



Photo by R. Schmus  
Dean Paul C. Eaton presents Ricketts' director Walt Weiss with the Interhouse Sing Trophy after the Rowdies edged Dabney by one point Monday night.

## Weiss leads Ricketts to close victory over Dabney in IH Sing

The Ricketts House Glee Club, led by senior Walter Weiss, extended its three-year domination of the Interhouse Sing by one year last Monday night in Scott Brown Gymnasium. In taking first place with its rendition of the contest number, "Hangtown Gals," Ricketts narrowly edged out second-place Dabney House by one point, 259-258. Fleming and Blacker were third and fourth with 237 and 212 points, respectively, out of a possible 300.

**Three judges**  
The three judges, all prominent in local musical activities, were Miss Shirely Nute, Choral Director at Glendale High School; Mrs. Hedwig Rice Finkembinder, Choral Director at Monrovia High School; Mr. William P. Benulis, teacher of music theory and Director of the Glee Club at RCC. Master of ceremonies was Dr. Alfred Ingersoll, and Dean Eaton presented the trophy to the winning team.

**Additional numbers**  
In addition to the contest song, the following additional numbers were presented by the respective houses: Blacker, "Glory and Honor Are Before Him," by J. S. Bach, arranged by Peter Tkach; Dabney, "Jesus Walks This Lonesome Valley," a Negro spiritual, arranged by William Dawson; Fleming, "Non Nobis, Domine," words by Rudyard Kipling and music by Roger Quilfer; Ricketts, "Hallelujah," from *Hit the Deck*, by Vincent Youmans. An octet from Ricketts House also presented

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## Hilton Hotel to host "Cotillion"

by Dave Leeson

"Cotillion," will highlight this quarter's social program.

The formal, hosted this year by the luxurious Beverly Hilton Hotel, will give the gentlemen of Tech their chance for a fling at high society. The Cotillion will begin at 9:00 p.m., Friday, March 1. Formally attired couples will dance to the music of Keith Williams and his orchestra in the beautiful Cadere and Saray Suites of the ultra-modern Hilton.

Drinks will be served only to those who remembered to bring along identification; refreshments of a milder nature will be provided during the course of the evening by the ASCIT. Bouquets and dark tuxedos

(Continued on page 5)

## Group sends another man from Africa

Charles F. Gallagher, AUF's expert on northwest Africa, will arrive at Caltech Sunday for an extensive series of talks and discussions. A graduate of Harvard and the University of Paris, Gallagher recently ended a three-year stay in Africa.

Highlights of his schedule will be several evening seminars with advanced history and economics classes, lunches with various student and faculty groups and numerous lectures.

**Officer, scholar, historian**  
Born in San Francisco, Gallagher attended the Japanese language training school during World War II and was an officer in the navy. He was a Fulbright fellow and a Ford Foundation fellow, and while in North Africa he wrote a history of Morocco.

In the summer of 1956, he traveled across North Africa under the auspices of the American Universities Field Service, visiting Tunisia and Libya and studying the workings of the newly independent countries of the area.

### Luncheons

Among his meetings with non-class groups during his nine-day stay will be an informal box lunch with the Geology Club at noon next Monday; lunch with graduate students in the YMCA lounge Thursday noon and a talk before the undergraduate lunch club on the subject "Sociology of the Berbers" at noon, Tuesday, March 5.

The California Tech needs managing, news, feature, sports, and photo editors for the next three terms. Anyone interested should contact us as soon as possible. We will be trying to produce the best possible paper, and will need enthusiastic help.

Bob Walsh

# Dick Kirk elected president, Gene Cordes in second spot

The ASCIT election committee yesterday set the runoff election for Wednesday. Polling will occur in front of Dabney Hall from 1 to 4 p.m. and in the student houses from 12:30 to 1 p.m.

Gene Cordes defeated Andy Perga for ASCIT vice president, and Dick Kirk was unopposed for proxy in yesterday's elections. Brad Efron and Lee Hood will enter a runoff election for second representative.

Election results were released at 7:30 p.m. last night by the election committee, headed by Bill Hecht.

Dabney ended Ricketts' tradition of BOD domination by placing five men on next year's board: Kirk, Tony Iorillo, Bill McClure, Russ Pitzer, and Don Owings.

## Oppenheimer coming to Caltech next week

In a program designed to permit maximum contact with Caltech students, J. Robert Oppenheimer will participate in discussions, meals and informal conversations during his stay on campus which starts next Thursday and continues to March fifth. Usually considered to be the person who contributed the most towards the development of American atomic research during World War II, Oppenheimer is also known for astuteness in non-technical matters and is now head of the Institute for Advanced Study at Princeton.

### Schedule

**THURSDAY**  
11:00-2:00—Lunch at Fleming.  
3:00-5:00—Discussion with about twenty graduate students.  
6:00-8:00—Dinner at Blacker.  
8:00—Meets with BOD and IHC.

**FRIDAY**  
11:00-2:00—Lunch in Dabney House.  
3:00-4:00—Office hours.  
4:00-5:00—California Tech interview.

**SATURDAY**  
6:00-7:00—Dinner with Oppenheimer Committee.  
8:00—Open house.

**MONDAY**  
11:00-2:00—Lunch with Throop Club.  
3:00-5:00—Office hours.  
7:00-8:00—Talk before undergrad student body.  
8:00—Meets with Y Cabinet.

