The faculty has approved a proposed set of graduate House Policies Committees which recognize the importance of a graduate curriculum so that a student can change his option before the start of the junior year without carrying an overload. The Division of Electrical Engineering and Aeronautics, the Division of Chemistry and Chemical Engineering, and the Division of Humanities have proposed changes in their curricula which would implement the proposed new option.

EPC PROPOSALS

The recommendations of the EPC are:
1. Each student must express a preference for an option and be assigned an advisor by the time of pre-registration in the third term of his freshman year. The requirements for the physics option must be such that any student in good standing can change to this option before the start of the junior year and still meet minimum requirements for the bachelor's degree within the usual four-year period without penalty in overloads.
2. An option may specify up to 30 units of required courses in the sophomore year in addition to Ma 1abc, Ma 2abc, H 2abc, and PE 2abc (these 30 units need not be in the particular option).
3. Each option shall include 27 units of electives in science and engineering, 30 units of the sophomore year, but each option may limit the number of the 27 elective units which can be taken in the major field.

APPLIED SCIENCE

The Division of Civil, Electrical, and Mechanical Engineering and Aeronautics has proposed that effective with pre-registration in May, an entirely new undergraduate program in engineering was adopted.

Option Requirements Revised

The four-year program will lead to an undesignated Bachelor of Science degree in Engineering. The Master's degree will then be the first degree in engineering in which the student's preparation will be as complete as it is now in Aeronautics.

The tentative plans for undergraduate curriculum so that a student can change his option before the start of the junior year and still meet minimum requirements for the bachelor's degree within the usual four-year period without penalty in overloads.

OYER OPTIONS

The main proposal of the Division of Chemistry and Chemical Engineering is to let the superiors more choice of the 27 units of electives in science and engineering.

The other divisions—Biology, Geology, Humanities, and Physics—may be expected to have any proposed changes ready for approval prior to pre-registration in May. All these proposals are based on the expectation that faculty approval will be given in time for registration in the fall. The California Tech Research Office will publish all new information as soon as it is available.

A series of general meetings to allow students in choosing an option and an advising fee in sophomore year and to explain the available electives will be held in the fall.

Engineering: April 7, 10:00 a.m., 21 Bridge

Chemistry and Chemical Engineering: April 14, 1:00 p.m., 21 Gates

Physics: April 21, 11:00 a.m., 210 Bridge

The following general meetings, students who wish to do so, will be held by the Division with the following option coordinators:


Chemistry and Chemical Engineering: Professors: J. R. Smithson, William Corcoran, and J. P. W. Wart.

The Registrar's office must have at least a tentative indication from each freshman of his choice of option by April 7.

ROTC Instructor

Suffers Injury

In Air Accident

Captain Andrew Henry, Air Force ROTC instructor, suffered a broken collar bone when a slight collision between his plane and another with a lack of proper training when he was forced to bail out of a crippled T-33 jet trainer from San Diego Naval Hospital. He parachuted to the top of a cliff near his base. The plane was built by the company he was found and taken to the San Diego Naval Hospital. He was dead when he was found. Since he is in a heavy cast, he probably will not be able to resume his teaching duties for this term.
The sweeping curriculum revisions now being formulated reflect a faculty desire to encourage each individual to pursue a variety of special electives which would most profit and expand their own intellectual capabilities.

Also we would like to suggest some specific areas that the new EPC, judging by student complaints, should investigate during its year in office for possible inclusion in the reorganization.

1. Humanities department. Thanks to Dr. Hunter Mead and some of the other faculty. The unique curriculum has done this year.

2. The physics option. Objectives were raised on the EPC last term to Ph 111 on the basis that it covers topics in just a sketchy manner. It only has the potential of being relearned more rigorously later. The physics department has already announced that the junior needs a qualitative understanding and feeling for certain phenomena so that they will know intuitively when a wavelength or a frequency or an energy that they might compute is of the right order of magnitude. This, it is claimed, is the aim of the course.

3. The advisor system. With the removal of most rigid requirements it is going to be more important that each student be advised well and so be able to see that what he is doing is making sense.

