

California Tech

Associated Students of the California Institute of Technology

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Number 5



Richard Nixon makes a point during his speech at Caltech last week.

Morphew Supports Barnett

Yesterday morning, Richard D. Morphew of the White Citizen's Council of Jackson, Mississippi, spoke on the recent integration problems in Mississippi. He began with a discussion of the different state-supported systems of higher education. Placing great emphasis on the idea of states individually controlling their education systems, he said "he cannot understand why anyone" outside Mississippi "should be so concerned with her school policies."

He then proceeded to the particular case at hand: Governor Barnett's refusal to admit Negro James Meredith to the University of Mississippi. He attempted to link racial segregation in the south with the "segregation" he found in the California system. Here he said, students are "intellectually segregated," referring to the state system of junior colleges being considerably segregated by ability from the state universities. He then cited the present day system of placing Indians on reservations as an example of racial segregation.

Morphew then spent considerable time in discussing the admission status of James Meredith. He quoted the court commentary including a report from his commanding army officer saying that "Meredith needed to rid himself of an antagonistic attitude," and a psychiatric record from the army stating that Meredith was too "emotionally involved in the racial question." He also cited discrepancies in Meredith's voting registration in the State of Mississippi.

He then proceeded to what he felt was the basic issue of this entire question: Whether a contract (the Constitution) means what it says? Or, may centralized government assume sweeping powers beyond the con-

tract's expressed limits? He stated that the Supreme Court had assumed legislative and executive powers above anything expressed in the Constitution. Since education is left up to the individual states, the only Constitutional process left was to pass an Amendment expressly granting federal control over education. But, he concluded, "those people prefer to use centralized force to overcome Constitutional process."

He then spoke at great length of the reported brutality of the Federal marshalls in Oxford. These marshalls, he contended, were not primarily law-enforcement officers, and thus were not trained to control such a "crowd of enthusiastic college students." He expressed disappointment that no Civil Liberties group had protested the brutality and "wanton violation of the Bill of Rights." He referred scornfully to that "unlawfully adopted 14th Amendment," and concluded that in Oxford the "Police State came to America, and they did

not even declare martial law." "This," he continued, "is the way dictatorship fastens its hold on the people."

He then discussed the relative percentages of non-white in Mississippi (42%) and California (5-6%). In this question of segregation, or "Biracial accomodation" as he expressed it, the question of numbers is most important. In President Kennedy's actions, he cited a violation of the Presidential oath, a "demagogic substitution for law." He then stated that using this recent case as precedent, "these judicial dictators" might decide to eliminate other freedoms. He concluded with the statement that "unconstitutional government within our own nation is the gravest danger to our freedom."

Yearbook Still On Schedule

The 1963 **Big T** will break tradition and appear on time this year, according to Jack McKinley, **Big T** editor.

McKinley, with the assistance of faculty section editor Joe Weis, met the first deadline last Monday, October 15. The deadline included sending in a complete 16 page section and entitled the **Big T** to a color picture, selected last fall, to be printed in the endpapers of the annual at no additional charge. The color picture selected was one featuring galaxies in color and was published in Engineering and Science, Caltech's alumni magazine, a few years ago.

The 16 page section sent in included the introduction, table of contents, and part of the faculty section.

Deadlines For **Big T**

The next deadline for the **Big T** will be December 1. McKinley's present plan calls for the first 64 pages to be in on that date and to include five pages of introduction, 16 pages of the faculty section, 36 pages of the activities section, and seven pages of the sports section.

The second deadline will be on February 5, 1963. Sixty-eight pages are scheduled to be sent in at that time, comprising the senior section and the Houses section.

The third and final deadline will be on March 28. Sixty pages are scheduled for insertion at that time. These pages will include the advertisements, the remainder of the sports pages, and a few activities pages.

In addition to Weis, mentioned above, section editors will be Alan Hindmarsh, senior editor; Bill Meisel, activities editor; Dave Hewitt, sports editor; and Dave Ollis, business manager.

Annual Same Size

The 1963 **Big T** will have 192 pages and will again be printed by the Taylor Publishing Company. If all deadlines are met, the publisher has agreed to have all annuals delivered by early June.

The 1962 **Big T** has not been sent to the publisher yet. When it has been completely sent to the publisher, it will be out about ten weeks later and will then be distributed.

Frosh Dinners Hear Atkins Speak

At the Y Freshmen Diners' Club last Monday evening Mr. John Atkins, instructor in anthropology, spoke on the subject "Rites of Passage—How to Make Smoother Transitions." The talk was one of a series to be held during the year with various faculty members at Chandler Dining Hall.

In his introductory remarks Atkins, the first anthropologist to join the Caltech faculty, set forth the various branches of his field. The three basic divisions are archeology, comparative anthropology, and social (or cultural) anthropology. Archeology is a physical form of anthropology, in that knowledge of past societies is gained from remnants of their existence. This differs from comparative anthropology, which deals mainly with linguistics; and social anthropology, which involves studies of primitive societies in an attempt to draw conclusions about social behavior which may be applied to contemporary living. The perspective in this branch tends more toward historical considerations.

Atkins dealt mainly with that particular aspect of social anthropology involving rites and rituals of societies. These were classed in two sections—those which involve individual transition and those which involve the society as a whole. Four of the most important individual transitions are birth, puberty, marriage, and death. Such things as holidays, harvest festivities, and other occurrences which happen on a cyclic basis constitute transitional periods of an entire society.

In primitive societies the birth of a first child may be cause for considerable ceremony and ritual. Other activities of a sim-

ilar nature occur in life, marking definite transitional periods. Situations in contemporary society which are analogous to these rites are the marriage ceremony and honeymoon. The latter, as it is traditionally conceived, involves a separation from society for a period of time followed by an emergence in a new form to go on with daily living. Many social customs have faded in past years, but there is an attempt by many to instate new rites, especially on an individual basis.

In the discussion which followed the talk, the question of personal identity was of major interest. Atkins denoted that the differences between male and female in attitudes and behavior were becoming less and less, and that confusions of a firm sense of identity may result. The fact that the transition from childhood to adulthood was becoming a steady, gradual change was also brought up. The idea that the adolescent, lacking outward signs of distinct change in status, doesn't know where he stands was put forth in the discussion. Commenting upon the fact that the incoming college freshman does not experience a substantial change in his way of life, Atkins said that it was difficult to determine if this was for good or for bad. He used the example of Boot Camp for incoming recruits as a distinct contrast, in which the individual undergoes a complete change in his normal way of life.

Next week Dr. Linus Pauling will speak on "Molecular Biology and Medicine." Sign up sheets will be posted in the Houses until 1 p.m. next Monday. The dinner will begin at 6:30 p.m.

Honor Society Chooses Nine

Six seniors and three juniors were elected to the Caltech chapter of Tau Beta Pi, the national scholarship honor society of engineering colleges. In order to qualify, a student must be a junior ranking in the top eighth of his class, or a senior ranking in the top fifth of his class.

The new members are: Dave Barker, senior, Dabney; Bob Causey, senior, off campus; Jan Dash, senior, Page; Alan Hindmarsh, junior, Ruddock; Stephen Prata, senior, Page; Bruce Rothschild, senior, off campus; Arthur Turner, junior, Dabney; Will Spiegelman, senior, off campus; and Joe Weis, junior, Ruddock.

Philharmonic Series Commences At Pasadena Civic Auditorium

Two series of classical music concerts are about to start: The Coleman Chamber Music Series and the Los Angeles Philharmonic Series.

The Coleman Concerts are held Sundays at 3:30 p.m. at the Pasadena Playhouse. The first concert this season will be November 4th, when the Solisti di Zagreb will play. The Solisti are a Yugoslavian group consisting of fourteen strings and a harpsichord. They will perform works by Pergolesi, Boccherini, Rossini, Tartini, Webern, Shostakovich, and Mozart.

The rest of the season's concerts will be: November 18th, the Albeneri Trio; January 13th, Nikolai and Joanna Graudan, cello and piano, assisted by William Primrose, viola, and Mitchell Lurie, clarinet; February 3rd, the Budapest Quartet; February 24th, the Koechert Quartet; April 21st, the New York String Sextet; May 19th, the winners of the Coleman Audition held on May 11th.

The Los Angeles Philharmonic Orchestra will give concerts on the following Wednesday

nights at the Pasadena Civic Auditorium: November 7th, with Zubin Mehta, conductor; December 5th, with Janos Ferencsik, guest conductor and Daniel Barenboim, pianist; January 9th with Zubin Mehta, conductor, Vera Zorina, narrator, and Leopold Simoneau, tenor; February 20th, with Pierre Monteux, guest conductor; March 13th, with Henry Lewis, guest conductor and Byron Janis, pianist; April 10th, with Zubin Mehta, conductor and George London, baritone.

