairman of the board, agreed that better pay for administrators would be increasingly important in the future, particularly as local administrators will have more responsibility with decentralization.

### EDUCATION ABROAD

In other action Friday, the Regents approved the establishment of Education Abroad Centers in Greece and in Sweden. The proposal caused a certain amount of dissension among the Regents because the centers are not to be connected with a local university and will not have classes conducted in the local language.

At a press conference following the Regents' meeting, President Clark Kerr and Berkeley's Chancellor Roger Heys submitted statements to reporters expressing their concern over recent accusations that the campuses of the University are the scene of illegal activities.

### ILLEGAL ACTIVITIES

Kerr called these illegal activities "myths" and said, "if there are individuals who have knowledge of illegal acts on any campus, these persons should bring such actions to the attention of appropriate law enforcement agencies as well as to the Chancellor of the campus involved."

Without any evidence, the administrators must conclude that the accusations have no foundations.

## Wheeler to speak on constitutional structure changes

Social and political critic Harvey Wheeler of the Center for the Study of Democratic Institutions will present "The Restoration of Politics" tomorrow in Campbell Hall at 4 p.m.

Wheeler, the co-author of



HARVEY WHEELER  
Speaking Tomorrow

"Fail-Safe," has proposed broad changes in the constitutional structure of the United States to meet what he feels are increasing demands for long-term planning, both socially and economically.

A political scientist, Wheeler has taught at Harvard, John Hopkins and Washington & Lee Universities. A Harvard Ph.D., he has published numerous monographs on political science and theory.

### Food needed

During the weeks of December 6 to 15, AWS and Charities Committee are sponsoring the Christmas Cheer Drive on campus. Any non-perishable foods will be welcome for needy Santa Barbara families.

## No violence, few paraders mark VDC action Saturday

By ALAN FISHLEDER  
Assistant News Editor

Participation in last Saturday's Viet Nam Day Committee parade fell short of expectations as only about 6,000 demonstrators made the five mile trek from the UC Berkeley campus through parts of Berkeley, Emeryville and Oakland. The march was predicted to have 15,000 participants.

Violence to the demonstrators feared by public officials did not materialize as approximately 1,000 law enforcement officers lined the parade route.

The Hell's Angels Motorcycle Club of Oakland, which interfered with a similar demonstration last month, stated last Friday it would not counter-



# El Gaucho

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## Gauchos cinch Camellia bid; face Diablos in Sacramento

By GARY FAYSASH  
Sports Editor

"How sweet it is!" UCSB's Gaucho eleven swept aside the Cal Poly Mustangs 35-6, Saturday afternoon, to uncompromisingly prove themselves the rightful recipients of that coveted Camellia Bowl bid.

Cactus Jack Curtice's gang roared over, around, and through Cal Poly's supposedly iron defense, as they rolled up 266 yards on the ground, and bombarded the Mustangs with a potent

aerial attack which chalked up 174 yards and four block buster TD's.

Every one got into the act, as recuperated QB Mike Hitchman, and senior signal caller Bob Heys passed for two TD's apiece, in a hard fought battle.

### EVEREST INTERCEPTS

After a stumbling start, that had Gaucho fans on edge after assistant coach Andy Everest's son Tom intercepted a Greg Heer pass early in the first quarter and sped 30 yards for the score, the UCSB eleven settled down to a devastating attack on the Mustangs.

Hitchman, back in action though still showing signs of bother from his injured hamstrings, flipped a 12 yard aerial to wingback Paul Vallergera in the end zone, to even things up with three minutes left in the second quarter. Bob Ford's magic toe went to work to put the Gauchos ahead 7-6.

Marvelous Mike then rebounded to open the second half as he hit halfback Bob Blindbury with an 11 yard toss for the score. Hitchman completed 9 of 15 for 149 yards, while rambolling for 30 yards on 13 carries.

### HEYS STARS

Heys put on his best performance of the year, completing 4 for 4 and 103 yards. He connected with end John Keever for a six-yard scoring pass, just seconds before halftime to move the Gauchos out ahead 14-6, and topped off the scoring with a brilliant toss to Blindbury, who danced his way for a 25 yard pass-run TD play.

UCSB's other tally came in the fourth quarter as fullback Mike Thomas, who rushed for 38 yards, crashed 11 yards off right guard to top off a 74 yard drive.

(Continued p. 6, col. 1)

## 'More soul' needed in civil rights says Negro

By BONNIE KESSENICK  
Staff Writer

In a two-hour rally Friday, Negro leader Hosea Williams addressed a crowd of about 200 people with songs, prayers, and words on the Negro problem in America.

Williams, an official in the Southern Christian Leadership Conference and leader of the Selma to Montgomery march, told the SNCC-sponsored rally his thoughts on fear, "white folks," capitalism in America, and the hypocrisy of the white structure, and graphically illustrated the situation that the Southern Negro lives under daily.

### MOVEMENT SPIRIT

His first emphasis was placed on what he called "spirit," Williams said, "the spirit of this particular movement has been going on a long time... ever since Moses, in fact.

"The important thing you've got to realize is that the spirit of Alabama has got to come here to California."

Williams continued, "Sometime, you've got to realize that we are all human, we are part of that spirit. What is needed is more soul, soul to realize that men in this country are not free. You've got no soul if you don't realize that."

### MUSICAL ADDITIONS

Punctuating his speech with renditions of "Michael Row the Boat Ashore," "I'm Gonna do What the Spirit Say Do," and "If You Miss Me at the Back of the Bus," Williams told his audience that they were "white folk" only if they thought with a middle-class attitude.

"If you've got soul," he added, "you're black folk, regardless of your skin pigmentation."

(Continued on p. 8, col. 3)



GAUCHO SPEEDSTER--Senior Halfback Bob Blindbury spear-headed UCSB's win over Cal Poly, as he caught passes for 110 yards and two TD's.

demonstrate and stayed away from the march.

California Highway Patrolmen in squad cars accompanied each unit of marchers. National Guardsmen in the Bay Area were on alert.

The participants, ranging from babes in arms to elderly men and women, met jeers and boos, and one demonstrator was hit in the face by an egg, but there were no other incidents.

Many demonstrators bore placards reading "Peace in Viet Nam" and "No More War." Several girl marchers wore black skirts and shawls while men and youths wore fatigue jackets, slacks and sweaters.

Some were barefoot and (Continued on p. 8, col. 1)

El Gaucho  
**Opinion**

EDITORIALS

**Much More to Overcome**

Keeping its word while the law stood ready to keep the peace, the VDC's peaceful, law-abiding Saturday morning march through Oakland came off without a hitch.

It is an easy event to describe: 6,000 people walking down a street, some of them carrying pickets which plead for peace.

But the implications, real and imagined, and the motivations, real and imagined, will keep the sociologists, psychologists, political scientists and, no doubt, Senator Burns busy turning out voluminous analyses of the VDC protests for at least 20 years. And for good reason.

People with serious concerns, united in only a general way, have rolled out the heavy artillery in their arsenal -- the demonstration--to awaken a lethargic general public to the inhumanities of war. Once shaken, the bleary-eyed public is unsure who has shaken them and for what reasons or with what new answers.

This is where the social scientists can help with explanations, since the essential simplicity of the peace message will probably not be understood. If it is beautiful in its simplicity, it is also cryptic because it is incomplete.

Ironically enough, when it comes to the task of answering the specific questions--the overture only teases--it is doubtful that the demonstrators will understand each other.

This only compounds the problem for the public. Confusion will result from the newspapers, who tell it the way it was, through the lens of imperfect understanding. And the public thinks it has some pretty good notions about student protests anyway.

Above all, the public is not sure what the demonstrators are implying: Do they want the U.S. to get out of Viet Nam on the next troop ship and if so, what about the consequences? What do they mean by disarmament; when, where and under what guarantees? What new role should the U.S. assume in world affairs?

Or are they asking for much more? How should one view their talk about a changing society?

But the practical answers have not been forthcoming. The public is in no position to judge the appeal, let alone reverse its decision.

The demonstrators obviously cannot speak out on specific questions with one voice. There are far more views on domestic and foreign conditions than there are people to protest them. All they can agree to do is shout, Follow me! until the public listens, but when the public asks, Where? there is no consensus.

The ominous imponderables, the How, the Where, the When, the Why, remain matters of private conscience. Until they somehow become fixtures in the public conscience, the fog of misunderstanding will enshroud the noblest sentiments, distorting them into terrifying fantasies.

Demonstrations won't be enough. Scholarly explanations won't be enough. Listing the alternatives won't be enough. The academicians cannot perform the critical task; they cannot do the public's thinking. Right now, the thinking public doesn't seem to know what to think about the protests, or how to relate them to the profound questions they seek to illumine.

A triumph for free speech, you say, for protesting a war, protesting war generally, for proselytizing the good life and the realization of man's individual and collective goals? Maybe.

The real triumph will be a practical way to stop the war, a concrete step toward eradicating social injustices, some tangible improvement in the human condition. So far, so much wishful thinking.

JEFF KREND  
Editor

**Speaking of Camellias . . .**

Some seasons you win a few and lose a few, but this is ridiculous.