4. Engineering. The new policy is bringing the biggest changes in the engineering option because it was here that the groups of students were most rigidly grouped so that EE's can study what is interesting to them and want. Good points of change in the engineering option because it was here that we suggested.

5. The grading system. How can there be less emphasis on numerical grades and more accurate recorded picture of one's abilities and performance?

We suggest that the committee work more closely with the faculty, EPC and that it keep the student body better informed of its discussions and recommendations than the outgoing committee has done this year.

The faculty is in a mood to let the student chart a large share of his own curriculum. We would like to see the EPC take advantage of this opening and ask the faculty essentially those we suggested.

The plain fact is that Ricketti's secretary was irresponsible, those athletic managers were sloppy, and their executive committee ignorant. Oh, no one ever told the MICSS to design an Interhouse athletic manager, etc. Blame whoever you want. And don't laugh at Ricketti. Every student group on campus this last year suffered from the same athletic disease to some extent. Witness the Bearers, campus service group.

The suggested solution? Work within the rules and or/and traditions, and if they don't work, change them, don't ignore them, enforce penalties for a job poorly done. In short, do the best job you can to at least do something.

Let's forget for a moment that we are all engineers or scientists who will ultimately benefit from the improved quality of Russia's technological progress. To what avail will our knowledge and knowledge edge be when some damn fools start dropping bombs? We oversimplify the problem when we try to tell people what to think about this. I only ask that anyone who feels that the answer is to make future scientists and engineers of us all. But a word of warning. There are no silver bullet solutions. The best we can do is to start making progress toward a better world and to see that the Russian people are getting their share of it.

Let's talk to each other and try to learn more. Let's use our intelligence on a problem that really requires intelligent thought. Let's do something.

Bruce Abell

CUT TRAVEL COSTS

Sheraton Hotels

STUDENT-FACULTY DISCOUNTS

Here's money-saving news for students, faculty and all other members of the Caltech family. Sheraton Westlands and Sheraton San Diego offer you special low rates — even lower than our regular weekday Special group rates are provided for athletic teams, other college organizations, and student groups.

You get these discounts at any of Sheraton's 24 hotels in the U.S.A., Hawaii and Canada. Sheraton is a member of the Starwood Hotel Group. To get a reservation, call your local Sheraton hotel, your favorite Faculty Guest Club or with your own phone. State please where you are a student, faculty, staff or guest, and we'll give you the best rate.

Jo P. Green
Caltech Residence, 470 Atlantic Avenue
Bannock 10, Mesa.
ASCIT Play
To Show Soon

BY MIKE FALCOTT

This year’s ASCIT play, Dark of the Moon, will be a challenge both to the actor and audience.

This marks the first time a serious dramatic offering will be presented as the annual play. Up to this point, in general, we have witnessed light, frothy, situation comedies. But Dark of the Moon is anything but that; it is taut, exciting drama and the type of play which would not receive the Good Housekeeping Seal of Approval. This break with tradition is a healthy change and will allow the drama club to carry on a fuller and freer program. There is room for all sorts of drama on this campus; tragic, comic, farcical, experimental—all types should be allowed to exist as a mode of expression for the Tech student. Drama, as an extracurricular activity, is at once fun and creative, and the program should have a broader scope.

The actor in serious drama must act, he cannot fake it as in light comedy. In order that the audience be moved and involved, the actor must be so likewise. This promises some interesting results. For an area so delayed, as Pasadena, with airy conventions of the class, Dark of the Moon should be a refreshing change.

There is still room for those who wish to assist with lighting, sets, makeup, and props. Contact Bob Poe, Lower Throop mailbox, if you are interested. Oh, yes. Tickets will be out soon.

Using observations of cepheid variable stars, astronomers at Palomar and Mt. Wilson Observatories have calibrated a method of measuring the vast distances in space beyond the Milky Way.

For more than 40 years astronomers have been using cepheids to measure distances in space, but with imprecise calibration. These stars have two unique habits that make it possible to use them as distance indicators. They dim and brighten periodically, and the length of their blink period and their brightness are related—the longer the period the brighter the star. If two cepheids of the same period are compared and one of them appears to be brighter than the other, the difference in brightness will be due entirely to the fact that one is farther away than the other.