**TUESDAY**  
11:00-2:00—Lunch with Ricketts.  
2:00-5:00—Office hours.

## Announcements

### ASCIT play

Tryouts for the Drama Club production of *Dear Charles* will be conducted in Dabney Hall Sunday at 2 p.m. and next Wednesday at 7:30 p.m. Copies of the play may be obtained from Dwight Thomas in Dabney Hall. Those interested should notify Herb Rauch in Fleming.

### Lost and Found

The Caltech YMCA Lost and Found has a great number of unclaimed jackets, slide rules, glasses, books, etc. These will be auctioned in two weeks if still unclaimed.

### IRE Students Day

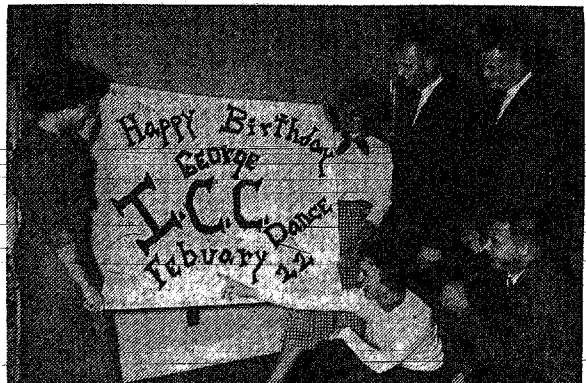
The Institute of Radio Engineers will hold its students' day program March 5 at the Institute of Aeronautical Sciences in Los Angeles. (See page 4.)

## Fielding plays at ICC dance tomorrow nite

With "Happy Birthday, George" plastered around the walls of the spacious Ontario Armory, with the music of Jerry Fielding's orchestra rending the air sweet, with inter-school spirit at its highest, the tenth annual ICC dance opens its doors tomorrow at 9:00 p.m.

### Met in 1948

The ICC first met in 1948 for the purpose of promoting inter-school spirit. In addition to planning this annual dance, it also arranges exchange assemblies and serves as a co-ordinating body for other activities. Craig Elliott, Glenn Converse, and Dave Leeson are serving as Tech's representatives this year, meeting with students from seven other southern colleges: Chapman, Claremont Men's College, Occidental, Pomona, Redlands, Scripps, and Whittier.



Whittier's Kathy Heacock points out inadequacies of Occidental's English to members of ICC, including Tech Proxy Craig Elliott (right, standing).

charge of organizing this year's dance: Chapman is handling the cloak room, CMC selected the band and Armory, Occidental is decorating. Pomona is responsible for finances, Redlands organized the entertainment, Scripps artistically composed the bids, and Whittier directed the publicity.

The bids, costing \$2.00 per couple, may be obtained from Dave Leeson, Dick Kirk, Herb Rauch, or at the door.

The Armory is located at 950 N. Cucamonga Ave., Ontario, approximately five miles north of Highway 66.

## Sophs, ASCIT to throw after-dance

The Sophomore Class and the ASCIT will jointly sponsor an after-game dance this Saturday night in Ricketts Lounge.

The dance, part of the ASCIT-class series of after-game affairs, will feature the music of Tony Iorillo and his band. All couples attending the game are invited to top off the evening dancing and enjoying the refreshments. The dance will begin immediately after the Pomona game, which starts at 8:00 p.m. in the gym.

### California Tech

Editors-in-chief — Tom Dodge and Frank Kofsky  
Managing Editor — Bob Walsh  
News Editor — Jim Wilkinson

News Staff: Dave Leeson, Bob Lushene, Alan Berg, Lance Wallace, Jerry Hanson, Alan Carlin  
Feature Editor — Mike Milder  
Feature Staff: Brad Efron, Howard Weisberg, Ford Holtzman, Dave Gilson and Gary Yale Bronbrenner  
Sports Editor — Dick Van Kirk  
Sports Staff: Tony Leonard, Steve Emanuel, Dave Singmaster, Dick Fiddler, Ed Krehbiel  
Photography: Dave Groce, Randall Schmus  
Business Manager — Ed Park  
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## "Now hear this!"

For too many years the American people have been suffering from the delusion that their elected representatives are servants of the people. Unfortunately this idea has permeated even the lowest echelons of government. Even ASCIT candidates feel obligated to use the Dale Carnegie technique of "sincerely wanting to represent your opinions." I should like to propose that some daring candidate gamble his office bid on the assumption that the student body would appreciate a more realistic campaign.

I would wager my cherished editorial position that 99% of the candidates will admit, if pressed, that a major factor motivating them to run for office is the prestige associated with the position they seek. I have yet to hear the frank statement, during a campaign, that the candidate is seeking personal prestige. Perhaps I am making a naive evaluation of the situation. Peharphs everyone, with the sophistication born of experience, accepts implicitly the fact that all candidates are not the altruistic "representatives" their platforms lead us to believe. Nevertheless it would be refreshing to hear during the dinnertime speeches, "I am running for this office because of the advantages it offers. I will do a good job because it will look good on my record" or, "Anyone can perform the duties of this office. It was the easiest job I could find and I'm sure it will make negligible difference to anyone but me and my opponents whom is elected."