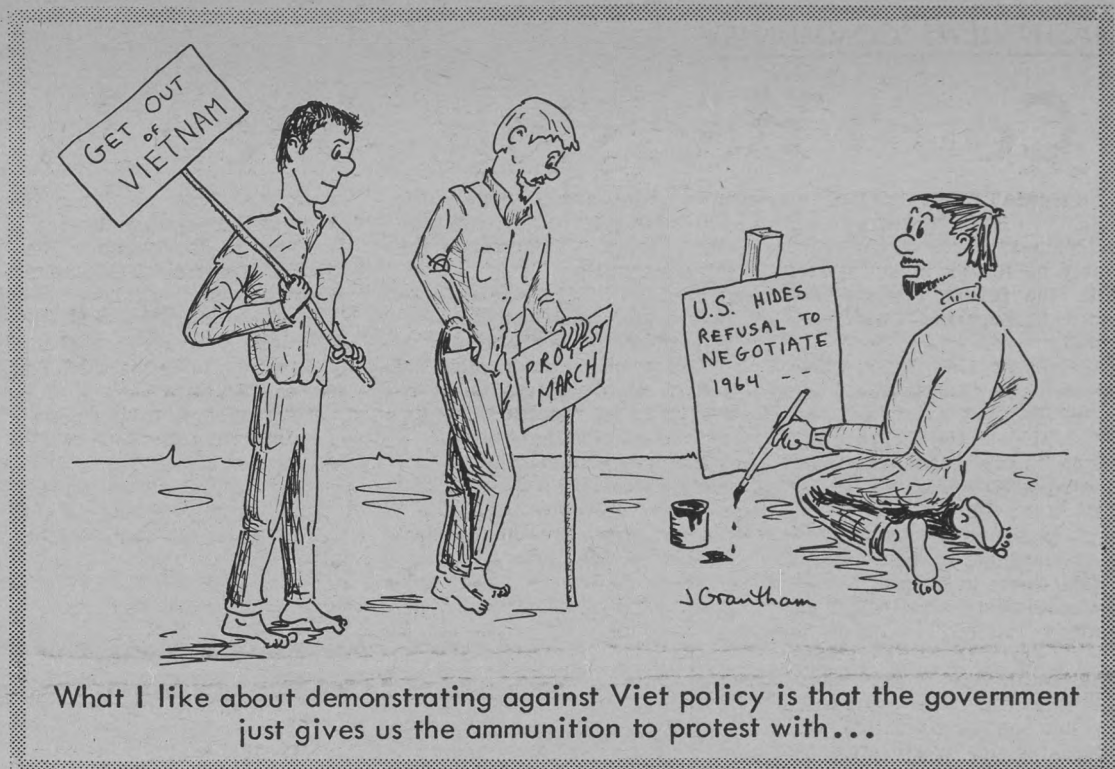
An 8-1 winning season at UCSB doesn't come along every day and when it does, it rates a standing ovation.

Cactus Jack and the "Grid Express" came on strong at the beginning and finished strong at the end. The laurels are hard-won and well-deserved. To compound the victory with a Camellia Bowl win would make UCSB football the success story of the year. Congratulations for an outstanding performance.

JEFF KREND  
Editor

EL GAUCHO editorials do not necessarily represent the views of other staff members, the Associated Students, or the University of California.

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**The Boiler Room**

**EG cartoonists replies to letter**

To the Editor:

I was not moved by the "suicides," Mr. Kauffer, it seems to me to be the height of human hypocrisy and/or stupidity to value one's life so little that one commits suicide to further the idea that human life is valuable.

Your mystic reverence for this insanity is what is "funny," Mr. Kauffer. Your "self-sacrificing" pacifists are making life a "sick joke," not I.

JAMES GRANTHAM  
Cartoonist

**Concert reviewer bridges on corny**

To the Editor:

Your November 17th review of the University Symphony Orchestra concert by staff reviewer Richard Mansfield was so trite and of such low-grade journalism that it really deserves little comment. However, there remain a few questions to be answered by your staff.

Is it a recent addition to good journalism to spend more than one-half of a review on music not even in a concert?

If the Hungarian composers often played in the University concerts, (Dohnanyi, Kodaly etc.) are so 'obscure' to Mr. Mansfield, then why is he the one reviewing concerts from your newspaper? These composers would be obscure only to someone with a poor and sparse musical education.

It is beyond me why Mr. Mansfield has let himself believe that musicians ask to be "repaid" by reviewers, especially himself. Amateur reviewers are notoriously ill-equipped to write constructive criticism and they often receive little attention from the musicians themselves. Any musician worth his stuffing enjoys playing music without an audience or a reviewer.

Anything written in a nasty tone (as he calls his "nasty review") leaves little ground for an unemotional, clear, intelligent review. His lack of professionalism is bridging on the corny. I wasn't aware that EL GAUCHO was catering to this kind of an audience.

Mr. Mansfield deserves no prize for "having tried."

JANICE C. CONDIT  
Senior, Music Department  
(Editor's note: Opinions expressed by staff reviewers do not necessarily reflect the views of other staffers or editors or of this newspaper as a matter of policy.)

**Sex, love survey strays from intent**

To the Editor:

It has been brought to my attention that a survey entitled "Survey of Sex and Love. . . College Women 1965-66" is being mailed to senior women students on this campus.

It cannot be denied that surveys with good and honest intent are welcome into the campus community when these surveys increase the substantive information that scholars have. Unfortunately, it is my belief that this particular survey lacks the legitimacy which would normally welcome it into the campus community.

May I first point out that the study is in no way affiliated with the University. I have had personal contact with the sponsors of this study in that I served them for a short period of time as an assistant.

My brief contact with the sponsors has led me to believe that they have seriously strayed from their original intent, or at least their implied intent.

I have reason to doubt that in the past the data which has been collected has been handled with confidentiality. It was for these reasons that I dissociated myself completely with the study and its sponsors.

Based on the above information, I strongly urge that all senior women receiving this questionnaire refrain from answering it. I am concerned when the best interests of my fellow students are involved.

My knowledge and firsthand experience with this study can lead to the only conclusion that the survey is neither in the best interests of senior women at UCSB nor scholarship in general.

MEREDITH J. KHACHIGIAN  
Senior, Sociology

**Info lack makes 'war mentality'**

To the Editor:  
Congratulations to Jeff Krend

for his editorial, "Thumbs Down on Reason." As one who participated in the Berkeley Viet Nam Day March, (and would do so again on November 20 if I could), I have been exposed to both kinds of the repudiation of reason that Krend speaks of.

I naturally get a little tired of being characterized as a commie, a dupe, a coward, a moral cripple, or any number of other nicknames that have been applied to me. I also get tired of hearing those carrying on the war described as heartless, cruel, idiotic, monstrous, or sadistic.

I was heartened at the efforts of the Viet Nam Day Committee to bring speakers who had facts to the forum at Berkeley; the SFA had six speakers at their two rallies over Viet Nam. I am unfamiliar with similar efforts of the pro-Administration forces; I hope they exist.

I think a big reason for the "war mentality" Mr. Krend speaks of is the lack of information one can obtain. News stories from Viet Nam are of two types (fill in your own figures and locations): (1) "American forces attacked . . .

. . . today, killing . . . and wounding . . . American losses were minor," or, (2) "Communist forces today ambushed . . . but were repelled. . . . Communists (capital C) were killed and . . . were wounded, American losses were minor."

Is this the type of information that one is supposed to reason with? When people are as concerned as the demonstrators obviously are (no one marches miles down a city street for the hell of it), they deserve more.

They deserve more than statistics; they deserve more than just good news. (If things are going so well, why haven't the Viet Cong, North Viet Nam, or Red China--pick any two--surrendered?)

When they do not get information, they become frustrated, and express themselves in ways that have worked in the past. Are our State Department masterminds the only ones capable of interpreting the situation?

If so, we have come a long way--and I am afraid it is down.

JIM BETTINGER  
Freshman, Undeclared

# Court decision--'step in right direction'

By MATTHEW MOORE  
Staff Writer

Members of the Communist Party no longer must register with the federal government, the U.S. Supreme Court has ruled.

Professor Keir Nash, whose specialty is constitutional law, came to the conclusion that the action of the Court was a "step in the right direction" toward establishing more freedom in the United States.

Nash discussed the problem of regulating Communism faced by the Court in the past.

Communist control, explained Nash, is based on poorly drafted acts of Congress. The Smith Act of 1940 stated that it is illegal for any person to join an organization that advocated the overthrow of the U.S.

The Internal Securities Act, passed in 1950, forces any Communist to register with the federal government.

"When the Supreme Court became more liberal in 1957," continued Nash, "it attempted to let Communists off while at the same time it refused to declare the acts unconstitutional."

Nash cited a court case as an example.

"In the Yates case, 1957, the Court acquitted Communists by defining organization, in the Smith Act, as the actual formation of a party."

"The Court reasoned that since the party was organized in 1945, and the prosecution was not brought until 1948, conviction was barred under a three-year statute of limitations."

"But," Nash said, "isn't this to violate the common-sense meaning of the word organize? Surely organization is a continuing activity as the party grows or changes its structure."

In the recent case, the Court came right out and declared the Internal Securities Act unconstitutional. "It (the act) is a violation of the fifth amendment," continued Nash, "because when a Communist is forced to register, he renders himself liable to prosecution for advocating the overthrow of the U.S. government."

Nash then looked at Communist legislation from the point of view of the government. "Is

it constitutional," Nash asked, "to make laws to punish people who attempt to overthrow the government?"

The political science professor answered yes, but only to a point. "The right to distribution and discussion of books or pamphlets ought to be protected; specific plans for overthrow should not be."

"The government should forget about the membership clause in the Smith Act. Rather, people should be prosecuted when they are in the actual act

of laying plans for the overthrow of the government."

"General notions about promoting the violent overthrow of the government through distribution of Marx's and Lenin's literature hardly constitute plans of a clear and sufficient danger," stated Nash.

The wisdom of trying to control internal Communism was Nash's next topic.

"The U.S. should balance the gravity of the Communist threat against European neutralist opinion."

"As for the internal threat, the possibility of a communist takeover is incredibly remote."

"No left-wing party has ever gained more than 10 per cent of the popular vote in the U.S. Communists have consistently

polled over twenty per cent in France and Italy, yet no putsch has been tried in those countries."