There are some complications involved in using cepheids for a yardstick. Some have an irregular period and others do not conform exactly to the period-luminosity relationship. Also, some have been discovered with the same period but small differences in luminosity.

These are the problems which the group of Palomar and Mt. Wilson astronomers set out to solve. The group is composed of Halton C. Arp, Robert P. Kraft and Allan R. Sandage. They studied cepheids ranging from the dim ones with one-day periods to the very bright ones with periods of 100 days.

Arp went to Aarhus and, using the 74-inch telescope at Palomar, observed 69 cepheids in the Small Magellanic Cloud, a small satellite galaxy of the Milky Way visible only from the southern hemisphere. Arp determined that cepheids with the largest amount of variation of luminosity during a period are the most reliable as distance indicators because their period-luminosity relationship is the most precise.

Sandage pointed out the physical reason that cepheids with nearly the same period may vary slightly from their average luminosity; they increase their average radius as they evolve.

There are some 610 known cepheids in the Milky Way Galaxy, and Arp, Kraft and Sandage studied some of them in the Milky Way’s star clusters. This was done because the distances to those clusters have been established by a modified version of triangulation. Knowing the distances to the clusters that contain cepheids, astronomers then know the true candlepower, or brightness, of the cepheids in those clusters. Thus the starting point of the distance scale is established and can be used to compute distances in light years.

Two problems remain unsolved in the investigation, but they are not expected to affect the calibration to any large degree. One is the indication that some cepheids have a different metal composition than others. Special patterns of cepheid change during their period because their temperature changes throughout the cycle. There is evidence, too, that at some phases of the period, two layers of gas may pass through each other.

The other remaining problem in the current cepheid investigation is the determination of the evolution of these stars. It is believed that early in their life cycle, many stars become the kind of cepheid that will be used as distance indicators. The mechanism of the pulsation or the cause of it is not known, but several promising leads are emerging with which to develop a theory of pulsation.

It has been suggested, primarily by the Russian astronomer S. A. Zhevakin, that the pulsation may be due to the formation of a helium-ionized zone near the surface, which acts as

(Continued on page 4)

May 2 Deadline for McKinney Contest

Another opportunity is available for those Techmen who feel that their literary genius is being stifled by the repressing conventions of the classroom. They will be rewarded with the money rather than grades points in the McKinney Prize Contest in English for 1960.

Prizes of $100, $75 and $50 will be awarded to the three top essays, which will be entitled “The Beat Generation.” The papers, to be 1200 words in length and to be based on Kerouac’s “On the Road,” and Perlmuter’s “A Coneys Island of the Mind,” must be submitted to Professor Kent Clark by Monday, May 2, 1960.

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NOW MORE THAN EVER
Salem refreshes your taste
Preparation Ends, Mun Delegates Off To Cal

Twelve Techmen will be leaving next week for Berkeley where they will participate in the Twentieth Commemorative Session of the Model United Nations. The conference, which will be attended by delegations from almost 50 western colleges and universities, will take place next Wednesday through Saturday on the University of California campus.

The Tech delegation will be representing Israel. The delegues will participate in discussions and vote on resolutions as if they were actually Israeli delegues to the United Nations.

Steve Moler is chairman of the delegation. Ken Scholtes, Clyde Zaidin, Roger Noll, Bob Koh, Marty Cartyg, Bob Tsoi, Fred Boalesl, Francis Wilson, Sid Lathurich, Bob Walsh, and Harold Thomas complete the group.

Over two dozen international problems will be considered by various committees and councils during the three-day session.

Mock Conventions At Oxy, L.A. State

It's election year again, and politically minded Techmen can find their glue at the customary mock political conventions held in the spring. The Republican Convention this year will be held at Oxy on Friday, April 22, while the Democratic Convention will be held at L.A. State the next day.

In both conventions the Tech delegation will represent Illinois.

Oxy, the Republicans will have 60 votes, and at L.A. State, the Democrats will have 69.