Student rates are available on tickets to both concert series. Season tickets to the Los Angeles Philharmonic Series are sold at seven dollars for six concerts. Season tickets to the Coleman Concerts are available for \$12.00, \$10.00, and \$8.00; four, two, and two dollars off the regular rate, respectively. Single tickets are \$2.50 for the Solisti di Zagreb concert and \$2.00 for all others, \$1.00 off the regular rate.

Tickets can be bought on campus from the Humanities Secretary, Mrs. Kotkin, or from Mrs. Green at the bookstore.

Editorials

The Sky's The Limit

Let's look at the annual expense summary as listed in the catalog:

Tuition	\$750.00
Health Fee	18.00
ASCIT Dues	19.00
California Tech	1.50
Student House Board	458.00
Student House Room	220.15
Student House Dues	18.00
Total for the year	\$1484.65

Ridiculous, isn't it? Everyone knows that expenses this year are about \$2800 or more. The above listing is indeed taken from the catalog, but it is from the 1956-57 catalog.

Studying the above figures carefully, we notice many interesting items. Perhaps the most interesting single entry is "Tuition, \$750." The plain fact in this matter is that tuition has more than doubled in the past six years. Is this justified?

R. B. Gilmore, acting business manager and comptroller, has noted that in 1956-57 total student fees collected were \$816,541 out of total income of \$8,092,589, or a percentage of about 10%. In 1961-62, student fees totaled \$1,619,000 out of a total income of \$15,347,000. This was 11% of the total collected.

These figures are, however, misleading. They include figures for research and government projects—items which students should be in favor of but should not have to support financially. A much more accurate indication of total costs for students comes from taking the total costs related to student education and dividing by the number of students to find the cost per student to the Institute. In 1957-58, this cost was \$3671 per student and in 1961-62, the cost was \$4348 per student. Extrapolating, we find that in 1956-57 students paid about 27% of total student costs and in 1962-63 students paid about 33% of total student costs. Thus, it can be noticed that there is a slight but steady increase in the percentage of student costs which are paid by students.

The reasons for this increase, according to Gilmore, are that the Institute presently bases its student fees on the presumption that student should pay for about 10% of the total campus income. This means, however, that if other sources of income increase (as government research contracts presently are) then student fees will increase whether or not this increase is justified. Clearly, a first correction of the fee situation would be to decide what percentage of total student fees should be paid by students and to base student tuition fees on that criterion, not on a percentage of total income.

Another item which could use correction is derived from the fact that graduate education costs more than undergraduate education. Gilmore agreed that graduate students do require more in the way of equipment, individual teaching, etc., but stated that it was the policy of the Institute to charge equal tuition fees for all students. We feel that it would be more reasonable, both because of the higher educational cost and because of the large number of graduate fellowships to increase the graduate tuition and have, along with this, a corresponding lowering of undergraduate tuition.

Both these changes can be put into effect without making any great changes in the Institute's financial programs and should provide much needed relief to the tuition-hounded undergrad.

—Richard Karp
J. C. Simpson

B&G Strikes Again

Because of some recent parking trouble the physical plant department is planning a preliminary re-interpretation of the parking rules concerning student stickers. The new interpretation will require that all regular parking stickers be permanently affixed to the car's windshield, and not affixed to pasteboards or made removable in any way.

The reasons for this move center around difficulties encountered with students who have two cars and use the same sticker for both, and with students removing the stickers to park in unauthorized places, such as the Saga lot. Movable stickers are also said to make enforcement of the parking rules generally more difficult.

The truth is that all these inconveniences to B & G are easily taken care of, especially as current policy is to give a ticket to any car illegally parked, and then to check registration records, a comparatively easy job, to see if the offender is a student. The other reasons are not really reasons at all.

On the other hand the inconvenience to the student will be considerable. All those who have put their stickers on some kind of windshield insert will have to re-register their car and acquire a new sticker. In addition many students have completely valid reasons of all kinds (social ones included) for not affixing the sticker to their windshield.

In any case the Physical Plant Department, while it can establish rules for parking and require stickers as a control measure, has no right to order Techmen to put these stickers on their windshields permanently if they do not wish to. This, combined with the fact that the inconvenience to the student is much greater than any benefit gained by B & G, should be ample grounds for seeing that this measure does not go into effect.

—J. C. Simpson
Richard Karp

Low Man On Totem Pole

Once upon a time, Caltech had a literary and/or humor magazine. It was called **Totem**, and before that it was called **Farrago**, and before that it was called the **Pendulum**.

The Humanities Department pays for **Totem**, and there is always sufficient money to ensure its publication. It appeared twice during 1960-61 and once during 1961-62. Why so rarely? As noted above, the reason is not money. The reason is, as with so many other things on campus, student apathy.

There have been many valiant attempts made by a few people to save **Totem**: prizes have been put up for writing contests, editors have begged anyone and everyone to write anything and everything, and JPL has said that if their employees would be allowed to write for it there would be plenty of material. Still, **Totem** continues its publication schedule, which will result in exactly zero issues this year if the series continues as it has been going.

We feel that there are numerous benefits of printing a journal such as **Totem**, not the least of which is the added prestige given to a scientific school by production of a well-written literary effort. **Totem** would be greatly improved, however, if it was a humor magazine as well as a stomping ground for new surrealist poets. The field of satire, for example, would probably be fruitful at Tech.

We sincerely hope that anyone interested in **Totem** will contact the editor soon. And while we're on the subject, just who is the editor?

—Richard Karp
J. C. Simpson

Dinner Club Meets Invention Made Geology Trivial

Last night Dick Schuster and David Clarke spoke at the Y Dinner Forum on the subject "Arms Control—Is It Possible?" Schuster, a Caltech graduate now employed at JPL, analyzed the technological problems in the way of a warless world, while Clarke centered his talk on attempts to understand the psychological, sociological and political problems which stand in the way of peace. Both stressed that the human problems are the most critical to be solved.

Next week Mr. Marvin Kaphan will speak on the subject "Suicide—To be Prevented or Permitted?"

Y Activities Listed In Annual Report

The Caltech YMCA has issued its annual Report of Activities for the year 1961-62. The report listed and discussed the various activities which the Y sponsored last year.

The Athenaeum Luncheon Forums emphasized the relationship between science and government, international affairs, and new developments in various scientific fields. There were lectures held on religion to satisfy the curiosity of students in place of religious courses in the curriculum.

At the Y Dinner Forums and Freshman Diners' Club, all manner of current topics were discussed by faculty members or speakers from the Los Angeles area.

A panel discussion on the relative merits of fallout shelter construction and a concert by the Yale Russian Chorus were two special program events.

The Leaders of America Program brought to campus James A. Pike, Protestant Episcopal Bishop of the Diocese of California, and Sidney Hooke, Chairman of the Philosophy Department of NYU's school of Arts and Sciences.

Folk singers Peggy Seeger,
(Continued on Page 7)

Invention Made Geology Trivial

The invention of a new geological instrument, the digital seismograph, was announced recently by Dr. Frank Press, Director of the Seismological Laboratory. The design and construction, which took one year to complete, was done by Wayne Miller, an electrical engineer, with support from the Air Force as part of a program for the detection of nuclear explosions.

The instrument, which contains 1600 transistors, is fully automatic and on a 24-hour-a-day operating schedule. Designed to produce data suitable for use with the larger computers, such as the IBM 7090, the seismograph consists of two sections. The first section converts movements of the earth's crust along three axes into numerical data; the second section transcribes these data onto magnetic tape usable by the computers.

The major advantages of the new instrument over standard seismographs lie in the ease and accuracy with which data is prepared for analysis. Normally data must be read off graphs, and then only to an accuracy of two figures; with the electronic instrument, the figures are given automatically to an accuracy of four figures, and can be placed on magnetic tape with virtually no intermediate handling by human agents. The second unit also edits the figures and presents them in graphical form if desired, so that the operator can select sequences of his choice for further study with very little trouble. "This first application of digital data logging technique to seismology has great flexibility," Dr. Press said. "The uses to which it can be put are limited only by the imagination of the researchers."

Editors:

Since the beginning of second term last year, residents of Page House have been plagued by the large floodlights formerly on the Firestone Lab. Now at last, B&G has removed these, using the small floodlights around the Winnett Center to light the area. I would like to express my admiration of B&G for doing so; not only have they made life easier for men living in Page, but they have also greatly improved the looks of the area between Winnett and Firestone after dark.