"World public opinion poses a real threat, if we are really interested in influencing them

to favor the American system," said Nash.

"Communists can plausibly argue that their system is as free as ours, because the illegality of the communism in a capitalistic society."

Nash believes that it is necessary for the U.S. to set an example. "We would be better

advised to show that we can tolerate dissent. Our present laws do not show this clearly enough."

# Check who's coming on campus November 30

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### Announcements

Flying home for the Holidays? call Santa Barbara Travel Bureau, tele 6-3116 or contact our campus representative, Greg Stathakis @8-7148 days or evenings.

FOR Seniors who have not filled out SENIOR ACTIVITIES FORMS at the Campus Photo Shop! They are available on the table in front of the A.S. Office in the SU. Put them in Larry Miller's box in the A.S. Office.

We can can and will, your gifts that is! BeeZzz Card & Gift Shop, 6575 Seville Rd., I.V.

Skiers--see the best of Alpine Skiing John Jay's Silver Skis Mon., Nov 22 CH 8 p.m. presented by UCSB Ski Club.

The House of Stuart: the band for your dance & party, call now: Eric Hayes, 21829

Anyone interested in playing marathon basketball contact T. Newlin, D.P. C-22

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Hey! Joaner: happy birthday, the 39rs

The old man is crazy!!

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R.S. Let's go chopping together this Christmas, OK? - TP

C.M.W. II: 6 more days. S.

Barb, ILYVM, D -- MOE

Sherri and/or Linda, how about a break? . . . Lonely D.G.

Girl from Jerry's, Use ID call Alan Z. Number is right

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## ACTIVITIES CALENDAR

### TODAY

4 p.m. - Lecture: "Du parti pris des choses a l'objet" Francis Ponge CH  
4-5 - Student Activities Board, AS Office  
4-5:30 - SU Policy committee, 419-136  
6:30-8 - Mountaineering Club, SH 2116  
7-9 - Weightlifting, 455-101  
7-10 - Recreation, Old Gym  
7:30-10 - Flying Club, SH 1128  
8 - Film: "Silver Skis," CH  
8:30-10 - SNCC Meeting, SH 2123

### TOMORROW

8:30-4 - Circle "K" Vehicle Check "C" Parking Lot  
4 p.m. - Discussion with Eugene Rosenstock Huessy, "The Old Economy of Salvation," 431-102  
4 - Psy Colloquium: "Language Competence in Infra Humans," David Premack Psy 1802A  
4 - Lecture: "Restoration of Politics," Harvey Wheeler, CH  
4-5 - Rally Committee, SH 2116  
4-6 - WRA Meeting, 401-202  
4:15 - Christian Science Organization, URC Building  
4:15-5:30 - AWS Executive Board, SH 1116  
7-9 - Weightlifting, 455-101  
7-10 - Crew Club, SH 2119  
7-10 - Recreation, Old Gym  
7-10 - Chess Club, 451-123  
7:30-8:30 - Newman Club, URC Building and San Nicolas Lounge  
8 - Junior Class Film: "Bye Bye Birdie," CH  
8-9:30 - Military Science Draft Presentation, SH 1004

## Fillippini speaks on farm laborers

Ad Hoc Committee on the Study of Migrant Farm Workers Problems of the AS Social Concerns Committee will present a Forum Program on Monday evening Nov. 29 at 8 in the Parish Hall of the Unitarian Church.

Guest speakers will be Wilbur Fillippini, Vice President 5th District of the California Labor Federation AF of L-CIO, and two Community-Aides-In-Training at Operation Buena Ventura in Oxnard, Manuel Alva and Mrs. Josephine Marcus.

Fillippini will speak about the problems of housing for farm workers. Discussion will follow.

### WEDNESDAY

12-1 - Faculty - Staff Choral Group M2210  
12-1 - AS Finance Committee NH 2120  
12-1 - WRA Board of Reps. 421-213  
1 - Cross Country: NCAA Regional Championship, Lagoon

THURSDAY-SUNDAY  
Thanksgiving Recess  
Administrative Holiday

SATURDAY-SUNDAY  
noon-4 p.m. - Swimming Pool

## Movies

### SILVER SKIIS

John Jay will show his latest production, "Silver Skis," in Campbell Hall tonight at 8 under the sponsorship of the University Art Affiliates and the campus Ski Club.

Tickets are available at Ott's, the American Sporting Goods shop, and the AS Office.

Marking Jay's 25th anniversary in ski movie production, the film traces the sport from pre-war indoor ski slides at Madison Square Garden to the 1965 International Races at Vail, Colorado.

The film covers the globe from "snow bunnies" battling gravity in Japan to Stein Brikken carving fresh tracks in New Zealand. The scenes offer a commentary on ski fashions which preceded contemporary stretch pants and an insight into the training maneuvers for World War II ski troops.

### BYE BYE BIRDIE

"Bye Bye Birdie" will be shown tomorrow night at 8 p.m. in Campbell Hall. Presented by the junior class, the film features Dick Van Dyke and Ann Margaret. Cost is 50 cents.

### SEVEN DAYS

"Seven Days in the Life of the President," a television special covering a week with President Johnson, will be telecast Sunday and Monday, Nov. 28 and 29, at 8 p.m. on Channel 11.

### "Bye Bye Birdie"

Dick Van Dyke, Ann-Margret  
Nov. 23 - 8 p.m.  
Campbell Hall - 50¢  
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## Announcements

### CAR CHECK

"Safe Car, Will Travel," the Circle K AAA sponsored Vehicle safety-check will be held tomorrow in the lot across from the swimming pool, 8:30 a.m. to 4 p.m. The pre-Thanksgiving safety check will be supervised by the campus police, at no charge.

### SNCC

Santa Barbara Friends of SNCC will meet tonight, at 8:30 in SH 2123.

### MOUNTAINEERS

Mountaineering Club will meet tonight at 6:30 in SH 2116.

### JUNIOR COUNCIL

All Junior Class Council members are required to attend a special meeting this afternoon at 4 in the South Hall patio area, to have the La Cumbre picture taken.

### FLYING CLUB

Flying Club meets tonight at 7:30 in SH 1128. Refreshments will follow the meeting and a film on soaring.

## Classes cut

Chancellor Vernon L. Cheadle has announced the dismissal of classes on Wednesday, beginning at 3 p.m., just prior to the Thanksgiving holiday, so that students may begin their travel home during the daylight hours.

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# IV transportation problems studied by AS committee

AS Personnel Committee decided Friday to recommend that Leg Council look into the possibilities of securing more buses to expand the AS bus service.

The AS bus service, currently employing five drivers and three buses, has met a heavy demand for transportation to campus, especially from supervised housing along El Colegio and Camino Del Sur.

The demand for bus service is expected to increase in coming years as student parking on campus is phased out; the AS bus service is directed to this problem.

The three buses, which can carry 45 persons each, are making seven runs daily -- four runs to campus and three return trips -- with the primary service going to supervised housing. All runs are reportedly running near to capacity.

Bus driver Jim Muzzy feels that one more bus is needed this year on the El Colegio run, and that another could be used to pioneer a new run in southern Isla Vista.

AS Vice President Dave Forman added that the buses should concentrate on the freshmen, since they have been deprived of the right to drive on campus.

The AS bus service is operating under a budget of \$4,985

a year, while each "new" bus costs between \$1,500 to \$2,000, although such buys are hard to come by, according to Florence Fong, AS business secretary.

Dave Thomas has been appointed student supervisor of the bus service and will be responsible for schedules, drivers, and the maintenance of the buses.

## Form offered for bus schedule change

Fill out this questionnaire if you would like to use AS bus service.

Your Address . . . . .  
Time you need to leave IV . . . . .  
Time you need to leave campus . . . . .

Turn in questionnaire into AS Office, Box 41, Personnel Committee.

After evaluation of questionnaires bus service will relocate bus stops and times, and will print schedule in EL GAUCHO

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Bellflower: *Johnson Jewelers*  
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Fullerton: *Stedman Jewelers*  
Glendale: *Hopkins Jewelers*  
Glendale: *Jensen and Fallon Jewelers*  
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Highland Park: *Garbe Jewelers*  
Huntington Park: *Parr's Jewelers*  
Indio: *Shepard's Jewelry*  
Inglewood: *Finley's Jewelers*  
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Lakewood: *Brand Jewelers*  
La Mesa: *J. Jessop & Sons*  
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Lake Tahoe: *Rene of Lake Tahoe Jewelers*  
Lodi: *Dee's Jewelers*  
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Long Beach: *Gulliksen Jewelers*  
Long Beach: *C. C. Lewis Jewelry Co. Inc.*  
Long Beach: *Rothbart Jewelers*  
Los Altos Center: *Wehrman Jewelers*  
Los Angeles: *B. D. Howes and Son*  
Los Angeles: *Jay's of Westwood, Jewelers*  
Los Angeles: *Lords Jewelers*  
Los Angeles: *James T. Nojima Jeweler*  
Menlo Park: *George Hirzel Jeweler*  
Modesto: *Shoemaker's Jewelers*  
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Pasadena: *Olson and Son, Jewelers*  
Petaluma: *McLaughlin Jewelers*  
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Redlands: *Smith Jewelers*  
Redwood City: *Kessinger Jewelry*  
Reseda: *Talbert's Jewelers*  
Rialto: *Meyer Jewelers*  
Riverside: *Luman Green, Jeweler--2 Stores*  
Riverside: *Mardon Jewelers*  
Sacramento: *E. A. Grebitus & Son*  
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Salinas: *Andrus Jewelers--2 Stores*  
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San Francisco: *Azevedo Jewelers*  
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San Francisco: *Hughes & Feldhahn Jlr.*  
San Francisco: *Sidney Mobell Fine Jewelry*  
San Francisco: *Niederholzer Jewelers*  
San Jose: *Paul's Master Jewelers*  
Downtown & Westgate Center  
San Luis Obispo: *Ross Jewelers*  
San Mateo: *Steiner's Jewelry*  
San Pedro: *Allen and Son, Jewelers*  
San Rafael: *Lelands Jewelry*  
Santa Ana: *Buffum's*  
Santa Barbara: *Churchill's Jewelers*  
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Tulare: *Carter's Jewelers*  
Tustin: *Patterson Jewelers*  
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Upland: *Scott's Jewelers*  
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Ventura: *Bahn's Jewelers*  
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Moscow: *Dodson's Jewelers*

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Seattle: *Friedlander & Sons, Jlr.--2 Stores*  
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10:30 FOLKSOUND  
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# MUSTANGS MAULED AS UCSB CAPS 8-1 SEASON

## Gauchos climax best year since 1936 with 35-6 Cal Poly victory

(Continued from p. 1)

Ten different ball-carriers completely stymied the Mustang defenders, while six receivers kept the Cal Poly secondary honest, or rather, frustrated. Blindbury, who only packed the mail for eight yards, led the receiving department as he nabbed five passes for 110 yards and two TD's.