I don't really expect anyone to use this technique. I think however, if he did, he might ingratiate himself to the seniors, who have heard essentially the same fatuous statements for three years, and also to many underclassmen for his frank and novel campaign.

## LETTERS

### Editors, The California Tech:

In unsolicited reply to your editorial of this date, I say, "No! Caltech is not too narrow." After all, gentlemen, Caltech is a technical school. Supposedly the students who come here desire this type of education, or else they would have gone to a liberal arts college. In addition to their technical studies, the students receive a large amount of instruction in the humanities, both in the classroom and out. Compare our ICC members with those from the other schools. Compare our scores on the college sophomore comparison tests of a few years ago. Compare the themes in our English classes and in the old *Pendulum* with those from any liberal arts college. We do not come out bad. In fact we come out so good, there seems to be hardly any point at all in carrying out your suggestions that we increase the extracurricular activities to the point where every man is the president of not one but two clubs or that we insert more humanities classes into the curriculum so that still more technical courses can be shoved over into the fifth year.

There apparently exists a certain vogue in condemning technical studies and in vocally longing for the greener, or at least more well-tailored, pastures to be found inside walls of ivy. We are constantly urged to become well-rounded, like a rubber ball which bounces aimlessly. Certainly technical studies, like any other discipline, require much concentration. That this fact can be a boon, rather than a handicap, in the pursuit of the values of life can be demonstrated by the success of Caltech graduates in general. I do not think Caltech is narrow.

Yours truly, Sam Phillips.

### The California Tech

California Institute of Technology  
Pasadena, California  
To the writer of the editorial "Is Caltech Too Narrow?"

I agree with your description of the dilemma. Scientists and engineers—in their ceaseless concern with Nature, its processes and dimensions and laws—frequently lose sight of Human Nature.

But I must confess some amusement at your approach to the problem and at your proposed remedy. They betray you as a victim of the tragedy you describe. "Clearly," you say in your 'the-derivation-is-on-the-blackboard' voice, "Caltech students fail to put sufficient time on these important non-technical aspects of life." Such partitioning of time into pieces for this activity and for that is contrary to the very spirit of humanistic learning. A daily hour of practice may be effective for an Arthur Murray course, but to consciously allot fifteen minutes here and fifteen minutes there to "non-technical aspects of life" is ludicrous. I realize that a schedule is Practical and Expedient in the Breakneck Pace of Today's World; I merely point to your phraseology to illustrate your unconscious involvement in the situation which distresses you (and me).

You follow this proclamation by listing, in true engineering fashion, (a), (b), and (c)—oh, beg pardon, it was (1), (2), and (3)—"three obvious remedies." Making lists is also foreign to the humanist. An exploration of humanistic truths, as they are manifested in history, literature, art, philosophy, even in day-to-day existence, is an experience of widening understanding, a gradual enrichment of one's

inner store; it is not an ever-lengthening list. Of course, you didn't say it was. But again, in your approach to the dilemma, you give evidence of your entanglement in it.

Finally, you tell us that "the only practical solution" is to increase the number of humanities courses. At this, I'm afraid my amused chuckle almost became a guffaw. I could almost hear the engineer, "we'll just step up the input," or "turn up the voltage," or "increase the payload."

My principal point is that in suggesting an external solution, a "pull-the-lever" solution to what is essentially an internal problem involving attitudes, you show yourself to have the limited technical perspective you deplore. As you yourself admit, the immediate effect of additional humanities courses would be "decidedly slight." Courses in the humanities are indispensable and have nothing but beneficial effects on the people who actively participate in them. But to increase their number is simply an external gesture, which may or may not affect the internal situation, that is, the attitude in any engineer or scientist.

It seems to me that until the "narrow" engineer or scientist, be he at Caltech or elsewhere, sees the spirit of Man as an exciting and awesome force and until he wants to grow in his understanding and judgment of its creations, no amount of courses in Renaissance art et al will release him from his strictly Newtonian, Schroedinger-equationed, Bohr-theorized, kinetic-energized web.

However, as long as some are sensitive to the tragedy, as you have been despite your list-and-schedule approach, there's hope. Someone may yet have something interesting to say at dinner.

(Continued on page 8)

### You smoke refreshed

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### Salem refreshes your taste

# DOUBLED AND REDOUBLED

North  
S-Q 10 7 4 2  
H-A K 8  
D-9 5 3  
C-8 3

West  
S-3  
H-10 9 7 6 3  
D-K 7  
C-A K Q 9 7

East  
S-I 9  
H-Q J 5  
D-Q 10 8 6  
C-J 6 4 2

South  
S-A K 8 6 5  
H-4 2  
D-A J 4 2  
C-10 5

Bidding:	South	West	North	East
	1 S	2 C	3 S	Pass
	3 S	Pass	4 S	Pass
	Pass	Pass	Pass	

Opening lead: Queen of clubs.

South bids his routine 1 spade opener, and when North responds over the opposing overcall he feels his values justify an attempt at game. So he makes a coaxing bid of 3 spades. North, with an 11-point response, is happy, of course, to take the bidding to game.

South takes one look at the dummy and spots his problem—to keep from losing two tricks in diamonds. There doesn't appear to be any orthodox way to play the suit, so the declarer must make the play which offers the greatest percentage chances. In today's hand, South intuitively strikes the best line of attack and brings home the suit.