Again I would like to say that we in Page House are proud of B&G for listening to students' complaints and taking action on them.

R. F. Whitlock

BOD Discusses Representation

At 7:36 on Monday evening Larry Rabinowitz called to order the weekly BOD meeting.

John Letcher has been given a maximum of \$180 to make a sail for each of the Sailing Club's three Blasscat dinghies, a job for which the cheapest professional sailmakers would charge \$300. The \$180 is to be split with \$75 going to materials, \$15 to sewing machine rental, and \$90 for 60 hours of labor. The BOD approved this proposal unanimously.

Bob McEliece has been given the responsibility of calling a meeting of the Ex-Comm. Rumor has it that the EPC has met—it seems someone wanted to discuss Ch41 and Ch46, as well as abolition of grades.

A Dance Class will begin this Thursday at 8:00 p.m. in the Winnett Center Lounge. The price will be 50c per lesson of \$2 for a season ticket.

A proposal was made to make the IHC president a voting member of the board and the ASCIT president a voting member of the IHC. The following points were brought out:

1. BOD can simply invite the IHC president to its meeting if there are problems of mutual interest, as it has done in the past.

2. The above concept is only a theory since the problems must be recognized first.

3. The Houses, as some of the more important organizations on campus, should be directly represented on the BOD.

4. The present BOD offices correspond to administrative functions and do not represent special groups.

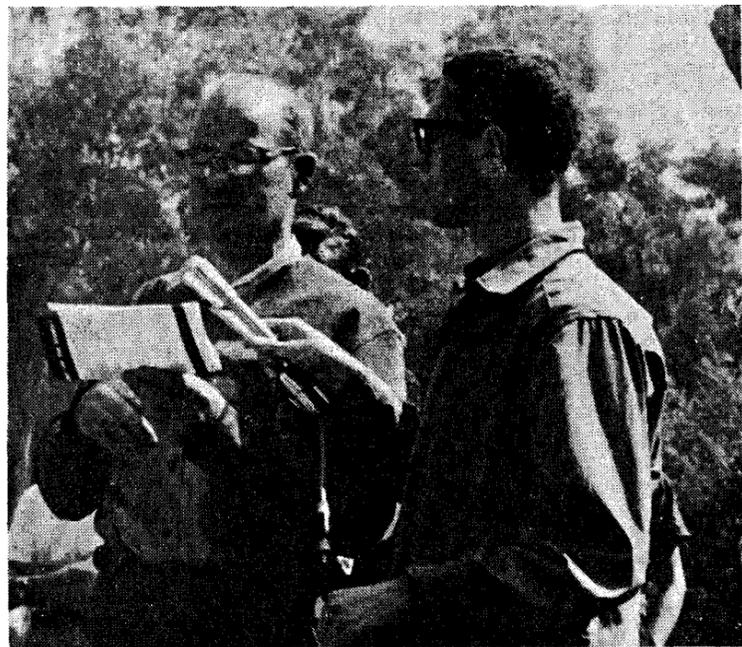
5. Giving the ASCIT president a vote on the IHC might distort its meaning and function as a body specifically representing the Houses.

6. BOD will have only 8 members next year due to the elimination of the office of Business Manager.

7. Communication between the two bodies would be improved.

The proposal was voted down this week (1-2-5), but will undoubtedly be brought up again next week.

Other topics discussed included parking stickers; a Bopp proposal to move meetings to Tuesdays in order to give Glee Club members more time for "fructification" before Wednesday rehearsals; and the immense saving in printing costs for the Assembly posters, now all over campus, as a result of spelling "Committee" with only one t.



—photo by Ken Brown
Henry Abarbanel groans as a member of the audience asks Richard Nixon an obviously impromptu question after Nixon's speech last week.

Relationships Seminar Soon

A seminar on intergroup relations will be held at Camp Hess Kramer in Malibu on November 2, 3, and 4. The Los Angeles County Commission on Human Relations in conjunction with Camp Hess Kramer sponsors the conference to demonstrate the problem of equal opportunities as a necessary reality. The student on campus will be emphasized in the attainment of this goal. The session is titled "Citizenship First Class," and is the ninth of an annual series.

Activities will start on Friday, November 2, in the afternoon, and will end the following Sunday after lunch. Many experienced authorities will lecture on human relations and small discussion groups will be led by qualified adults. A few expense scholarships will be granted to selected students. Because these are limited, applications for aid should be submitted early. Further details may be obtained from Tom Huff at the Caltech Y.

Goat Pens New YMCA Project

Caltech men are needed this Saturday, October 20, for a work project to help needy persons overseas.

are being given through the Heifer Project to needy persons overseas.

Work will consist of building pens and fences for care of goats en route to shipment. The goats

Individuals who can spare one hour of their time on either date should contact Tom Huff at the Caltech YMCA.



ROTC Gains New Officers

Caltech's Air Force ROTC program has undergone several changes this year. During the summer Major Peterson, last year's Professor of Air Science, retired after twenty years of service, and is now working at Douglas Aircraft. His replacement as PAS is Major Woods. Woods has a very interesting background, including three escapes from German prisoner of war camps in World War II and a motorcycle tour of Europe after the conclusion of the war.

Captain Henry, another staff officer, was transferred during the summer, leaving the squadron one officer short. A replacement is expected sometime after the beginning of the year. In the meantime Captain Ballard of the Oxy ROTC squadron is teaching a combined course to the freshmen and sophomores. Captain Stevenson, the only officer remaining from last year, is the Commandant of Cadets.

Thirty-four freshmen entered ROTC this year bringing the total corps strength to seventy cadets, about the same level as last year. The Squadron Commander for the first half of the year is Cadet Major Bocklage, a senior returning after a year's leave of absence.

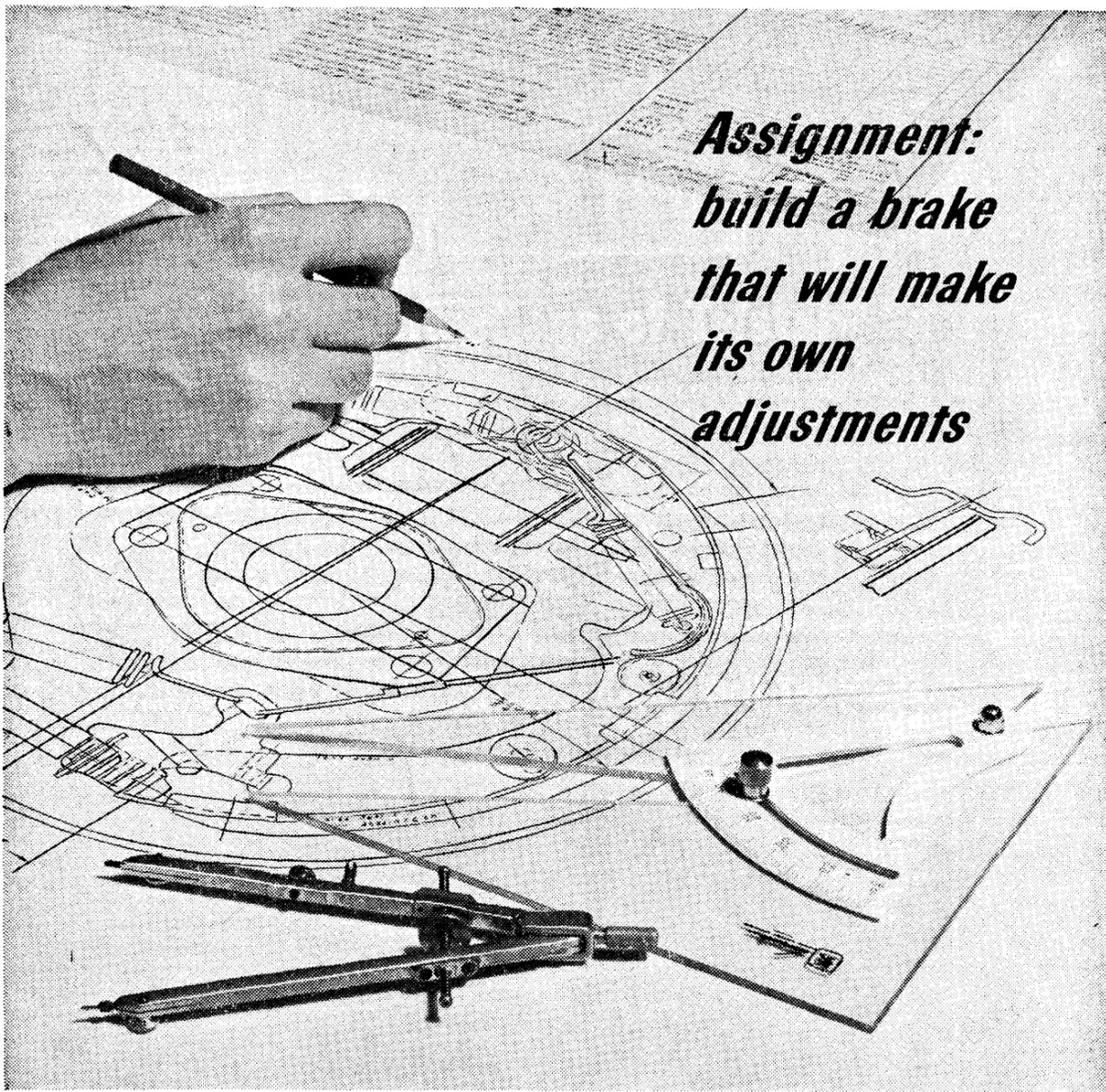
The three flight commanders are cadet First Lieutenants Fuzak, Reining, and Ricks. Cadet First Lieutenant Abe is again serving as drill team commander. Flight sergeants for

this term are tech sergeants Holland, Peterson, and Follansbee. The squadron first sergeant is Master Sergeant Leonard.