The "Green Weenies," defensive unit, allowed only six

first downs and one lone six-pointer on Everest's interception return. In all, they stopped the Mustangs for only 45 yards on the ground, and 57 in the air.

Leading that tight little defense was linebacker Ted Maneki who had a great day setting up the Gauchos' second TD as he recovered a Cal Poly fumble, and intercepted a Jeff Curlovsky pass on the last play before intermission. Line-

backer Gary Cline also recovered a bumbled Mustang ball.

Cactus Jack's gridders used some razzle-dazzle plays to stun a once proud Poly defense, as they pulled off brilliant wing-back reverses, sent receivers wide open downfield, and used beautiful faking to set up some of the top plays.

The going was so spirited that late in the fourth quarter two scuffles broke out. One fight started when Blindbury was roughed up next to the Gaucho bench. Both benches were emptied before order could be restored. On the next play end Tony Goehring had a little too much of Mustang gang-tackling methods, but that fracas was quickly stopped.

While UCSB was devastating that Mustang squad to gain a berth in the Camellia bowl, its lone competitor for the spot, San Francisco State, which lost to both Cal Poly and Santa Clara, edged Cal Davis, 35-28, while Cal State at Los Angeles, number two college division team in the nation and the Gauchos opponent Dec. 11, humiliated San Fernando Valley State, 56-0.

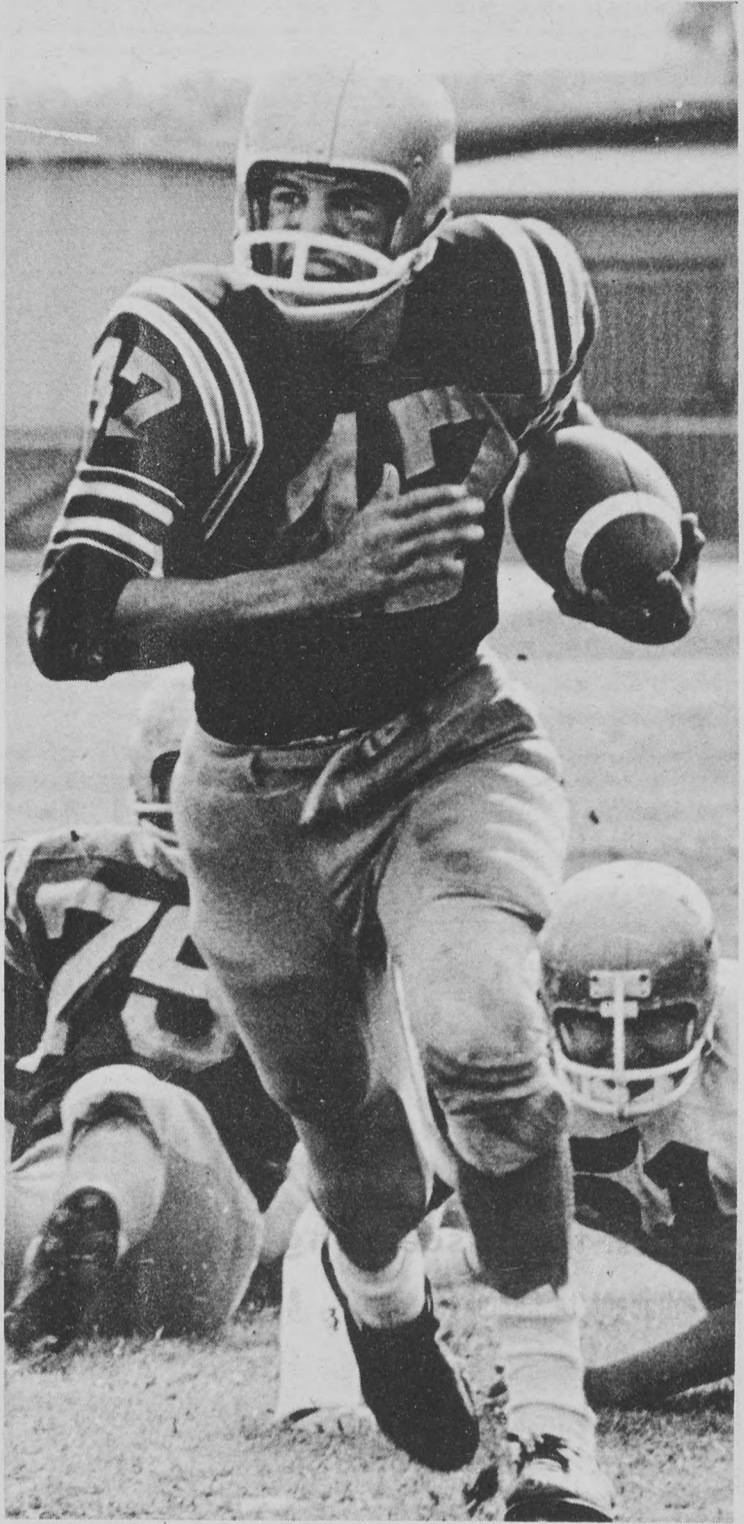
This will be UCSB's third bowl game. In the first Potato Bowl contest in 1948, Santa Barbara whipped Willamette, 46-7, and in the first and last Citricado Bowl in 1956 the Gauchos dropped a 25-14 decision to the San Diego Marines.

Strangely the Gauchos, who sport a fine 8-1 record, have never been rated the entire season by either of the wire services, but after Saturday's stunning victory, and the invitation to the NCAA Pacific Coast regional championship bowl game, it is hoped UCSB will gain recognition somewhere.

In the game, kicking specialist Ford went five for five on his PAT's, while missing one 25 yard field goal attempt.

The Gauchos threatened two other times in the game on marches that got to the Cal Poly seven times. On the first occasion, Hitchman on a fake field goal attempt threw wide to Vallergera in the end zone in the first period, and the second time in the third quarter was Ford's missed field goal.

Nevertheless, UCSB's stunning offense, which completely ran rampant over a Mustang defense that had held L.A. State and Santa Clara to one touchdown apiece, and the heralded Green Weenies who stopped the Mustangs cold, showed they had the fight in that final hour bid for the Camellias which they have earned in their best season since Spud Harder's boys went 9-1 back in 1936.



WINGBACK PAUL VALLERGA. Reeled in four catches for 57 yards and a touchdown to close out a brilliant sophomore year.

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14	Passes Completed	8
1	Passes Had Intercepted	1
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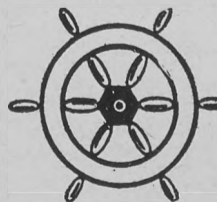
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## Soccer men tip Biola to tie UCLA for Southern California soccer crown

It's hard to believe, but the UCSB's open soccer team has won itself a co-championship with UCLA.

It was a long uphill fight, coming down to the final game of the year in which the Gauchos had to struggle for their 1-0 victory over Biola.

The Gauchos scored early in the game, as Scott Morgan intercepted a clear pass from the Biola fullback and pushed it into the nets.

The Gauchos, with their championship at stake tried

desperately to score some insurance goals, but Biola stopped every drive. It was the Gauchos defense that saved the day, as it held out to preserve the victory.

As important as the championships, UCSB's biggest game could be against Berkeley this Friday. It will be the preliminary to the semi-final game for the NCAA championship, between St. Louis and USF.

Adding to their tremendous season, the Gauchos placed several men on the all-star team.

Representing UCSB on the open team are Jim McCloud an inside, Bill Owen at center back, and Steve Arnold at half-back. Goalie Mike Nickoloff won honorable mention.

For the NCAA team Bill Kaltenekker won a position, with Carlos Ortiz, another goalie, and Dick Kipling, as honorable mention, while junior Steve Arnold was named coach of the year.

## UCSB harriers host NCAA meet

It's all Southern California as far as this year's version of the UCSB cross country team is concerned. All the runners plus the coach hail from that part of the state, and in this Wednesday's NCAA Regionals on our course, the Gauchos will try to place the regional trophy in the northern part of Southern California. As a preview to this meet, here is a run-down on the top seven runners and Coach Pete Petersons.

Latvian-born Pete Petersons graduated from USC in 1959, where he lettered in both track and cross country. He did his credential work at USC before taking his first position at Hughes Junior High in Los Angeles. In 1962, he moved to Pierce J.C., where he began to coach track and cross country. Last semester, Coach Petersons accepted an offer to come to UCSB to assume cross country coaching duties. The personable coach has worked in well with the Gauchos harriers.