After taking two club tricks, West switched to a heart. Taking it with the Ace on the board, declarer pulls two rounds of trump and leads to the King of hearts on the board. He trumps the dummy's remaining heart, leaving only spades and diamonds in the two hands.

South then drops the Ace of diamonds from his hand. The reader will now sympathize with West as he is forced to make a cloudy decision. The worst of the alternatives is to discard his small diamond. South will then throw him into the lead with the King of diamonds, and West's next lead necessarily allows the declarer to slough a losing diamond from the dummy while trumping in his hand. This assures him of no more diamond losers.

West must, therefore, sacrifice his King in the vain hope that East holds the Queen and Jack of diamonds. Declarer then breathes a sigh of relief, followed by a trump lead to the board and a diamond lead through East's Queen.

The success of this play depended primarily upon the highly probable 4-2 diamond split with the doubleton containing one of the honors. In all, this offered slightly better than the one out of four probability of having both honors lie in East's hand.

# Student's multi-phase S.F. Magazine appears in store

by Alan Berg

In the third issue of *Magnitude*, the following was read: "There has been much Speculation on Methods of traveling to the Moone in recent years by Authors of Romantic Fantasies . . ."

This article ends in what now appears an archaic and worn exclamation of the virtues of space travel: ". . . Soon it should be possible to build an Impregnable fortress on the moone, a Bulwark in the skyes, forever guarding freedom of the seas and international peace. God Save the King!" This seems archaic but nevertheless is as accurate as the "researchers" of the *Magnitude* staff could find when searching for evidences of seventeenth century attempts at space travel!

Just as the *Magnitude* staff has "investigated" pre-atomic

space travel, they have also done some speculating about the future of man, and they are very much interested in some of the implications of modern science and technology, for some of them are scientist, some future scientists now at Caltech.

But, WAIT!

What is *Magnitude*? Who is *Magnitude*?

While not as sublime as *Pendulum* nor as ridiculous as *Farrago*, *Magnitude* does convey to its readers a sense of well-dressed urgency to express some of the spontaneously generated ideas of the day. It is run on a moderate budget, is printed by a method known as photo-offset, and contains articles of science fiction, motion picture reviews, some poetry, humorous features, and much more. It is a magazine approaching professional standards. Some of its contrib-

utors spend most of their time around the Institute and lots of their spare time in other times.

CD not for defense

Most of the writers for *Magnitude* are members of the Chesley Donovan Foundation. In fact it is CD which sponsors *Magnitude* and lends impetus to the activities and thoughts recorded in the magazine. The name Chesley Donovan is reputedly a pseudonym for the board of directors of the foundation. CD members work in various fields; some of them are creatively interested in literature, others in experimental photography, different scientific facets, or music.

Ralph Stapenhorst, a freshman at Tech, is editor of *Magnitude*. For several years he has been interested in writing and publishing and his efforts have been rewarded in the appearance of *Magnitude*. He is currently working on some experiments in animated films.

Ron Cobb, presently employed by Disney Studios, does most of the magazine's art work. Even (Continued on page 4)



## What a MATHEMATICIAN can do at IBM

Mathematics is an ancient but ever-advancing science that contains many forms. It shouldn't surprise you then that it took some time before John Jackson discovered the one brand of mathematics that seemed custom-tailored to his ability and temperament. John is an Applied Science Representative, working out of the IBM office at 122 East 42nd Street, N. Y. C.

First of all, what's it all about? What does a fellow like John Jackson do all day? In his own words, "I keep in touch with the executives of many different companies—advising them on the use of their IBM electronic data processing computers. I personally consult with these customers, and analyze their scientific and technical problems for solution by IBM. Occasionally, I'm asked to write papers, and give talks and demonstrations on electronic computing. All in all, it's pretty fascinating . . . something new pops up every day." In other words, John is a full-fledged computing expert, a consultant . . . and a very important person in this



Colling on a customer

coming age of automation through electronics.

Since the IBM laboratories are always devising easier and faster ways to solve the problems of science, government, and industry, an Applied Science Representative can never say he's learned his job and that's the end of it. At least once every two months, he attends seminars to be updated on the latest developments in engineering and operations research.

### Introduces new methods

During the two years that John has spent with IBM in Applied Science, he has guided innumerable IBM customers to new and better ways of doing things electronically. For example: about a year ago, a leading aircraft manufacturer wanted to experiment with a radically different design for a nuclear reactor. Although the basic format had been established, the project still required many months of toil with mathematical equations.

The aircraft people decided that they couldn't afford to wait that long, so they called in IBM. After discussion with top executives, John helped to map out a computer program that saved the organization over 100 days



Mapping out a computer program

of pencil-chewing, nail-biting arithmetic. Later, for this same company, John organized the establishment of computer systems for aircraft performance predictions . . . for data reduction of wind tunnel tests . . . and for wing stress analysis. At the same time, he worked with this company's own employees, training them in the use of IBM equipment. John still drops around to see that everything is running smoothly.

Another service that John performs is the constant reappraisal of each customer's IBM operation. Occasionally, a customer may tie himself in knots over a procedural "stickler." Periodically, in fact, John brings IBM customers together . . . just to talk-over what's happening in each other's business—how everybody else handled that old bugaboo in any industry . . . details.