The Tech Illinois Democrats will have representatives on the platform committees with responsibility for the plank on national defense and foreign policy. The chairman of the Democrat Convention will be majority leader Muskel of the California State Assembly, while Assemblyman Shail of California will head the Republicans.

Applicants should see Eli Chernoff, 68 Fleming, or Art Rubin, 61 Fleming, by noon tomorrow.

Steve Allen To Visit Tech On April 5

Steven Allen, noted television comedian and motion picture actor, will be on campus Tuesday, April 5. Allen will be here under the auspices of the Caltech YMCA, and will speak at three campus meetings. Many think of him as a comic and nothing more, but Allen is a concerned leader and thinker in the fields of social action and the history of philosophy.

Along with Robert Ryan, Allen was the founder of the Hollywood chapter of the Committee for a Free Nuclear Policy. He has written a number of articles and editorials on the segregation question. And he is working on plans for a television program, which would make the great thoughts of Western man palatable to a mass TV audience.

Allen will speak to students and discuss his concerns with them at a public meeting in Dabney Lounge from 24 in the afternoon.

Aero Keeps Manned Nose Cones Cool

A promising solution to the entry problem of manned space vehicles has been found by the Guggenheim Aeronautical Laboratory. It has been discovered that the ejection of helium gas from the front of the cone cools the rocket significantly during its flight through the atmosphere. The outrushing air spreads the helium in a thin, continually flowing blanket over the cone's surface.

Helium, chosen because of its large capacity to absorb heat, not only prevents the hot shock wave layer of air over the nose from transferring much of the heat to the cone, but also absorbs and carries away most of the heat.

Of course, the re-entry problem has been solved for guided missiles already, but these remain in the dense atmosphere only for the relatively short period of 30 seconds, rather than the more extended period of about an hour required for manned vehicles. Ballistic missiles must take higher temperatures than manned vehicles, but for much shorter durations.

Loiter Leos, professor of aeronautics, is directing the research, which is being carried out by Captian Monte Coffin of the Air Force and Dr. Toshi Kubota, assistant professor of aeronautics, in a program supported by U.S. Army Ordinance.

The experiments, being carried out in a Caltech wind tunnel, are designed to simulate speeds of about 19,000 miles per hour at altitudes of up to 150,000 feet, where the atmosphere is very thin. Information obtained from the wind tunnel experiments is being extrapolated to predict the performance of the helium blanket under flight conditions where much higher temperatures and speeds are attained.

Other heat absorbing blankets are going to be tested in the research program. These include water, ice and frozen camphor.

All these materials show promise.
Trackmen Face CHM, Pomona On Saturday

Saturday afternoon, the Caltech track team faces its first SCIAC competition in a triangular meet against Pomona and Claremont-Harvey Mudd. The boys may offer Tech its closest competition of the season.

Spurred by a strong team effort in its last meet before finals the Tech Varsity will be improved. That meet resulted in a near victory with the final score San Fernando State College 74%, Caltech 64%, Cal at Riverside 20 and Pasadena College 15.

Deeply Rooted Key to Tech's improvement is its growing depth, particularly in the field events. Lames Fennell is nearing top form in the javelin with marks over 200 feet. Ed Cline, with eyes on 12-foot six-inch shot put return John Weaver on to new heights. Versatile Geary Yancey has filled the weakness left in the broadjumping of the low hurdles.

Weightmen Leibowich and Stewart continue to improve. Typifying the team effort runners Bob Joa, Mike Ruecker, Rich Harris and Ben Burke have contributed valuable points each meet in several races.

Pomona looks strong in Saturday's meet with Claremont-Harvey Mudd close behind, led by Mike Laughlin, who boasts a 2:02 12-foot six-inch should push the broadjumping of the low hurdles.

FRESHMEN They are anxious to enter the fray and attend the school record, set last year by Dave Bang, which now stands at 2:27 in the mile. The pacemaking which develops on Monday will pay dividends later.

EXTRA-CURRICULAR

When you have time away from the books, enjoy it more with Budweiser. Where there's Life . . . there's Bud.