Reo Nathan, a junior physics major, hails from Grossmont High in San Diego. Reo has a mile best of 4:21.9, an 880 best of 1:55.2, and a two-mile clocking of 9:46.

Jeff Rawlings, an undeclared sophomore, comes to us from Redlands. As a Freshman, he ticked off times of 4:23 for the mile, and 9:17 for the two-mile.

Jimmy Allen, a junior zoology major, makes his home in San Diego where he attended Pacific High. Jimmy's two best races are the six-mile and the two-mile, where he has clocked 31:01 and 9:19, respectively.

Jack Roach, one of two seniors on the team, is a history major from Pomona. He has turned in times of 9:29 for the two-mile, 4:15 for the mile, and 1:56 for the half-mile.

John Galloway, another one of the bright sophomore flashes, has improved greatly since the start of the season, and has filled in well for injured junior stalwart, Rich Schankel. Galloway is from Santa Monica, and plans to go into medicine. He has run 4:24 for the mile, and 1:58 for the half.

Jon Brower, the other senior, is a sociology major from Fairfax High in Los Angeles. Brower too, has come a long way to make this year's top seven. He has clocked 33:03 for the six-mile, 9:39 for the two-mile, and 4:22 for the mile.

### SPORTS BRIEFS

The Harlem Travelers face the UCSB-Westmont All-Stars in a colorful benefit game to be staged at the San Marcos Gym tomorrow night at 8 p.m. Tickets for students with A.S. cards are only \$1, with proceeds going to the San Marcos Athletic fund.

Another benefit is being held at Robertson Gym this Saturday night when the local all-stars meet the UCSB varsity in the annual Hall of Fame charity game with tip-off slated for 7:30 p.m.

There will be a short required meeting of all frosh football players today at 4 p.m. in Room 1125 of Robertson Gymnasium to discuss pre-registration procedures with assistant athletic director Andy Everest. All players attend!


All varsity and freshmen baseball players who have participated in fall practice will meet in room 1125 of Robertson Gym tomorrow at 4:45 to discuss pre-enrollment procedures. Individuals concerned are expected to be there.

Rounding out the top seven is freshman Bill Torrez, a math major from Santa Maria. Bill has turned in times of 10:04 for the two-mile, and 4:20 for the mile.

Wednesday's meet covers most of the West Coast, with Nevada, and Arizona being in-

cluded in the region. Teams participating Wednesday include Nevada, Cal State at Los Angeles, SFVSC, Fresno State, Long Beach State, Pomona, Cal State at Hayward, and UCSB. These schools are all "small" schools in this NCAA division. Meet time is 1 p.m.

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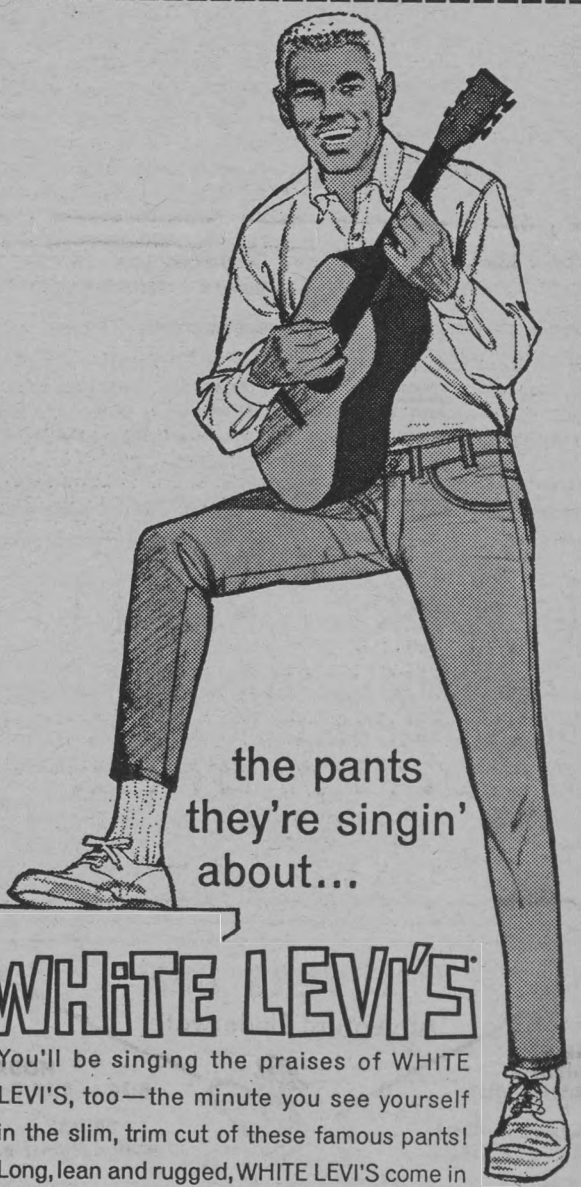
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## Cal colleges in march

(Continued from p. 1)  
others strummed guitars while they sang anti-war songs.

There was some question at the time of the demonstration as to whether the demonstrators were actually students. According to the VDC, about 40 California colleges were represented in the march. It said also that about 60 to 70 per cent of the protestors were students.

About 25 students and instructors from UCLA arrived in Berkeley Saturday afternoon in support of the U.S. policy in Viet Nam.

A leader of the groups said they were "asking all Californians to help finish the job of making sure this is the last mob march embodying non-students that ever originates on a UC campus."

Called the Victory in Viet Nam Association, the group picked up pro-Viet Nam policy placards and joined the march.

The parade began with a rally at Cal and ended with speeches in Oakland's DeFremery Park. The VDC was forbidden to march to the Oakland Army

Terminal, but a VDC leader reportedly said the group plans to reach the terminal in some legal way possibly by motorcade.

Also, VDC leaders plan to go to Washington next week to organize a national program of opposition to the U.S. government's policy in Viet Nam.

Last week, Oakland city officials refused the VDC a parade permit, but were overruled by a federal court injunction affirming the VDC's right to march.

It had been charged by Oakland officials that parade would be too large and might develop into an unorganized mob. U.S. District Court Judge William Sweigert ruled, however, that Oakland's denial was an "unreasonable, arbitrary abuse of the discretion of city officials, and an invalid interference with basic constitutional rights."

UC President Clark Kerr, commenting on accusations that planning for the anti-Viet Nam war demonstration was illegal, said that illegal activities were not being condoned in the UC system.

## Williams condemns voting inequality in South, asks students to help

(Continued from p. 1)  
"When you've got this black soul, you realize the mistakes that have gone before you, you even drop out of school to give a year of your life to helping the cause of humanity. Then, you've got soul."

"There's nothing funny about the situation in the South," he said. "We all of us have a responsibility that we have not fulfilled. You have not fulfilled it."

Williams added that "We certainly cannot continue to talk about democracy overseas, to claim they must have free election, to lie that the ideals of Thomas Jefferson have become glorious reality in this country. This is a lie."

"We can no longer perpetrate in Viet Nam or in Santo Domingo or anywhere else, the lie that America is free."

On the subject of Negro voting rights, Williams claimed that "the Southerner, the Jim Clark, says, if a Negro has to eat in the same restaurant, sleep in the same hotel, go to

the same school, well he doesn't like it, but he'll go along."

"But the minute you start considering voting equality, Jim Clark knows he can't let the Negro get ahold of that vote. Clark just might find himself back in the cotton field."

He added that Federal registrars have been tremendously effective in the South, "but after all they've only gone into 12 counties."

As a parting word to students who are concerned about working in the South, but think they should stay in college, Williams urged them to "Go now. Don't hide behind your education, or think you have to graduate to help."

"Devote a year, two years of your life to helping humanity in the South, and do it now."

## Fr Council meets

Fresh Class Council members will meet tonight at 7:15 p.m. in SH 1127 for the yearbook picture.

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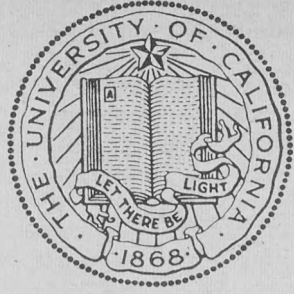
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"SITUATION HOPELESS - BUT NOT SERIOUS"





# El Gaucho

SPECIAL  
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Associated Students, University of California, Santa Barbara

## Some Reflections On Science and Culture

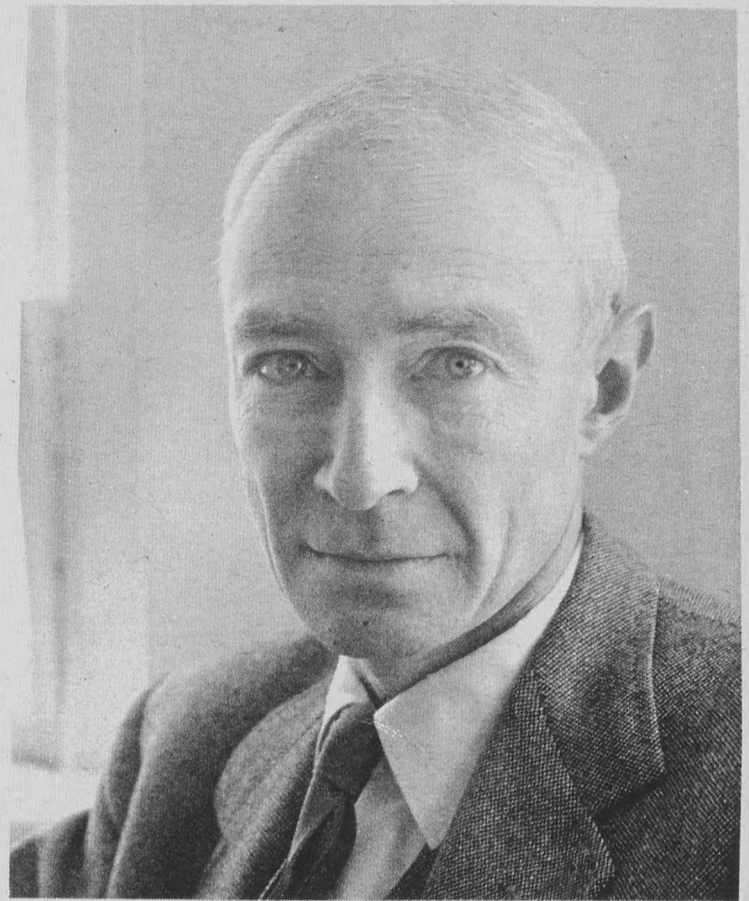
by J. Robert Oppenheimer

Communication is as vital on the person-to-person level as it is to the world of scholarly publications. In an age of increasingly complex technology and the problems which technology in part engenders, the margin for error through misunderstanding on whatever level becomes progressively less.