### New field for Mathematicians

John is exercising his mathematical know-how in a field that was practically unheard of ten years ago. Even now, this kind of work may be news to you. It was to John Jackson a few years back when he was an undergraduate at the University of Colorado. At that time, he was considering actuarial work or mathematical research. But John liked the excitement and diversification of science and industry and he wanted to use his

mathematical background in both of those areas. It was not until he was interviewed by IBM that field computing whetted his scientific appetite. A few months later, John launched his own IBM career as an Applied Science trainee.

Promotionwise, John has come a long way since that time. He's now an Applied Science Representative in one of the busiest, most responsible offices in the IBM organization . . . mid-town Manhattan.

With his wife, Katherine, and daughter, Lisa, 20 months, and John,



Discussing a problem with colleagues

Jr., 6 weeks, he enjoys his suburban Port Washington home. He's happy and he's satisfied. And then, too, John knows a few vital statistics about IBM . . . such as the fact that the Applied Science Division has quadrupled during the past three years, and that in 1956 alone, over 70 promotions were conferred. If ever a future held promise, here is one.

IBM hopes that this message will help to give you some idea of what a mathematician can do at IBM. There are equal opportunities for E.E.'s, M.E.'s, physicists and Liberal Arts majors in IBM's many divisions—Research, Product Development, Manufacturing Engineering, Sales and Technical Services. Why not drop in and discuss IBM with your Placement Director? He can supply our latest brochure and tell you when IBM will next interview on your campus. Meanwhile, IBM will be happy to answer your questions. Just write to Mr. P. H. Bradley, IBM, Room 8701, 590 Madison Avenue, New York 22, N. Y.



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"SECRETS OF LIFE"  
and  
"THE BRAVE ONE"

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**COLORADO**

Marlon Brando Glenn Ford  
Machiko Kyo

"The Teahouse of the August Moon"

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**UPTOWN**

"OKLAHOMA"  
and  
"The Great American Pastime"

---

**UNITED ARTISTS**

"Wings of the Eagle"  
and  
"Hot Summer's Night"

## Techmen discuss human behavior in unique class

"Introduction to Human Relations," or PL 7 as the catalog calls it, was started at Caltech in the Spring of '55 as an experimental course to help students improve relations with other pupils by understanding themselves and their impact on others.

The course proved so successful that it has been continued as a regular part of the curriculum. Perhaps the reason for its success is that it is not only different from anything else offered at Tech, but it is one of the few courses offered to undergraduates anywhere in the United States that deals with the problems of living with other people. As one student put it after taking the course, "This course dealt with an immensely practical phase of living, that of getting along with people."

The class explores itself, individual and group reactions, analyzes the situation and then decides how and why people act as they do in a particular situation. With this background, the class then tries to determine ways of avoiding unfavorable reactions and bringing about more favorable results when working with people.

The class is taught in two sections of about 20 students each. Each section meets once a week for two and a half hours with the instructors, Dr. Charles Ferguson and Dr. Evelyn Hook-

er, who is Caltech's first female faculty member; both are members of the UCLA faculty.

Since the students themselves are permitted to decide what topics they would like to study, the course covers everything from human behavior in leadership and groups to religion and sex.

Once the general outline of the course has been decided the class discusses the problems. Generally one or two topics are covered at each meeting. Discussion takes place around a large table, with instructors remaining more or less in the background until the discussion is over, then they sum up what has been said and help the class draw its conclusions.

The class this year found group reactions one of the more interesting fields of study and decided to study group dynamics. After observing individual reactions as seen in the class, the group discusses them and draws conclusions as to what effect a member of the class has on the group as well as the effect of the group on the individual.

Students are encouraged to use the group as a testing ground for various actions. If a student feels that he is ineffective in working with other people, he can talk it over with the class. Other members of the class may tell him how he affects them, why he causes this reaction and offer suggestions as to how he can increase his effectiveness.

In addition to the topics covered in the classroom, the class has also studied the problem of juvenile delinquency as an example of human relations that have gone wrong. Each section divided itself into three groups of about six people each. These groups interviewed juvenile authorities and visited various institutions for delinquents to see what has gone wrong, why and what is being done about it. The groups then reported their reactions to the problems and the methods used to solve them.

Originally the course was open to sophomore engineers only but now it is offered to the entire undergraduate student body. The Institute has found the experiment successful and the students have found it a course that stimulates thought and provides an opportunity for self and group evaluation usually not found in a college course.

## Campus Brewins

### Vegas virginal vice

Led by Blackjack Whitlet, the phine phlemingoes joined Troll Club in a gambling party. Typically, everyone lost.

With two minutes to go, Ham Trotter, secret House Shill, cried, "I've got \$45,000." M. Greetch screwed his courage to the sticking point, and dumped his \$10,000 roll on the red. D. Kripping won The Prize with \$3,000.

Another prize was won by Jauswine, who saved his blind date from shame by modestly claiming Polswine's continued loud mention of basketballs as an allusion to Jaswine's athletic prowess.

### Rowdies Raunch and Roll

Le Dans Apache went well, with sound effects by T. Dodge and floor show by Brent Banta and friend. Explanation: Dodge was audibly profane, Banta was not prone to argue.