Swim Team Tackles Claremont Long Beach St. In Dual Meet

In their first league meet last term, the varsity and frosh swimming teams defeated Redlands. The varsity won by a surprisingly close margin of 55 to 40, while the frosh trounced their opponents, 65 to 3.

The leading swimmer of the day was Winn of Redlands, who won the individual medley, beat Caltech's Gary Tibbits by 0.2 of a second in the 100-yard freestyle, and then led his freestyle relay team to a victory in the respectable time of 3:45.7. The best performance turned in for Caltech was that of Marshall Buck, who won the 200-yard breaststroke in the time of 2:33.6, coming within two seconds of the school record, set last year by Don O'Connors.

The Caltech varsity squad will attempt to extend its dual meet win streak to six straight this week end, when it encounters Claremont-Harvey Mudd here at 11:00 on Friday and Long Beach State there at 10:00 on Saturday.

CHM will make a determined effort to repeat last year's victory over CIT. Paced by Rick Mone, one of the finest competitors in the conference, and Mike Harvey, they are hoping to catch the Caltech varsity team cold as a result of their two-week layoff.

Long Beach State, led by Ken Hordorf, Doug Martin and Bill Remington, will be strong in every event. They also defeated CIT in a dual meet last year.

Frosh Win

Redlands' greatly undermanned frosh team offered no serious threat to Caltech's frosh, who proceeded to win every event. Among the outstanding times turned in by the frosh were 2:37.6 and 2:41.0 by Pat Manning in the 200-yard backstroke and 200-yard individual medley, respectively, and 59.7 by Larry Dubcek in the 100-yard freestyle. Bruce Cheeseman marked himself as a strong contender for individual conference honors on the basis of his times of 25.7 and 59.8 in the 50-yard and 100-yard freestyle events.

Due to a lack of entrants, there was no freshmen diving competition. Coach Webb Eversy would be interested in talking to any freshmen willing to fill the important spot.

The frosh team is scheduled to compete against the CHM frosh team this Friday. In case the latter does not show up, they will have an intersquad competition with several of the swimmers, who add necessary depth to the Caltech varsity.

A. C. T. I. O. N.

These are the silver wings of a U.S. Air Force Navigator. As a flying officer on the aerospace team, he has chosen a career of leadership, a career that has meaning, rewards and executive opportunity.

The Aviation Cadet Program is the gateway to this career. To qualify for this rigorous and professional training, a high school diploma is required; however, two or more years of college are highly desirable. Upon completion of the program the Air Force encourages the new officer to earn his degree so he can better handle the responsibilities of his position. This includes full pay and allowances while taking on-duty courses under the Bootstrap education program. The Air Force will pay a substantial part of all tuition costs.

After having attained enough credits so he can complete course work and residence requirements for a college degree in 6 months or less, he is eligible to apply for temporary duty at the school of his choice.

If you think you have what it takes to earn the silver wings of an Air Force Navigator, ask your local Air Force Recruiter. Ask him about Aviation Cadet Navigator training and the benefits which are available to a flying officer in the Air Force. Or fill in and mail this coupon.

There’s a place for tomorrow’s leaders in the U.S. Air Force.
The most difficult puzzle in the world

Do you have a solution? In high school, you may have thought you had the solution, only to have it vanish. In college, it may seem well within your grasp, only to vanish again. But this is not unusual. It's a very difficult puzzle.

The puzzle? How to find your life’s work. The solution? It comes only with searching. It may be right under your nose or it may still be far away in the future.

But the solution will come. You will very probably find it in the work you undertake after college.

This has proved true many times at IBM. For instance, young engineers and scientists—after learning the scope of IBM activities in research, development and manufacturing—have found their interests leading them into such vital growth fields as microwaves, circuit design, solid state physics, magnets and manufacturing research. Depending on individual talents and inclinations, a college graduate may acquire skills at IBM that lead to a variety of careers.

When a person is able to move into areas where his true interests lie, and when he has many areas to choose from, it will certainly be easier for him to find his life’s work.

After all, it’s easier to find the solution to The Most Difficult Puzzle in the World when you have access to all the clues.

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