Dr. J. Robert Oppenheimer, regarded by Chancellor Vernon Cheadle as "a man whose breadth of learning and humaneness is as great as his achievements in science," delivered this challenge to the intellectual community to a turn-away crowd in Robertson Gymnasium Oct. 14, 1965.

UCSB's first Convocation Lecturer drew upon a lifetime immersion in physics and poetry to offer "Some Reflections on Science and Culture" on this historic occasion.

EL GAUCHO is pleased to publish the text of Dr. Oppenheimer's address in its entirety.



J. Robert Oppenheimer, director of the Institute for Advanced Study at Princeton, N.J., where he is a professor of physics, spent 18 years at the California Institute of Technology and the University of California, Berkeley, as a teacher and researcher.

During World War II he was director of the Los Alamos Scientific Laboratory in New Mexico, where the first atomic bomb was produced. In 1963, he was awarded the Atomic Energy Commission's highest honor, the \$50,000 Enrico Fermi Award, in recognition of his contribution to theoretical physics.

He is known in scientific circles for his work on the quantum theory, cosmic rays, fundamental particles and relativity, and for his ability to inspire others to creativity in physics.

His interest in literature led him to add Sanskrit to his reading repertoire of eight languages so that he might read Hindu scriptures.

We live in an unusual world, marked by very great and irreversible changes that occur within the span of a man's life. We live in a time where our knowledge and understanding of the world of nature grows wider and deeper at an unparalleled rate; and where the problems of applying this knowledge to man's needs and hopes are new, and only a little illuminated by our past history.

Indeed it has always, in traditional societies, been the great function of culture to keep things rather stable, quiet, and unchanging. It has been the function of tradition to assimilate one epoch to another, one episode to another, even one year to another. It has been the function of culture to bring out meaning, by pointing to the constant or recurrent traits of human life, which in easier days one talked about as the eternal verities.

### STATUS QUO

In the most primitive societies, if one believes the anthropologists, the principal function of ritual, religion, of culture is, in fact, almost to stop change. It is to provide for the social organism what life provides in such a magic way for living organisms, a kind of homeostasis, an ability to remain intact, to respond only very little to the obvious convulsions and alterations in the world around.

Today, culture and tradition have assumed a very different intellectual and social purpose. The principal function of the most vital and living traditions today is precisely to provide the instruments of rapid change. There are many things which go together to bring about this alteration in man's life; but probably the decisive one is

science itself. I will use that word as broadly as I know, meaning the natural sciences, meaning the historical sciences, meaning all those matters on which men can converse objectively with each other. I shall not continually repeat the distinction between science as an effort to find out about the world and understand it, on the one hand, and science, in its applications in technology, as an effort to do something useful with the knowledge so acquired.

### WHAT IS SCIENCE?

But certain care is called for, because, if we call this the scientific age, we make more than one kind of oversimplification. When we talk about science today, we are likely to think of the biologist with his microscope or the physicist with his cyclotron; but almost certainly a great deal that is not now the subject of successful study will later come to be. I think we probably today have under cultivation only a small part of the terrain which will be natural for the sciences a century from now. I think of the enormously rapid growth in many parts of biology, and of the fact, ominous but not without hope, that man

is a part of nature and very open to study.

The reason for this great change from a slowly moving, almost static world, to the world we live in, is the cumulative character, the firmness, the givenness of what has been learned about nature. It is true that it is transcended when one goes into other parts of experience. What is true on the scale of the inch and the centimeter may not be true either of the scale of a one hundred billionth of a centimeter; but it stays true where it was proven. It is fixed. Thus everything that is found out is added to what was known before, enriches it, and does not have to be done over again. This essentially cumulative irreversible character of learning things is the hallmark of science.

### CAN'T BAN KNOWLEDGE

This means that in man's history the science make changes which cannot be wished away and cannot be undone. Let me give two quite different examples. There is much talk about getting rid of atomic bombs. I like that talk; but we must not fool ourselves. The world will not be the same, no

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matter what we do with atomic bombs, because the knowledge of how to make them cannot be exorcised. It is there; and all our arrangements for living in a new age must reflect its omnipresent virtual presence, and the fact that one cannot change that.

A different example: we can never have again the delusions about the centrality and importance of our physical habitat, now that we know something of where the earth is in the solar system, and know that there are hundreds of billions of suns in our galaxy, and hundreds of billions of galaxies within reach of the great telescopes of the world. We can never again base the dignity of man's life on the special character in space and time of the place where he happens to live.

These are irreversible changes; so it is that the cumulative character gives a paradigm of something which is, in other respects, very much more subject to question: the idea of human progress. One cannot doubt that in the sciences the direction of growth is progress. This is true both of the knowledge of fact, the understanding of nature, and the knowledge of skill, of technology, of learning how to do things.

#### MORAL PROGRESS

When one applies this to the human situation, and complains that we make great progress in automation and computing and space research but no comparable moral progress, this involves a total misunderstanding of the difference between the two kinds of progress. I do not mean that moral progress is impossible; but it is not, in any sense, automatic. Moral regress, as we have seen in our day, is just as possible. Scientific regress is not compatible with the continued practices of science.

It is, of course, true, and we pride ourselves on it that it is true, that science is quite international, and is the same (with minor differences of emphasis) in France, India, Korea, Japan; but culture is not international; indeed I am one of those who hope that, in a certain sense, it never quite will be, that the influence of our past, of our history, which is for different reasons and indifferent peoples quite different, will make itself felt and not be lost in total homogeneity.

I cannot subscribe to the view that science and culture are co-extensive, that they are the same thing with different names; and I cannot subscribe to the view that science is something useful, but essentially unrelated to culture. I think that we live in a time which has few historical parallels, that there are practical problems of human institutions, their obsolescence and their inadequacy, problems of the mind and spirit which, if not more difficult than ever before, are different, and difficult. I shall be dealing with some traits of the sciences which contribute to the difficulty, and may here give a synopsis of what they are.

#### SCIENTIFIC REVOLUTION

They have to do with the question of why the scientific revolution happened when it did; with the characteristic growth of the sciences; with their characteristic internal structure; with the relation of discovery in the sciences to the general ideas of man in matters which are not precisely related to the sciences; with freedom and necessity in the sciences, and the question of the creative and the open character of science, its infinity; and with what direction we might try to follow in bringing coherence and order to our cultural life, in doing what it is proper for a group of intellectuals, of artists, of philosophers, teachers, scientists, statesmen to do to help refashion the sensibility and the institutions of this world, which need refashioning if we are at all to survive.

It is not a simple question to answer why the scientific revolution occurred when it did. It started, as all serious historians would agree, in the late Middle Ages and early Renaissance, and was very slow at first. No great culture has been free of

curiosity and reflection, of contemplation and thought. "To know the causes of things" is something that serious men have always wanted, a quest that serious societies have sustained. No great culture has been free of inventive genius.

If we think of the culture of Greece, and the following Hellenistic and Roman period, it is particularly puzzling that the scientific revolution did not occur then. The Greeks discovered something without which our contemporary world would not be what it is: standards of rigor, the idea of proof, the idea of logical necessity, the idea that one thing implies another. Without that, science is very nearly impossible, for unless there is a quasi-rigid structure of implication and necessity, then if something turns out not to be what one expected, one will have no way of finding out where the wrong point is; one has no way of correcting himself, or finding the error.

#### CURIOUS GREEKS

But this is something that the Greeks has very early in their history. They were curious and inventive; they did not experiment in the scale of modern days, but they did many experiments; they has as we have only recently learned to appreciate a very high degree of technical and technological sophistication. They could make very subtle and complicated instruments; and they did, though they did not write much about it. Possibly the Greeks did not make the scientific revolution because of some flaw in communication, but by what we know of it, it was very good. They were a small society; they talked freely with each other, and the record of these talks is even today an inspiring thing to read. It may be that there were not quite enough people involved.

I believe that none of these may be the right answer. Indeed in a matter of history, we cannot assign a unique cause, precisely because the event itself is unique; you cannot test, to see if you have it right. I think that the best guess is that it took something that was not present in Chinese civilization, that was wholly absent in Indian civilization, and absent also from Greco-Roman civilization.

It needed an idea of progress, not limited to better understanding, for this idea the Greeks had. It took an idea of progress which has more to do with the human condition, which is well expressed by the second half of the famous Christian dichotomy--faith and works; the notion that the betterment of man's condition, his civility, has meaning; that we all has a responsibility to it, a duty to it, and to man.

#### A REDISCOVERY

I think that it was when this basic idea of man's condition, which supplements the other worldly aspects of religion, when this was fortified and fructified between the Thirteenth and the Fifteenth Centuries by the rediscovery of the ancient world, of the Greek scientists, philosophers, and mathematicians, that there was the beginning of the scientific age.