### Puerile playlet

It was midnite in the Tech Office. On stage: Eds, trolls, beak. Enter Ed Cryball.

Beak: Hey Ed, those two dolls I saw you guys with at Bob's—were they—?

Ed: Yeah. They been to two track meets too.

Beak: Getting any yet?

Ed: Naw. Didn't beat 10.3 all season!

### Blacker boys bleed

To advance science and to make five dollars each, Messrs. Belcher and C. Ball went to donate blood to Bio. Belcher saved his for the snow party, where his date met an old girl friend with short (for a girl) black hair. C. Ball took his blood money and bought his mistress a dozen red, red, red roses for Valentine's Day. He is no longer so destitute, having opened a Lawrence Memorial Museum built around the contents of the Hell alley Kitchenette.

### MAGNITUDE

(Continued from page 3) when in high school, Ron displayed a flare for art. Among his hobbies is special effects photography. In addition to his art, Ron displays a rather sharp and (for me) enjoyable sense of humor which may be encountered in some of the more fantastic Magazine features.

Paul Arram Shoemaker, a sophomore majoring in astronomy, is assistant editor. His contributions to the magazine have thus far included several short stories, some illustrating effects, and a report of a spare

(Continued on page 8)

## Grant offered for grad study in Netherlands

Three fellowships for graduate study in the Netherlands during 1957-8, are being made available to Americans. The awards, offered by the Netherlands government, each carry a cash stipend of 2,500 guilders to cover room and board expenses for the academic year; tuition expenses are waived.

U. S. citizens having a bachelor's degree by the time of departure are eligible. They should have "good academic standing and capacity for independent study."

Successful candidates may study at the Universities of Amsterdam, Leyden, Groningen, Utrecht; Free (Calvinist) University, Roman Catholic University of Nijmegen; Institute of Agriculture, Wageningen; Institute of Technology, Delft; Institute of Commerce and Economics, Rotterdam; Roman Catholic Institute of Commerce and Economics, Tilburg.

Available fields of study include Dutch language and linguistics, Dutch history, Sinology, history of art, archaeology, technical and natural sciences, economics, business administration, and agriculture.

Grantees should have funds to pay their own travel and incidental expenses. They may apply for Fulbright travel grants to cover these costs.



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In addition, you will have the satisfaction which comes from doing important and challenging work. The petroleum industry supplies 60 per cent of the nation's energy requirement; and the continued discovery and development of oil reserves in the nation is vital to our welfare.

Humble interviewing teams will be on the campus on February 27, 1957. Be sure to check with your Placement Bureau for the exact time and place so you can discuss job opportunities; or write directly to:

Head of Personnel  
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# Tech geologists develop new method to find hidden deposits

A new method of prospecting for hidden mineral deposits may result from discoveries made recently by scientists at the California Institute of Technology.

Studying clues left by nature 250 million years ago, they have found that the location of underground ore is indicated by variations in oxygen isotope ratios in surrounding rock.

### Limestone examined

The announcement, made here today from Caltech's Division of Geological Sciences, is based upon reports by staff members who have completed a two-year field and laboratory examination of the Leadville limestone, a sedimentary formation in central Colorado that contains some of the country's richest silver, lead and zinc deposits. The investigators were geologist A. E. J. Engel, geochemist Samuel Epstein and geochemist Robert N. Clayton.

### Purpose of study

Caltech's current study began with a two-fold purpose: 1) to learn more about the physical-chemical properties of the replacement deposits and surrounding halos, and thus more about the formation of the earth's crust, and 2) to see if there was some systematic variation in the chemical make-up of the halos that would point to their hubs of ore. Such a clue would be welcome, for most surface ores are already located and being worked, and the discovery of underground ores is today too often a matter of luck.

A program of field work, supported by the U. S. Geological Survey, was begun in July, 1954, by Dr. Engel. As an experimental model he chose the Leadville limestone, a formation prominent in several sections of Colorado. A part of this formation near the towns of Gilman and Minturn was best for his purpose because it offered the greatest number of known factors: its lead and zinc deposits were well defined they were surrounded by an alteration halo some 200 square miles in area; the geology of the land was well understood.

### Specimens analyzed

Dr. Engel first collected rock specimens containing calcite, dolomite and quartz from the unaltered area around the outside of the halo. He then collected from within the halo, moving in narrowing circles toward its center and finally taking samples from drill cores where the concentration of ores was heaviest.

The next step was to analyze the specimens from the unaltered beds outside the halo to see if they showed any systematic variations in texture, chemical composition or oxygen isotope composition. They showed no variation in texture and no variation in their concentration of elements. Their oxygen isotope composition was uniform and consistent.

Dr. Engel then analyzed the specimens from the alteration halo. Again he found no variations in their texture or their chemical composition, regardless of their proximity to the central ore deposit.

### Valuable tool

What the mass spectrometer showed was that the ratio of

<sup>18</sup>O to <sup>16</sup>O in each sample from the alteration halo varied directly with its distance from the ore deposit. Put another way, the oxygen isotope composition of the halo samples depended upon the extent to which they had been permeated and heated at the time of the original ore intrusion.

### INTERHOUSE SING

(Continued from page 1)

one number, a barbershop quartet ditty titled "She Is More to Be Pitied Than Censured," by William Gray.