Suicide Subject Of Dinner Club

At 6:30 on Wednesday, October 24, the Caltech YMCA will present the third of its series of informal dinner forums. The Y will feature Mr. Marvin Kaphan, a psychiatric case worker for the L. A. County Suicide Prevention Team.

Mr. Kaphan's controversial topic of discussion will be "Suicide—to be Prevented or Permitted?" The questions Mr. Kaphan will attempt to answer include: "Are there definite factors (environmental, etc.) which seem to drive people to suicide?" "Does wide-spread suicide indicate that our society hands people real psychological problems?" "If so, why prevent suicide—doesn't one have a right to suicide?"



It's now a fact: every Ford-built car in '63 has self-adjusting brakes

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Tough assignment—but not insurmountable. Today, not only does every Ford-built car boast self-adjusting brakes, but the design is so excellent that adjustments can be made more precisely than by hand.

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Self-adjustment takes place when the brakes are applied while backing up. This adjustment normally occurs but once in several hundred miles of driving. The brake pedal stays up, providing full pedal reserve for braking.

Another assignment completed—and another example of how Ford Motor Company provides engineering leadership for the American Road.



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From Other Campuses

by Richard Karp

Rice University has been in existence for 50 years and the Rice **Thresher** for October 9, 1962, felt sufficiently moved to give a history of some of the aspects of the school. For example, in the field of student body elections, everything was peaceful until about 1934 when certain shady political activities were "perpetrated by the 'fairer sex,' who used some unspecified form of electioneering. That was quickly stopped.

"Then in 1938 appeared the villain, the 'politico' Ben Blanton and his clique, who hit upon the novel idea of giving out oranges, bread, and candy on election day. The dean stopped the 'orgy of political giving,' and the **Thresher**, with a series of acid editorials, stopped Ben Blanton and his presidential candidate, current Alumni President Willoughby Williams."

Also at Rice, some 130 students in 1941 carried cards giving them unspecified "privileges" as members of the Progressive Party. Although the editor of the school paper and

evidently everyone else professed ignorance of what these special "privileges" were, the deans nonetheless banned the group and then took a strategic trip.

Sports Foul-Ups

Rice had its own problems in sports, too. The same issue of the **Thresher** reports on the 1959 season that "An Owl quarterback handed off to a Baylor lineman to lose one (game). A Rice end sprung a Clemson halfback for a long gainer with a perfect block on a Rice tackle that year. And Gordon Speer scored every point in a game which saw both teams score." In addition, there was a "16-13 loss to Georgia Tech when the Yellowjackets never crossed the Owl goal line and went for more than 30 minutes without a first down."

Lit In The Head

The Swarthmore **Phoenix** reported an interesting situation at another University when they noted that "Students in a 20th Century Literature class

(Continued on page 5)

Peace Corps Holds Meeting

Hal Johnson, Chief of East and Central Divisions of the Peace Corps, will present a Peace Corps meeting tonight at the Winnett Center.

The meeting will include a film on the Peace Corps narrated by Dave Garroway. A question and discussion period will follow, in which Johnson will explain opportunities and current projects.

Johnson received his A.B. from Colorado State College in 1944 and his M.A. from Columbia University in 1952. Before coming to his current position in 1960, he worked as Director of Communications Laboratory at Case Institute of Technology and as Education Advisor to the Minister of Education of Ethiopia.

Johnson has been with the Peace Corps since it was inaugurated two years ago. The present head of the Peace Corps is Sargent Shriver, who recently returned from a tour that included the region that Johnson is in charge of.

The meeting will be held at 7:30 p.m. in clubroom 1 of the Winnett Center.

graduate rattle

BY FLETCH MURPHY

Marks House last year was about as active as a dead turtle at absolute zero. The quiet that prevailed when one entered the door reminded one of a funeral at which everyone was a deaf-mute and wearing tennis shoes. I can't remember a game or a party where they had a five man or better representation. But this year things are different. Not only were they well-represented at the first INA Party, but they subdued Braun House in a touch football game—the only inter-house contest of any kind so far this year. And Braun even used alumni. Last year it was the Marxists who had to do the recruiting.

Again the question has been raised whether or not undergraduates are welcome at graduate parties. First, the graduate Houses are considered by most to be too small to throw successful parties individually, and

joint parties have a habit of overcrowding whatever home they find. Add to this the fact that there is always a planned girl shortage because many fellows go just to look, and one can see the impossibility of issuing a blanket invitation to undergrads. But no one ever has been asked to leave from a party merely because of his lack of a B.S. We hope this never has to happen. If we can't integrate by now . . .

This month's Scientific American had an article on "Cognitive Dissonance," which indicated that a person's desire for something increases either under a severe threat or complete removal of the object, but that desire decreases under a mild threat. Perhaps if one is worried about flunking a course he could mildly threaten to kill the prof. But the catch is that the theory doesn't work until after the decision is made.

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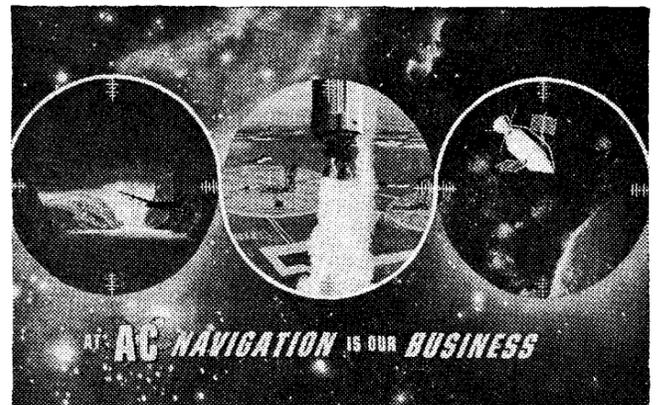
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Huff Tells Of Southern Bias

BY WALLY OLIVER

Tom Huff, the new Assistant Secretary of the Caltech YMCA, brings to the campus a variety of experiences. Although a native of northern California and a graduate of the University of the Pacific and the Pacific School of Religion, Huff became an Assistant Secretary of the Y at Mississippi State University. This should not be confused with "Ole Miss" at which the much publicized riots took place. Although frequently branded as a "Yankee rabble rouser," he continued in his attempt to enlighten a few receptive students to different philosophies. The Y created a "hotbed of liberals" with students who were slowly migrating from the traditional philosophies of isolation and segregation. Huff stated, "The Y is one place where freedom of speech is possible." He also declared that "Ole Miss" did not have that freedom.

The mode of life is different in the South to an outsider. Huff maintained the South is "living in the past," which in his opinion is a shaky foundation. To illustrate this point, he mentioned that the Mississippi State Y president was censured by an honorary society for reading a poem criticizing traditional religious practices. According to Huff all curriculum and school sponsored activities must be "real safe" in content, not to "offend" the state government. These examples, he asserted, demonstrate a lack of academic freedom on Southern campuses.

Experiment In Ethics

When asked why he wished to go to the South, he replied that besides the job offer, it was an experiment in ethics. Furthermore he asserted that a liberal in the South is analogous to a Christian behind the Iron Curtain. To hold his job he had to sign an affidavit listing all the organizations to which he belonged or contributed for the last five years. He conveniently omitted the mention of his membership in the NAACP because no such member would be employed by the State of Mississippi.

Education For Negroes

In comment on the education-

(Continued on page 6)

More Campuses

(Continued from page 4)

at the University of Missouri were taken aback when they reported to their assigned room, 11 in the Arts and Science Building.