It was very slow at first and marked by individual giants, by Kepler, by Newton. By the Seventeenth Century there were enough men involved in improving human knowledge, or useful knowledge--phrases varied--so that new societies were formed, the Royal Society, the Academy, where people could talk to each other and bring to the prosecution of science that indispensable element of working together, of communication, of correcting the other fellow's errors and admiring the other fellow's skills, thus creating the first truly scientific communities.

Just before Newton, Hobbes wrote: "The Sciences are small power; because not eminent; and therefore, not acknowledged in any man, nor one at all, but in a few; and in them, but a few things. For Science is of that nature, as none can understand it to be, but such as in good measure have attained it. Arts of publique use, as Fortification, making of Engines, and other Instruments of War; because they conferre to Defence, and Victory, are Power."

It was the next century that put science in a context of fraternity, even of universal brotherhood. It encouraged a political view which was egalitarian, permissive, pluralistic, liberal--everything for which the word democratic is today justly and rightly used. The result is that the scientific world of today is also a very large one: an open world in which, of course, not everybody does everything, in which not everybody is a scientist or a prime minister, but in which we fight very hard against arbitrary exclusion of people from any works, any deliberation, any discourse, any responsibility for which their talents and their interests suit them.

The result is that we face our new problems, created by the practical consequences of technology, and the great intellectual consequences of science itself, in the context of a world or two or three billion people, an enormous society for which human institutions were not really ever designed. We are facing a world in which growth is characteristic, not just of the sciences themselves, but of the economy, of technology, of all human institutions; no one can open a daily paper without seeing the consequences.

#### MEASURING GREATNESS

One can measure scientific growth in a number of ways, but it is important not to mistake things. The excellence of the individual scientist does not change much with time. His knowledge and his power does, but not the high quality that makes him great. We do not look to anyone to be better than Kepler or Newton, any more than we look to anyone to be better than Sophocles, or to any doctrine to be better than the gospel according to St. Matthew or the Bhagavad-Gita. Yet one can measure things, and it has been done. One can measure how many people work on scientific questions: one can count them. One can notice how much is published.

These two criteria show a doubling of scientific knowledge in every ten years. Casimir calculated that if the Physical Review continued to grow as rapidly as it has between 1945 and 1960, it would weigh more than the earth during the next century. In fifteen years, the volume of chemical abstracts has quadrupled; in biology the changes are faster still.

Today, if you talk about scientists and mean by that people who have devoted their lives to the acquisition and application of new knowledge, then 93 per cent of us are still alive. This enormously rapid growth, sustained over two centuries, means, of course, that no man learned as a boy more than a small fraction in his own field of what he ought to know as a grown man.

#### OVERWHELMING ARGUMENT

There are several points to keep in mind. One would naturally think that if we are publishing so much, it must be trivial. I think that this is true: any scientific community with sane people would protect itself against that, because we have to read what is published. The argument not to permit the accumulation of trivial, unimportant things which are not really new, which do not add to what was known before, is overwhelming.

The second point is that one may say that every new thing renders what was known before uninteresting, that one can forget as rapidly as one learns. That is in part true: whenever there is a great new understanding, a great new element of order, a new theory, or a new law of nature, then much that before had to be remembered in isolation becomes connected and becomes, to some extent, implied and simplified.

Yet one cannot entirely forget what went before, because usually the meaning of what is discovered in 1965 is to be found in terms of things that were discovered in 1955 or 1950 or earlier. These are the things in terms of which the new discoveries are made, the origins of the instruments that give us the new discoveries, the origins of the concepts in terms of which they are discovered, the origins of the language and the tradition.

A third point: if one looks to the future of something that doubles every ten years, there must come a time when it stops, just as The Physical Review cannot weigh more than the earth. We know that this will saturate, and probably at a level very much higher than today; there will come a time when the rate of growth of science is not such that in every ten years the amount that is known is doubled; but the amount that is added to knowledge then will be far greater than it is today.

This rate of growth suggests that, just as the professional must, if he is to remain professional, live a life of continuous study, so we may find a clue here also to the more general behavior of the intellectual with regard to his own affairs, and those of his colleagues in somewhat different fields. In the most practical way a man will have some choice: he may choose to continue to learn about his own field in an intimate, detailed, knowledgeable way, so that he knows what there is to know about it; but then the field will not be very wide. His knowledge will be highly partial of science as a whole, but very intimate and very complete of his own field.

He may, on the other hand, choose to know generally, superficially a good deal about what goes on in science, but without competence, without mastery, without intimacy, without depth. The reason for emphasizing this is that the cultural values of the life of science almost all lie in the intimate view: here are the new techniques, the hard lessons, the real choices, the great disappointments, the great discoveries.

#### SURPRISES

All sciences grow out of common sense, out of curiosity, observation, reflection. One starts by refining one's observation and one's words, and by exploring and pushing things a little further than they occur in ordinary life. In this novelty there are surprises; one revises the way one thinks about things to accommodate the surprises; then the old way of thinking gets to be so cumbersome and inappropriate that one realizes that there is a big change called for, and one recreates one's way of thinking about this part of nature.

Through all this one learns to say what one has done, what one has found, and to be patient and wait for others to see if they find the same things, and to reduce, to the point where it really makes no further difference, the normally overpoweringly vital element of ambiguity in human speech. We live by being ambiguous, by not settling things because they do not have to be settled, by suggesting more than one thing because their co-presence in the mind may be a source of beauty.

But in talking about science we may be as ambiguous as ever until we come to the heart of it. Then we tell a fellow just what we did in terms that are intelligible to him, because he has been schooled to understand them, and we tell him just what we found and just how we did it. If he does not understand us, we go to visit him and help him; and if he still does not understand us, we go back home and do it over again. This is the way in which the firmness and solidity of science is established.

#### MANY BRANCHES

How than does it go? In studying the different parts of nature, one explores with different objects, and one gets a branching of what at one time has been common talk, common sense. Each branch develops new instruments, ideas, words suitable for describing that part of the world of nature. This tree-like structure, all growing from the common trunk of man's common primordial experience, has branches no longer associated with the same question, nor the same words and techniques. The unity of science, apart from the fact that it all has a common origin in man's ordinary life, is not a unity of deriving one part from another, nor of finding an identity between one part and another, between let us say, genetics and topology, to take two

impossible examples, where there is indeed some connection.

The unity consists of two things: first and ever more strikingly, an absence of inconsistency. Thus we may talk of life in terms of purpose and adaptation and function, but we have found in living things no tricks played upon the laws of physics and chemistry. We have found and I expect will find a total consistency, and between the different subjects, even as remote as genetics and topology, an occasional sharp mutual relevance. They throw light on each other; they have something to do with each other; often the greatest things in the sciences occur when two different discoveries made in different worlds turn out to have so much in common that they are examples of still greater discovery.

The image is not that of an ordered array of facts in which every one follows somehow from a more fundamental one. It is rather that of a living thing: a tree doing something that trees do not normally do, occasionally having the branches grow together and part again in a great network.

#### PASSION FOR UNITY

The knowledge that is being increased in this extraordinary way is inherently and inevitably very specialized. It is different for the physicist, the astronomer, the microbiologist, the mathematician. There are connections; there is often important mutual relevance. Even in physics, where we fight very hard to keep the different parts of our subject from flying apart (so that one fellow will know one thing and another fellow will know another, and they do not talk to each other), we do not entirely succeed, in spite of a passion for unity which is very strong. The traditions of science are specialized traditions; this is their strength.

Their strength is that they use the words, the machinery, the concepts, the theories, that fit their subjects; they are not encumbered by having to try to fit other sorts of things. It is the specialized traditions which give the enormous thrust and power to the scientific experience. This also makes for the problem of teaching and explaining the sciences.

When we get to some very powerful general result which illuminates a large part of the world of nature, it is by virtue of being general in the logical sense, of encompassing an enormous amount of experience in its concepts and in its terminology, it is most highly specialized, almost unintelligible except to the men who have worked in the field.

The great laws of physics today, which do not describe everything (or we would be out of business) but which underlie almost everything that is ever noticed in ordinary human experience about the physical world, cannot be formulated in terms that can reasonably be defined without a long period of careful schooling. This is comparably true in other subjects.

#### PROFESSIONAL COMMUNITIES

One has then in these specializations the professional communities in the various sciences. They are very intimate, work closely together, know each other throughout the world. They are always excited, sometimes jealous but usually pleased, when one member of the community makes a discovery. I think, for instance, that what we now call psychology will one day perhaps be many sciences, that there will be many different specialized communities practicing them, who will talk with one another, each in its own profession and in its own way.

These specialized communities, or guilds, are a very moving experience for those who participate. There have been many temptations to see analogues in them for other human activities. One that we hear much discussed is this: "If physicists can work together in countries with different cultures, in countries with different politics, in countries of different religions, even in countries which are politically obviously hostile, is not this a way to bring the world

together?" It is certainly one of the few things we know how to do; we certainly should do it; we do. Yet it is, of course, a very fragile and limited way to bring the world together. I shall turn shortly to a generalization of this that is called for by our times.

The specializing habits of the sciences have, to some extent, because of the tricks of universities, been carried over to other work, to philosophy and to the arts. There is technical philosophy, which is philosophy as a craft, philosophy for other philosophers, and there is art for the artists and the critics. To my mind, whatever virtues the works have for sharpening professional tools, they are profound misreadings, even profound subversions of the true functions of philosophy and art, which are to address themselves to the general common human problem, not to everybody, but to anybody, not to specialists.

#### COMMUNICATION PROBLEM

An essential word on this account of structure and growth, it is clear that one is faced here with formidable problems of communication, of telling people about things, and of teaching. There is no escaping this. There is an immense job, never done, never ending, of teaching on all levels in every sense of the word.