After each House had completed its presentation and before the results of the balloting were complete, the audience was entertained by the Glee Club Quartet, Rube Moulton, Ted Oakberg, Joe Lingerfelt and Ron Arps, who sang the Negro spiritual, "Rock-a My Soul" and, "I Was Strolling Through the Park One Day." The Glee Club, under the direction of Olaf Frodsham, then presented "The Broken Melody," by Sibelius, and a traditional work-song, "Jerry."

### "COTILLION"

(Continued from page 1)

and with the limited Teehman's budget in mind, the ASCIT has arranged for sizeable discounts at Preble's Florists, 70 W. Green, and at Dedrick's Tux Shop, 230 So. Lake St. The ASCIT is also providing, free of charge, handsome formal invitations, which may be obtained from Dick Kirk in Dabney, Herb Rauch in Fleming, Dave Leeson in Ricketts, and Dick Stark in Blacker.

Those who plan to dine in the Beverly Hills area the night of the formal will find the following list of fine restaurants helpful:

The Corsican—1312 N. La Brea.

Buplichki—8846 Sunset Blvd. The Castle—828 S. Robertson Dr.

The Beachcomber Cafe—1727 N. McCadden Pl.

The Fox and Hounds—2800 Wilshire Blvd.

Smith Bros. Fish Shanty—8500 Burton Way.

Lawry's Prime Rib—55 N. La Cienega Blvd.

Richlor's—134 N. La Cienega Blvd.

Tail O' the Cock—477 S. La Cienega Blvd.

Stear's—116 N. La Cienega Blvd.

# Charities drive obtains \$3,100

Fleming won the interhouse competition in the recent ASCIT Consolidated Charities Drive by contributing \$930 of the record \$3,100 collected. As a result, they will enjoy a special steak dinner next Monday night when the chosen faculty members will serve as waiters and present after-dinner skits.

By far the largest amount was pledged to the World University Service, which will receive \$500 in addition to the \$1000 advanced to them last November for Hungarian relief. The \$3,100 collected compares very favorably with the \$1,700 collected last year when there was no interhouse competition.

Villa Frascatti—8117 Sunset Blvd.

The Coffee House in the Hilton itself, is also a source of fine food in a congenial atmosphere. As all these restaurants do a booming weekend business, a telephoned reservation is usually necessary to insure seating. For after the dance, Blum's, 317 N. Camden Dr., and The Pig N' Whistle, 9454 Wilshire Blvd., are very nice.

# Students' Day IRE program March fifth

The Los Angeles chapter of the Institute of Radio Engineers will hold its 1957 students' day program on Tuesday, March 5, at the Institute of Aeronautical Sciences Building near the Pan Pacific Auditorium in Los Angeles.

A round of short, informative, talks covering such topics as salaries of electronic engineers, information theory, micro-waves, circuit theory, and electronic computers will be held in the afternoon from 1-5 p.m. After each talk time has been allotted for informal discussions.

The evening program will include a banquet starting about 6 p.m. and a panel discussion on military electronics from 7-9 p.m. The banquet is free for all IRE members.

If you wish to attend, contact Herb Rauch or Luis Soux in Fleming or visit the secretary in the E. E. department office in 210 Throop.

# Sticklers!

WHAT IS THE NOISE IN A BOWLING ALLEY?

IRVING PETERSON. Pin Din  
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MRS. FRANK OLIVER. Lanky Yankee  
U. OF TAMPA

IN POKER, WHAT IS A SHY KITTY?

BLANCHE CHRISTOPHER. Scanty Ants  
DOMINICAN COLLEGE

WHAT IS LUCKIES' FINE TOBACCO? (SEE PARAGRAPH BELOW)

WHAT IS AN ANTEROOM IN AN ENGLISH POLICE STATION?

JERRY EICHLER. Bobby Lobby  
NORTH TEXAS STATE COLL.

WHAT WOULD A SOUTH SEA ISLANDER USE TO WASH WINDOWS?

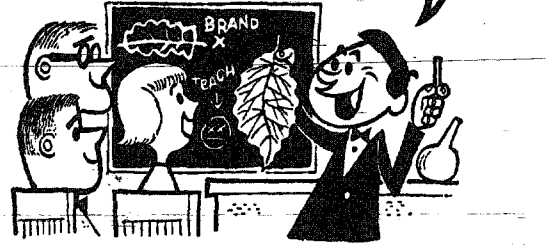
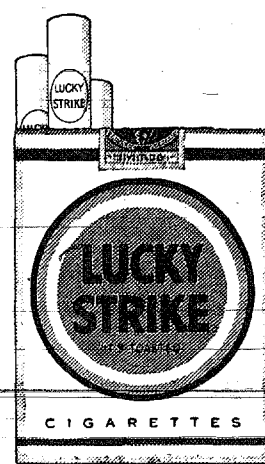
DAVID NOWRY. Fiji Squeegee  
IOWA STATE COLLEGE

FROM WHOM DO SAILORS GET HAIRCUTS?

CARL BRYSON. Harbor Barber  
CLARK UNIVERSITY

WHAT IS A PALE ROMEO?

DOUG MARTIN. Wan Don  
U. OF SOUTHERN CAL.