"Room 11 is a women's rest room.

"Donald F. Drummond, the instructor, moved the class to another room, commenting: "It's a very small ladies' room and there are 15 students in the course."

Results Of Integration

The admission of James Meredith into "Old Miss" has caused many repercussions in college newspapers. Perhaps the most interesting and unbelievable appeared in the Troy State College (Troy, Alabama) *Tropolitan* for October 9, 1962. The primary feature of the editorial (by the editor-in-chief) was a drawing showing the Catholic Church leading into Joseph Kennedy, which led into the "Trinity"—John, Bob, and Teddy Kennedy, and which led into and was subordinate to the NAACP. Another branch went from Khrushchev into the Communist Party into the NAACP. This was again, perhaps mistakenly, shown as subordinate to the NAACP. Going from the NAA-

CP were several little boxes labelled "Abernathy," "Freedom Riders," "Meredith," "Martin Luther King," and "Albany, Georgia." The implications that the Catholic Church controls Kennedy, that Kennedy is con-

trolled by the NAACP, and that the Communists support the NAACP were very clear and were fairly clearly stated.

The editorial continues, "Is it so important for one man, may he be black, red, green, or pur-

ple—to get an education? Is it important enough for him to start a minor Civil War? The only man who is that important would have to be either a strong member in the NAACP or Mar-

(Continued on page 7)

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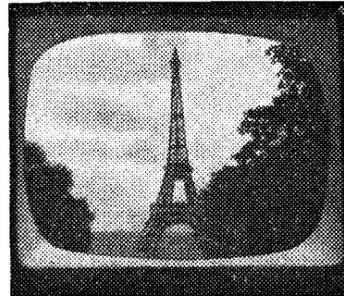
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P-CN



Brewins



Now that things have calmed down from initiation, we all gain a certain amount of elegant perspective. Beak has been listening and snooping with great glee to tales of frosh tortures, some of which he will soon relate in his flawless style. Unfortunately, however, Plague, Floyd, and Bloody-duck Houses can communicate. Maybe the monstrous four speak unknown southern tongue?

At any rate, it is quite interesting to observe the trials and tribulations through which the frosh creatures go.

B. D. House sent most of its froshlings off campus, much to the consternation of the native fauna. One sucker had to go to Bourgeoisville-to-the-South and try every herbarium until he found one that would give him at least a ten per cent discount on one or more gross of Aleph-null.

More Aleph-null?

Yet another snark was involved with Aleph-null; after giving a speech on the state of chastity at the Pasadena city upper

division high school, he gaily distributed Aleph-null among the audience.

Raingage had a more infinite delight task—he got to peddle “air” in a new, more marvelous form free of smog which would supply one domicile for a week. Beak thinks that maybe the cancer of L.A. should abolish stink-roar-things—maybe we could use freeways for toboggan slides?

Burp's Heartburn Emporium seemed to suffer exceedingly this year. Canine was ordered, and promptly did it, to get his tootsie cover stuck in waste receptacle of indelicate type. Hah, hah!

Four Floydfrosh followed faithfully the fulsome traditions of their House—they double dated at Burp's. Beak understands the audience had interesting comments to make about hirsute quality of legs of females.

More Gory Initiation

Bloodyduck House also put a freeway thru that marvelous store, Rabidson's—store officers were understandably dismayed when they learned that only

one quarter would have to be removed for the sake of progress.

Bloodyduck House sent yet another froshperson to take over for Allen Fudd of CbS. In an eating place, he was amazed to find a non-Western Eastern Figs Reptile in his A.O. Beckman

(Continued on Page 7)

More Tom Huff

(Continued from Page 5)

al system, he stated that the education of the Negro in the South is dependent on the whites. Thus the Negro must adjust to his predestined way of life because he is not properly prepared in school. In answer to those who say the Southern Negroes do not want equality and that it is Northern agitators who make publicity, he says they may appear so because “they have had to adjust.”

“It is delightful to be back in California where you do not have to look over your shoulder before talking”, he said. Commenting on Caltech life, he said, “There are values (religious) that are not appreciated. Little is done in appreciating and understanding these values. The YMCA emphasizes art, music, humanities, social problems, and religious values, which are lacking at Caltech.” He stated, “I do not have any answers, but to help the Y.

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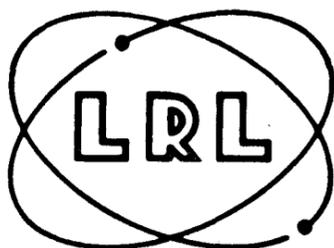
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Students Bit By Machines

BY R. F. WHITLOCK

"Bang! Clank! G—n that *&%*\$\$ machine! it swallowed my dime! I'll starve before the night is out." How often do we hear this lamentation in the Winnett Center Recreation Room? Far too often, I fear.

One of the most engaging and at the same time frustrating sports of those of us who have a greater need for after hour nourishment is that of weaseling food out of the vending machines scattered around campus. The problem becomes particularly acute over the weekend, when the serviceman is not at all available, and supplies dwindle in the face of a lack of food from other sources. Who

More Brewins'

(Continued from page 6)

soup. Not wanting to complain, he told the skinny servinghag that he was only tekly interested. Quoth he, 'The Fig's presence is odd since biting bugs were absent but it might have been attracted by dirt-air stuff. After seeing the guts of the heartburn-palace displaced, he revealed his true identity. After telling of the where of the picture taking machine he got a release for use by same CbS.

The Narrowway Emporium apparently has an atomjcal reactionator in their basement if the observations of two other Bloodyducks are accurate—gamma rays everywhere!

Another scientific study, run by Pearear of Floyd, investigated the expansive properties of a rubber bladder. Finding water holders insufficient, Pearhead proceeded to purchase an Alephnull 2' long, 8" cross. Amazing, Huh?

Vital Statistics Dept.

Two other floydies had an interesting task to complete—a set of total measurements of the woodnymphs of Throophall. After posing as managers of a contest for sexiwench championship, the Floydfrish brought HER to dinner at their House. Congratulations, lowly froshlings.

Plagued frosh are seemingly plagued with some interesting new affliction—with little effort on the part of upperpeople, the frosh makes a sudden appearance in the heart of a tropical new affliction—with little effort rainstorm. Most interesting.

One particular bacillus was stricken with yet another illness. In his violent deliria of a case of openlockitis, he even tried to make a lock opening device out of cardboard. Beak feels that he must top all the foolishness of all frosh, ever.

And so, our frosh were initiated, their minds warped, and perhaps even they were kenophilized to a certain extent.

Thumbtwiddler Twiddled

Word rapidly reached Beak of the misfalls of the friendly lark of Culbertson and his Hebrew roommate. Apparently they did not want to intrude upon each other's emotional release during a recent emotional release event; hence they carefully arranged a small indicator, approximately indicative of the emotional flux within the chamber. Unbeknownst to them, however, a certain surly sophomore attached leads to a BELL-ring, ring, ring when they enter room. Serves 'em right.

can solve this problem? Certainly not the student. All he can do is complain to the authorities after the weekend is over (when it does no good) and kick the —ing machines to pieces in an effort get back the money they swallow so gracefully. When the Winnett machines give out, the only course remaining is to go up campus either to Throop or Church. This involves a long, arduous hike through hostile territory which often results in the starvation and eventual death of the brave soul who so dares to trespass against the ghouls of West Campus.

Therefore, fellow goody gobblers, I propose a course of action that may eventually net us some action from those in places of power, influence and, immense wealth:

One: that any machine which persists in swallowing coinage without visible result be subjected to the most violent possible test of de- and acceleration in other words, kick it as hard as you can.

Two: if number one does not work, wait till the servicemen come around and kick them.

More Campuses

(Continued from Page 5)

tin Luther King's son . . .

"Just as sure as those eleven (sic) men passed the decision in 1954, integration will come to the South. But does it have to come with such drastic measures? Does it have to be turned sideways and crammed down our Rebel-born and Rebel-reared throats? It does not seem necessary.

"The Book has been thrown at the people of Oxford, while nothing seems to be done about Castro and our other communistic enemies. Also the 'Old Miss' front now has quieted down and Meredith is attending classes; however, Mr. Meredith had better be careful, for if the Mississippians keep their reputation he shall find himself swimming in a river with a cement block around his throat."

Isn't it nice to know that people like Billy Martin, the **Tro-politan** editor who wrote the above, exist in the U.S.? It might also be noticed that there are only nine members in the Supreme Court.