It has often been held that the great discoveries in science, coming into the lives of men, affect their attitudes toward their place in life, their views, their philosophy. There is surely some truth in this. Examples that are usually given include Newton and Darwin.

Newton is not a very good example, for when we look at it closely we are struck by the fact that in the sense of the Enlightenment, the sense of a coupling of faith in scientific progress and man's reason with a belief in political progress and the secularization of human life, Newton himself was in no way a Newtonian. His successors were.

If discoveries in science are to have an honest effect on human thought and on culture, they have to be understandable. That is likely to be true only in the early period of a science, when it is talking about things which are not too remote from ordinary experience. Some of the great discoveries of this century go under the name of relativity and uncertainty, and when we hear these words we may think, "This is the way I felt this morning: I was relatively confused and quite uncertain;" this is not at all a notion of what technical points are involved in these great discoveries, or what lessons.

#### WE UNDERSTAND DARWIN

I think that the reasons why Darwin's hypothesis had such an impact was, in part, because it was a very simple thing in terms of ordinary life. We cannot talk about the contemporary discoveries in biology in such language, or by referring only to things that we have all experienced.

Thus I think that the great effects of the sciences in stimulating and in enriching philosophical life and cultural interests have been necessarily confined to the rather early times in the development of a science. There is another requirement. Discoveries will really only resonate and change the thinking of men when they feed some hope, some need that pre-exists in the society.

I think that the real sources of the Enlightenment, fed a little by the scientific events of the time, came in the re-discovery of the classics, of classic political theory, perhaps most of all the Stoics. The hunger of the Eighteenth Century to believe in the power of reason, to wish to grow off authority, to wish to secularize, to take an optimistic view of man's condition, seized on Newton and his discoveries as an illustration of something which was already deeply believed in quite apart from the law of gravity and the laws of motion.

The hunger with which the Nineteenth Century seized on Darwin had very much to do with the increasing awareness of history and change, with the great desire to

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naturalize man, to put him into the world of nature, which pre-existed long before Darwin and which made him welcome.

#### QUANTUM THEORY

I have seen an example in this century where the great Danish physicist Niels Bohr found in the quantum theory when it was developed thirty years ago this remarkable trait: it is consistent with describing an atomic system, only much less completely than we can describe large-scale objects. We have a certain choice as to which traits of the atomic system we wish to study and measure and which to let go; but we have not the option of doing them all.

This situation, which we all recognize, sustained in Bohr his long-held view of the human condition: that there are mutually exclusive ways of using our words, our minds, our souls, any one of which is preparing to act and entering into an introspective search for the reasons for action. This discovery has not, I think, penetrated into general cultural life. I wish it had; it is a good example of something that would be relevant, if only it could be understood.

Einstein once said that a physical theory was not determined by the facts of nature, but was a free invention of the human mind. This raises the question of how necessary is the content of science, how much is it something that we are free not to find, how much is it something that could be otherwise? This is, of course, relevant to the question of how we may use the words objectivity and truth. Do we, when we find something, invent it or discover it?

#### LIMITED FREEDOM

The fact is, of course, just what one would guess. We are, of course, free in our tradition and in our practice, and to a much more limited extent individually to decide where to look at nature, and how to look at nature, what questions to put, with what instruments and with what purpose. But we are not the least bit free to settle what we find. Man must certainly be free to invent the idea of mass, as Newton did and as it has been refined and redefined; but having done so, we have not been free to find that the mass of the light quantum or the neutrino is anything but zero.

We are free in the start of things, We are free as to how to go about it; but then the rock of what the world is, shapes this freedom with a necessary answer. That is why ontological interpretations of the word objective have seemed useless, and why we use the word to describe the clarity, the lack of ambiguity, the effectiveness of the way we can tell each other about what we have found or not found.

Thus in the sciences, total statements like those that involve the word all, with no qualifications, are hardly ever likely to occur. In every investigation or extension of knowledge we are involved in an action; in every action we are involved in a choice; and in every choice we are involved in a loss, the loss of what we did not do.

#### COST OF MEANING

We find this in the simplest situations. We find this in perception, where the possibility of perceiving is co-extensive with our ignoring many things that are going on. We find it in speech where the possibility of understandable speech lies in paying no attention to a great deal that is in the air, among the sound waves, in the general scene.

Meaning is always attained at the cost of leaving things out. We find it in the idea of complementarity here in a sharp form as a recognition that the attempt to make one sort of observation on an atomic system forecloses others. We have freedom of choice, but we have no escape from the fact that

doing some things must leave out others.

In practical terms, this means, of course, that our knowledge is finite and never all-encompassing. There is always much that we miss, much that we cannot be aware of because the very act of learning, of ordering, of finding unity and meaning, the very power to talk about things means that we leave out a great deal.

#### PHYSICS ON MARS?

Ask the question: "Would another civilization based on life on another planet very similar to ours in its ability to sustain life have the same physics?" One has no idea whether they would have the same physics or not. We might be talking about quite different questions. This makes ours an open world without end. I had a Sanskritist friend in Berkeley who used to say that, if science were any good, it should be much easier to be an educated man now than it was a generation ago. That is because he thought the world was closed.

The things that make us choose one set of questions, one branch of enquiry rather than another are embodied in scientific traditions. In developed sciences each man has only a limited sense of freedom to shape or alter them; but they are not themselves wholly determined by the findings of science. They are largely of an aesthetic character. The words that we use, simplicity, elegance, beauty, indicate that what we grope for is not only more knowledge, but knowledge that has order and harmony in it, and continuity with the past.

Like all poor fellows, we want to find something new, but not something too new. It is when we fail in that, that the great discoveries follow. I should as a warning repeat that the fact that something is simple, elegant, and beautiful does not mean that it is true. That is another matter.

#### SCIENCE AND CULTURE

All these themes--the origin of science, its pattern of growth, its branching reticular structure, its increasing alienation from the common understanding of man, its freedom, the character of its objectivity and its openness--are relevant to the relations of science and culture. I believe that they can be and should be far more robust, intimate, and fruitful than they are today.

I am not here thinking of the popular subject of mass culture. In touching on that, it seems to me one must be critical but one must, above all, be human; one must not be a snob; one must be rather tolerant and almost loving. It is a new problem; one must not expect it to be solved with the methods of Periclean Athens.

In the problems of mass culture and, above all, of the mass media, it is not primarily a question of the absence of excellence. The modest worker, in the industrial world, has within reach probably better music and more good music, more good art, more good writing than his predecessors have ever had.

It seems rather that the good things are lost in such a stream of poor things, that the noise level is so high, that some of the conditions for appreciating excellence are not present. One does not eat well unless one is hungry; there is a certain frugality to the best cooking; and something of this sort is wrong with the mass media. But that is not now my problem.

#### VESTED DUTY

Rather, I think loosely of what we may call the intellectual community: artists, philosophers, teachers, professionals, prophets, scientists. This is an open group, with no sharp lines separating those that think themselves of it. It is a growing faction of all people. In it is vested the great duty for enlarging, preserving, and transmitting our knowledge and skills, and indeed our understanding of the interrelat-

ions, priorities, commitments, injunctions, that help men deal with their joys, temptations and sorrows, their finiteness, their beauty.

Some of this has to do, as the sciences so largely do, with propositional truth, with propositions which say "If you do thus and do you will see this and that;" these are objective and can be checked and cross-checked until, though it is always wise from time to time to doubt, there are ways to put an end to the doubt. This is how it is with the sciences.

For this community there are other statements which emphasize a theme rather than state a fact. They may be statements of connectedness or relatedness or importance, or they may be in one way or another statements of commitment. For them the word certitude, which is a natural norm to apply in the sciences, is not very sensible; depth, firmness, universality, perhaps more; but certitude, which applies really to verification, is not the great criterion in most of the work of a philosopher, a painter, a poet, or a playwright. For these are not, in the sense I have outlined, objective.

Yet for any true community, for any society worthy of the name, they must have an element of community, of being common, of being public, of being relevant and meaningful to man, not necessarily to everybody, but surely not just to specialists.

#### A NEED TO TALK

I have been much concerned that, in this world of change and scientific growth, we have so largely lost the ability to talk with one another, to increase and enrich our common culture and understanding. And so it is that the public sector of our lives, what we hold and have in common, has suffered, as have the illumination of the arts, the deepening of justice and virtue, and the ennobling power of our common discourse. We are less men for this.

Never in man's history have the specialized traditions more flourished than today. We have our private beauties. But in those high undertakings where man derives strength and insight from public excellence, we have been impoverished. We hunger for nobility, the rare words and acts that harmonize simplicity with truth. In this default I see some connection with the great unresolved public problems--survival, liberty, fraternity.

In this default I see the responsibility that the intellectual community has to history and to our fellows: a responsibility which is a necessary condition for remaking human institutions as they need to be remade today that there may be peace, that they may embody more fully those ethical commitments without which we cannot properly live as men.

#### A GREATER EFFORT

This may mean for the intellectual community a very much greater effort than in the past. The community will grow; but I think that also the quality and the excellence of what we do must grow. I think, in fact, that with the growing wealth of the world, and the possibility that it will not all be used to make new committees, there may indeed be true leisure, and that a high commitment on this leisure is that we reknit the discourse and the understanding between the members of the intellectual community.

In this I think we have, all of us, to preserve our competence in our own professions, to preserve what we know intimately, to preserve our mastery. This is, in fact, our only anchor in honesty. We need also to be open to other and complementary lives, not intimidated by them and not contemptuous of them, as so many are today of the natural and mathematical sciences.

As a start, we must learn again, without contempt and with great patience, to talk to one another; and we must hear.