Local Boy Makes Good

Under the headline of "'12 Grad Reaches International Fame," the **Varsity News** of the (Continued on page 10)

Mormaes Meet On Wednesday

The Caltech Deseret Club, an organization of Mormons on campus, has recently changed its weekly meeting time to Wednesday at noon in one of the dining rooms at the west end of Chandler Dining Hall.

The club discusses many prob-

Y Visits Synagogue

Friday, October 26, the YMCA Religious Emphasis Commission will sponsor a visit to the Fairfax Reform Jewish Temple. Those interested will meet at Winnett Center about 7:30; transportation will be provided, and dates are welcome. Following the service, there will be an informal discussion with Rabbi Sonderling, who was chief chaplain for German troops on the Eastern Front in World War I and who helped many people escape from Germany in World War II.

This will be the first in a series of visits to places of worship; anyone who is interested is invited to sign one of the lists that will be posted in the Student House lounges next week.

lems of religious importance, including several interrelationships between the sciences and religion, for example, psychiatry and the religious concept of the mind, and the determinism of classical physics versus moral freedom. Many discussions this year will cover the historical origins and development of religious scripture and dogma, particularly the Old and New Testaments.

All visitors are welcome to these meetings and for residents of undergraduate Houses there is a meal transfer agreement in effect similar to the Y-Diners Club.

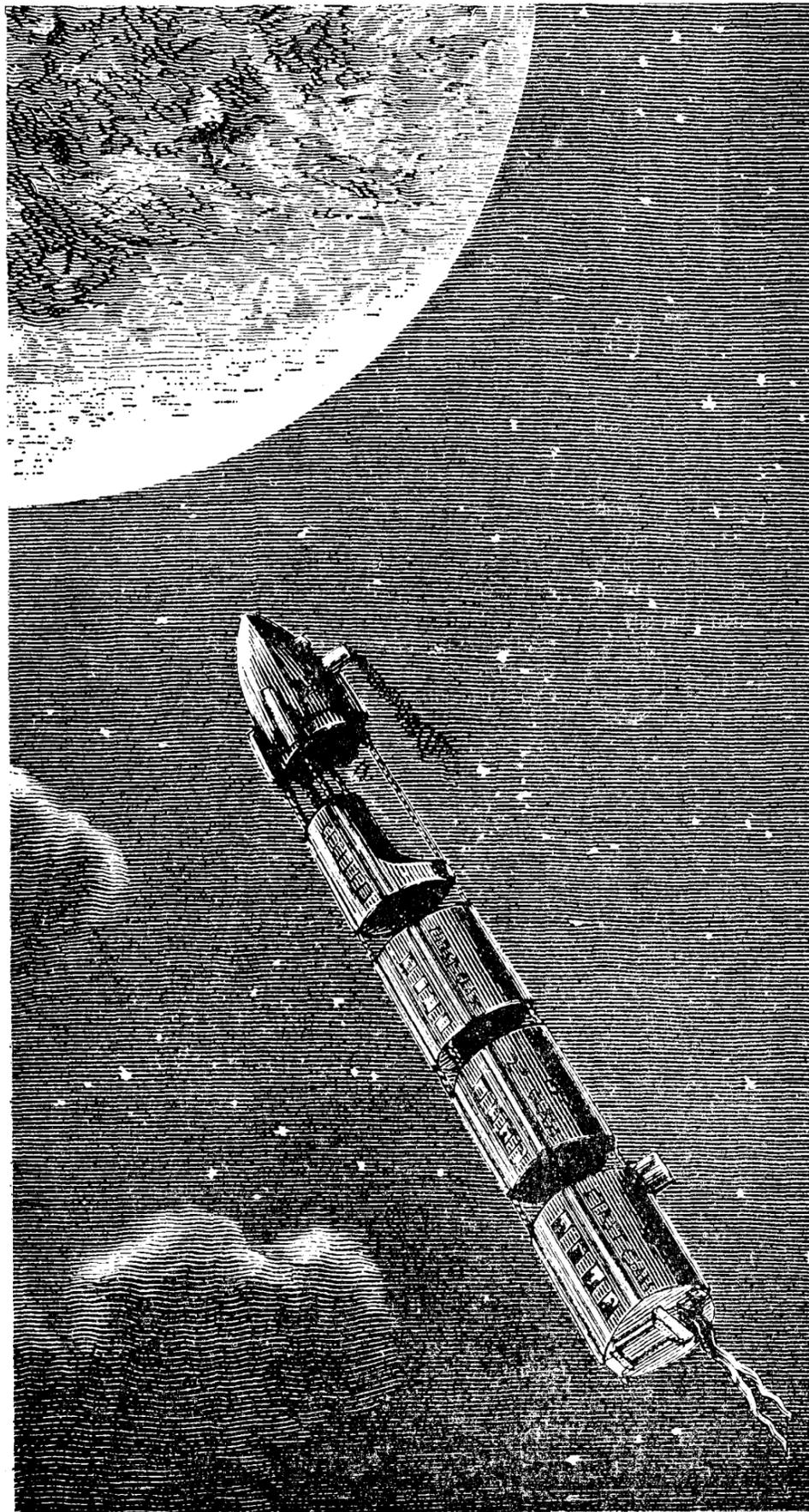
More Y Activities

(Continued from page 2)

Sam Hinton, and the New Lost City Ramblers were brought to campus by the Y, and ASCIT and the Y later sponsored other concerts.

Students were brought from various art schools to spend a weekend on campus.

For the first time in five years the income from the Y film series exceeded expenditures.

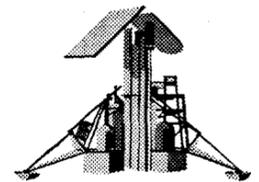


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SPORTS

Webmen Drop Three On Road Trip

BY DAVE OLLIS

The Caltech water poloists suffered the worst week of their season against foes LA State, El Camino, and Long Beach State. Although the locals were handicapped by several flu cases, the same was undoubtedly true of the opposition which, on the whole, displayed top conditioning for such an early time in the season.

On Tuesday Tech lost to LA State, 11-2, for the first away game of this year's schedule. The action was slowed down considerably by LA State to stop Caltech's fast breaking game led by speedsters' Bruce Chesebro and Dave Sieb. The game proved that Tech had better improve since earlier this year both Pomona and Claremont played close game with LA State. If the Beavers are to finish higher than last year's fourth place standing, these two teams have to be beaten.

El Camino, specializing in extreme conditioning in the water before developing ball handling

skills, swam the home team off the court and sewed up the contest with a 25-8 final score. At one point in the game, El Camino was held scoreless while Tech rallied for three consecutive points, but team endurance gave out and the end of the game approached a runaway.

Saturday afternoon the Beavers visited Long Beach State for a game with one of the stronger teams Caltech will see this year. After the first string Long Beach States varsity pummeled the University of Santa Barbara in the opening game with a 19-5 victory, the Beavers were bombed 18-3 by the second unit on the Long Beach squad. The only mistakes made by LBS were the three goals scored in the later parts of the contest. Hard pressing, strong swimming, and excellent ball control enabled Long Beach to score six points in the opening quarter while holding the Emerymen scoreless.

Last Tuesday Caltech played Claremont in the first league match at the Stag's pool. Tomorrow Pomona travels here for a varsity contest at 4:15 and a frosh match immediately afterwards. This year's team, despite apparently poor showing of the last week, has the ability to do well in this league and it could use a little enthusiasm so... Come out to the Alumni Pool at 4:15 Friday and see the games.



—photo by Ken Brown

Beaver defender knocks pass from outstretched hands of Pomona receiver.

Pomona Overrun Footballers, 33-0

BY STEVE BLUMSACK

A dark evening in the Rose Bowl was even darker for the Caltech varsity football team as Pomona romped to a 33-0 victory over the Beavers. With the score 7-0 in the second quarter of play, the lights in the Rose Bowl went out. After a few minutes delay, the game was continued with two light towers not in operation.

First half

Pomona had the only scoring opportunity in the first quarter due to a pass from quarterback David Berardo to end Ed Sanders on the Caltech 12 yard line. The Caltech defense dug in and attained possession of the ball four plays later.

After Caltech failed to advance the ball Steve Hall punted into Pomona territory. Pomona halfback Bob Benson gained most of the yardage and crossed the goal line nine plays later. A successful PAT made the score Pomona 7, Caltech 0.

Pomona kicked off to the Caltech 14 yard line, but Jon Evans returned the ball to the 36. The Beavers looked good for a while but were forced to punt again after an incomplete pass. Later in the second quarter, Caltech seemed to be moving the ball quite well when a fumble was picked off in the air by Pomona's Jon Crawford. Nobody could stop the fleet halfback. Another successful PAT concluded the scoring for the first half. As the teams left the field between halves, the scoreboard read: Pomona 14, Caltech 0.

Halftime proved to be almost as exciting as the game. Toward the end of the intermission, several Pomona students attempted to steal the Caltech banner from the stands. Alert Techman rushed to the aid and returned the banner to its proper place within a minute. Unfortunately, this was the only victory for Caltech.

Second Half

Pomona received the kickoff and proceeded to march down the field on a series of running plays. This time the touchdown was scored by Sid Hopkins, Pomona's right halfback. Berardo missed for the first time in the game on the try for PAT following the touchdown play. Cal-

tech held the ball for only four plays during the entire third quarter.

The opening of the fourth quarter found Pomona threatening once more near the Beavers' goal line. Caltech stopped the Sagehens' offensive drive, but were forced to punt when they were unable to move the ball. Pomona scored another touchdown just a few seconds later on a forty-seven yard pass play to end Grover Bagby. Berardo kicked his third successful PAT in four attempts to put Pomona out of reach. The final touchdown of the evening was scored by Pomona's quarterback David Peters from the Caltech four yard line.

After this play, the Beavers still had one opportunity to avoid being shut out. This time, led by Jon Evans, they moved the ball to the thirty yard line before being forced to give up the ball on downs.

Next Week

This week, the team travels to La Verne for a Saturday afternoon game. The La Verne team is supposed to be tough this year, but they lost to UC Riverside last Saturday, 18-7.

Lloyd Takes Three Discobolus Tilts

Lloyd House has taken an early lead in the discobolus competition by nabbing the first three contests.

In the first match, Lloyd challenged Dabney, last year's winners, in tennis, bowling, and football. Dabney accepted in bowling, and lost to Lloyd in two straight games.

Blacker next challenged in bowling and went down as Lloydmen took two out of three games. George Mager of Lloyd had games of 151, 155, 188 for the high series.

Last Tuesday, Lloyd beat Fleming, 9-7, in an extra-inning softball game. Bob Howenstine broke a 7-7 tie in the sixth inning to score two Lloydmen and win the game.

Lloyd faces Ricketts in the next discobolus match which should take place later this week.

Harriers Look Impressive In Pas Naz Win

In the first meet of the season last Friday, the varsity cross-country squad grabbed six of the first seven places to breeze past Pasadena Narzarena college, 19-40.

The team was led by sophomore Larry Weaver, who won the three-mile race in a fine early-season time of 17:01. Only one Pasadena runner in second place prevented a Caltech sweep as Tech runners took third through seventh places. After a tight intra-squad battle for third place, Louis Corl, Dennis Holt, and Tom Oberjat finished in that order in times of 18:10, 18:10.5, and 18:14 respectively. Ed Lee was sixth in 18:47, and John Caywood was a non-scoring seventh in 19:10.

In the two-mile freshman race the undermanned Caltech squad was forced to forfeit team honors to Pasadena, but the lone Tech finisher, Jerry Simpson, outclassed the entire Pasadena team to win the race and individual honors with a clocking of 11:11.

Tomorrow at 4:15 the varsity and frosh squads will meet Whittier in Tournament Park.

Frosh Gridders Lose To Oxy

The freshman football team was trounced by the Occidental College frosh, 54-0, last Saturday morning on the Tiger's field. The game was a runaway as Oxy scored the first time they got the ball and had no trouble in controlling the play for the rest of the contest.

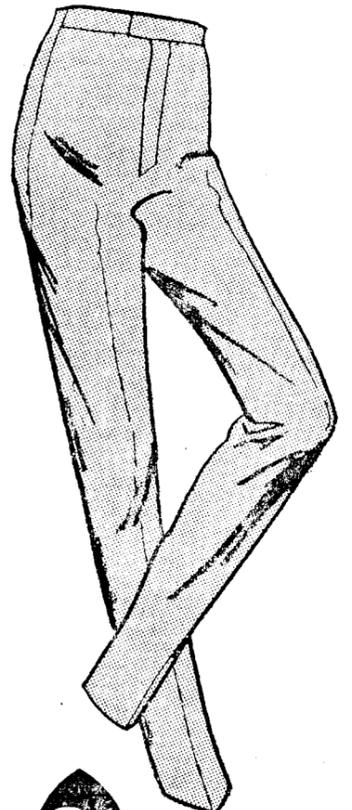
This year's frosh football team is plagued by initiation injuries and academic fears, both of which are not uncommon to Caltech athletic teams. Starting in the Oxy game were: ends, Jerry Jud Palmer and Andy Kampe; guards, Roland Russell and Dave Posner; center, Le Meyers; blocking back, Gordon Myers; wingback, Don Dumont; fullback, Steve Dodge; and tailback Marty Westbrook. The team ran out of the single wing, an offense which best suits the caliber of player and the limited season.

Next week the Beaver freshmen host Pomona on Saturday morning at Tournament Park.



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—photo by Thor Hanson

Page's Tom Resney bats against Blacker's Steve Teigland in recent inter-house softball game. Blacker won in extra innings, 9-6.

Lloyd Leads Softball Loop; Fleming Second

BY HAL PETRIE

After six days of interhouse softball, Lloyd House leads the teams with a perfect record of four wins and no defeats. With only two games remaining Lloyd has already faced the stiffest competition in the league and will be tough to catch. Though not a spectacular team, Lloyd apparently has the right combination to win.

The Wednesday game between Fleming and Blacker appears to be the important game for deciding second place, as fourth place Page has been inconsistent. Fleming has a strong battery with Bill Schoene as pitcher and Dennis White as catcher. Both Fleming and Blacker have lost only to Lloyd. As expected, third place Blacker has shown strong pitching and the

Softball standings:

House	Win	Lose
Lloyd	4	0
Fleming	3	1
Blacker	2	1
Page	2	2
Dabney	1	2
Ricketts	0	3
Ruddock	0	3

Games results:

- Lloyd 7, Fleming 5
- Lloyd 4, Blacker 2
- Blacker 7, Ricketts 5
- Dabney 8, Ruddock 6
- Lloyd 8, Ricketts 4
- Page 7, Dabney 4
- Fleming 6, Ruddock 0
- Lloyd 11, Page 4
- Blacker 9, Page 6
- Fleming 5, Dabney 4
- Fleming 7, Ricketts 5
- Page 13, Ruddock 2

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Soccer Team Drops First Game Of Season To UCLA, JV's Lose

Last Saturday morning UCLA downed the soccer team, 3-0, on the victor's field. This extended the Bruin's streak to eighty-eight straight victories on their home field. Both teams had won their first two games and this was a crucial one in the race for league honors. The junior varsity also lost to UCLA 4-2.

The Caltech forward line which had scored eighteen times in two games were blanked by

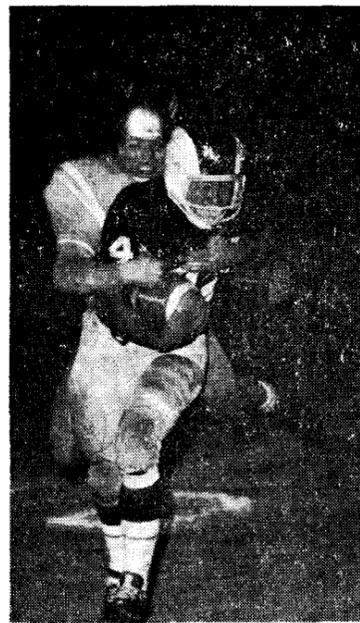
a strong UCLA back line. Meanwhile the UCLA forwards constantly pressed and poured in two goals in the first half.

In the first few minutes both sides attacked strongly, but soon the speed and ability of UCLA began to swing the game into the Caltech half of the field. UCLA opened the scoring when a high shot into the center was caught by the beaver goalie and in the subsequent scrimmage the ball was booted into the net. Soon afterwards, with the Caltech defense running in circles, a second goal was scored.

At the start of the second half the forward line showed much improvement, but the UCLA team soon regained their supremacy. However, even though UCLA controlled the back line, they could not come close enough to score until 15 minutes from the end of the game.

Basketball Begins Informal Practice

Coach Ed Priesler welcomed basketballers in informal workouts which begin last Monday and will continued throughout the week. Official practice begins next Tuesday, so that basketball players will still be eligible for interhouse softball.



—photo by Ken Brown

Larry Ruff tackles Pomona ball carrier in last Friday night's game at the Rose Bowl.

Back at Tournament Park the junior varsity could score only twice to go down, 4-2, after being behind 2-1, at halftime.

Next Saturday morning the varsity meets Redlands at Tournament Park while the junior varsity is idle.

BEYOND THE PLANE OF THE ECLIPTIC...

Whether in the forefront of space exploration or in bionics research, Lockheed Missiles & Space Company's almost limitless fields of endeavor offer a challenging choice to graduate engineers and scientists. Lockheed's location on the beautiful San Francisco Peninsula, its outstanding facilities, its sophisticated programs, its excellent employee benefits, among many other advantages, have all contributed to the Company's position as a leader in the aerospace industry.



SPECIAL CAMPUS INTERVIEWS

will be held

TUESDAY, OCTOBER 23

See your placement office for details

Lockheed, Systems Manager for such projects as the Navy POLARIS FBM and the AGENA vehicle in various Air Force Satellite programs, is also an important contributor to various NASA programs involving some of the nation's most interesting and advanced concepts. As one of the largest organizations of its kind, the Company provides the finest technical equipment available; for example, the Sunnyvale facility houses one of the most modern satellite tracking and control centers in the world. Every opportunity is given members of the technical staff to participate in the initiation of advanced technological developments.

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- Lockheed's Tuition Reimbursement Program remits seventy-five percent of the tuition for approved courses taken by professional and technical people who are working full time.

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- Electrical/electronic
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More Campuses

(Continued from page 7)

University of Detroit reported "U-D graduate Captain John D. Murray attained international fame Sunday as he safely ditched his Flying Tiger airliner in the Atlantic off the Coast of Ireland.

"Murray received a degree from U-D in chemical engineering in 1942." It seems unbelievable the degree of international fame that one can get from ditching an airplane! The story writer felt so impressed, in fact, that he felt obligated to continue with a description of the

ditching, a list of the pilot's college achievements, and a summary of his family life up to that time.

Such Democracy!

The *Varsity News* is in itself a model of journalistic freedom. In its masthead, the *News* proudly points out that its editors are "... appointed by the Faculty Board of Directors for Student Publications ... The editors' editorial policy is approved by this Board." Lest we think, however, that this stroke of luck for the editor that grants him unprecedented freedom is without its charms, the masthead also notes that "For any departure from policy, the edi-

tor is personally liable (legally and to the Faculty Board)." **Family Fun Dept.**

From our high school file, we read in the Leuzinger High School *Olympian* for October 12, 1962, under the headline "Sports Queen: A Farce?" an analysis of the use of a certain school function. The writer had established that the Sports Queen was appointed after much work on the part of all candidates. He asks what good she is. His conclusion is that it is "... comparable to being elected Queen of Lower Slabovia (sic). No one needs her, she serves no purpose

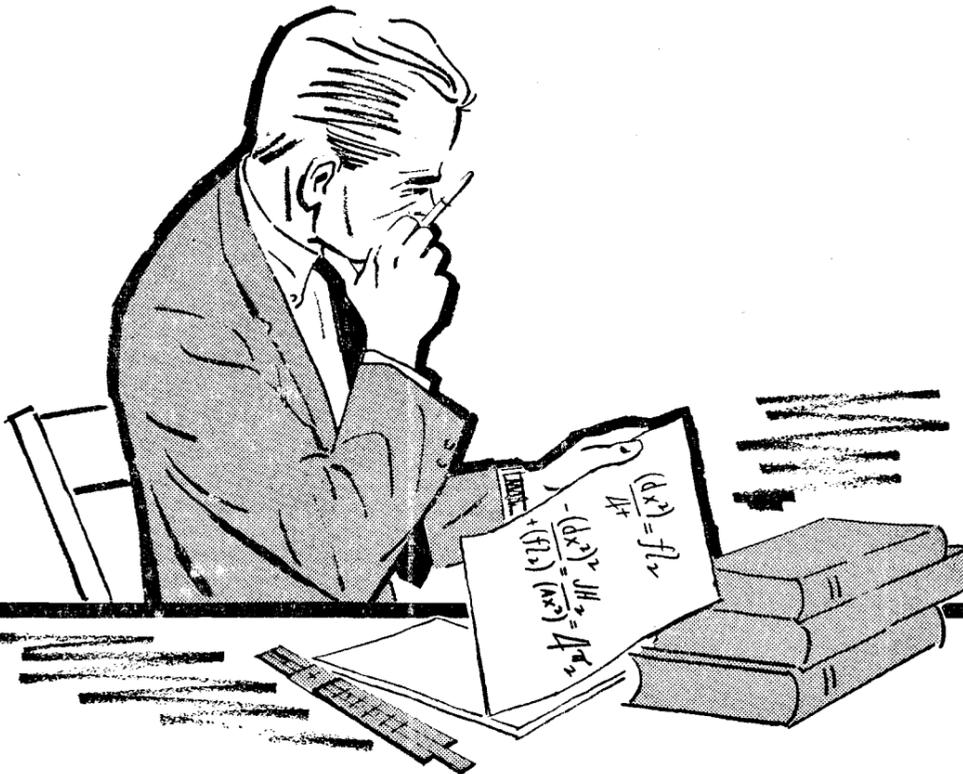
"I want the Sport Queen to be

much more than she is now. I'm officially launching the LET'S MAKE THE SPORTS QUEEN USEFUL campaign."

We have only one suggestion to bring up here. Since the Sport Queen is chosen on the basis of beauty, we can think

of lots of good uses for her, headed by one major use. Not only would at least half of the student body enjoy this new use, but the Sport Queen would have an excellent opportunity for making a little money in her spare time.

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| Dynamics Analysis | Fluid Dynamics | Hypersonic-Rarefied Gas Flow |
| Magnetohydrodynamics | Wave Phenomena | |
| Flutter, Turbulence | Re-entry Heating Problems | |

CIVIL

- | | | |
|---------------------------|---------------------------------|---|
| Elasticity and Plasticity | Plate and Thin-shell Structures | Experimental Stress Analysis of Structures at Elevated Temperatures |
| Random Loading | | |

CHEMISTRY (Physical-Organic)

- | | | |
|--|----------------------------|------------------------------|
| Non-equilibrium or Aero-chemical aspects of very high speed flight | Radiochemistry | Solid State Devices |
| | Hi-temp chemical reactions | Kinetics of reaction Plasmas |

ELECTRICAL OR ELECTRONICS

- | | | |
|-----------------------------|------------------------------------|---|
| Data Processing | Propagation Problems | Information Theory |
| Solid State Circuitry | Command & Control | Semi-Conductor Studies |
| Infrared | Plasma Microwave Interactions | Advanced Communication Systems Studies |
| Microwave | Energy Conversion (Thermoelectric) | Automatic Control Systems |
| Guidance & Navigation | | Aerospace Vehicle Electrical Power Distribution Systems |
| Visual Presentation Systems | | |
| Cryogenics | | |

PHYSICS, NUCLEAR PHYSICS & SCIENCE

- | | | |
|---|---|---------------------------------------|
| Energy Conversion (Thermionic & Magnetohydrodynamics) | Acoustic Power Prediction | Wave Propagation in Solids |
| Electron Optics | Advanced Reactor Studies | Plasma Microwave Interactions |
| Infrared | Underwater Acoustics | Guidance & Adaptive Control Processes |
| Cryogenics | Thinfilms | |
| | Radioisotope Fueled Generator Development | |

PROPULSION & THERMODYNAMICS

- | | | |
|-------------------------------------|---|---|
| Fluid Dynamics of multi-phase gases | Advanced Space Propulsion Systems | Radiation heat transfer problems |
| Liquid Rocket Studies | Mechanical Aspects of Advanced Reactors | Environmental Systems (ultra-high vacuum) |

MATHEMATICS (Applied)

- | | | |
|--------------------------------|--|------------------------------------|
| Classical Mechanics | Theory of Dynamic Programming | Digital Logic & Adaptive Processes |
| Orbital Mechanics | Systems Optimization & Nonlinear Methods | Random Signal Theory Studies |
| Systems Evaluation of Reactors | | Interplanetary Trajectories |

METALLURGY

- | | | |
|---------------------|-------------------------------------|--|
| Hi-temp Materials | Advanced Welding Joining Techniques | Effects of Metallurgical Structures (Creep & Stress Rupture behavior of super-alloy and refractory metals) |
| Solid-State Devices | | |

EXPERIMENTAL OR INDUSTRIAL PSYCHOLOGY (Ph.D.'s Only)

- | | | |
|--------------------------|-------------------------|--|
| Control-Display Research | Decision-Making Studies | Human Factors Field Evaluation & Analysis of Results |
|--------------------------|-------------------------|--|

ON-CAMPUS INTERVIEWS NOVEMBER 7

Please contact your College Placement Officer for an appointment. If you are unable to attend the interview, write to: J. J. Krajovic, Director, College Relations, Martin Company, Baltimore 3, Maryland.

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