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# Luckies Taste Better

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# Tech track team wins '57 opener

Coach Bert LaBrucherie's varsity tracksters opened their season Saturday by overpowering Pasadena Nazarene, Cal Poly, and Cal Baptist in a four-way meet at Paddock Field. The Beavers scored 107 1/2 points to Pasadena's 38, while Cal Baptist and Cal Poly trailed with 7 1/2 and 6, respectively.

Dick Van Kirk was high pointman for Caltech, with 141 1/3 points. He was closely followed by Bill McClure with 131 1/3 and Vic Johnson with 12.

Van Kirk took first in the broad jump, tied for first in the high jump, and garnered second place in both hurdle races. McClure picked up his points with a tie for first in the high jump and firsts in the high and low hurdles. Johnson concentrated on the throwing events to score, winning the javelin and shot put and taking third in the discus.

Caltech took first in nine of the fifteen events, with Pasadena Nazarene winning the other six. Performances in the field events were hampered by a mist-soaked field.

Other first place winners for the Beavers were Ron Forbess, 440; Larry Kraus, high jump (tie); Larry Whitlow, discus; and the mile relay team of Forbess, Marty Tangora, Tony Leonard, and Ed Krehbiel.

**SUMMARY:**

Mile: Coulter (PN), Hall (CT), Ramirez (CP), Pederson (CB); 4:32.3.

Shot: Johnson (CT), Pitzer (CT), Horowitz (CT), Wilson (PN); 40 ft. 5 in.

440: Forbess (CT), Tangora

(CT), Harrison (CP), Hall (CB); 52.4.

High jump: Kraus (CT), McClure (CT), and Van Kirk (CT), tie. Hall (CB) and Luenberger, tie; 5 ft. 10 in.

Higs: McClure (CT), Van Kirk (CT), Ingram (CT); 16.1.

Broad jump: Van Kirk (CT), Gastineau (PN), Hansen (CT), Richards (PN); 20 ft. 8 1/4 in.

100: Kidd (PN), Lukesh (CT), Krehbiel (CT), Cleveland (CT); 10.4.

880: Galloway (PN), Leonard (CT), Rusch (CT), Pederson (CB); 1:58.4.

Javelin: Johnson (CT), Luke (CT), Richards (PN), Lewyn (CT); 179 ft. 4 in.

220: Kidd (PN), Krehbiel (CT), Lukesh (CT), Cleveland (CT); 23.0.

Two mile: Coulter (PN), Wulff (CT), Ramirez (CP); 10:09.7.

Pole vault: Lowe (PN), Norton (CT), Herlein (CT); 11 ft. 6 in.

500: McClure (CT), Van Kirk (CT), Ingram (CT), Ownby (CB); 13.8.

Discus: Whitlow (CT), Luke (CT), Johnson (CT), Richards (PN); 117 ft. 9 in.

Relay: Caltech (Forbess, Tangora, Leonard, Krehbiel), Cal Baptist; 3:32.7.

# Caltech closes hoop schedule

Caltech's 1957 basketball season comes to a close Saturday, as the Beavers host Pomona-Claremont in an SCC encounter. In their first meeting this season, the Sagehens grabbed an easy 74-35 win, with Mike Gray, Stu Smithwick, and Ron Zumbun leading the scoring attack.

Saturday's game shapes up as a much closer contest, as the Beavers have discovered a fast-break attack and a sophomore sharpshooter named Fred Newman to greatly increase their scoring total recently. Newman has averaged close to twenty points a game in the last three weeks of play, and Glenn Converse, junior forward, has consistently scored in double figures.

Four seniors play the final game of their college career Saturday. They are Jim Welsh, Jim Workman, Howie Bloomberg, and Herb Rauch.

# Golfers begin practice

The Beaver golf team has hit the Brookside links to sharpen up for its opening match against the University of California at Riverside on March 8. Coach Charlie Swanson, Caltech graduate student, will have the nucleus back from last year's squad which took second place from Oxy in the SCC.

Coach Swanson's top man is hefty Ed Schuster who is rapidly rounding into shape.

Schuster will be backed up by Pete Abbey, Wayne Kregger, Pete Finley and Jack Schmidt, all with previous varsity experience. The sixth man on the team will probably be Kay Sugahara, a newcomer to the Tech team.



Photo by D. Groce  
Jim Welsh, Beaver cage captain, lays one in against Occidental as Glenn Converse moves in to rebound. Note the bleachers in the background showing a typical Caltech attendance.

# Injury to Cormia costs Beaver net squad win over Pomona-Claremont

Pomona-Claremont spoiled the 1957 debut of the Caltech tennis team last Saturday, edging the Beavers 5-4 on the Sagehen courts.

An injury to Frank Cormia, Caltech's number one singles player, forced a default of the first doubles match, which gave the Sagehens the match.

Today the Beavers host East Los Angeles J. C., and on Saturday they resume their conference schedule against Occidental.

Results: Tom Jeter (P) def. Frank Cormia (C), 6-4, 6-2; Vance Israel (P) def. Bernie Mueller (C), 6-0, 7-9, 6-0; Roger Megerth (P) def. Tom Hays (C), 4-6, 6-3, 7-5; Gary Spitzer (P) def. Dave Yount (C), 6-2, 6-2; Bob Tokheim (C) def. Dave Bond (P), 6-1, 7-5; Read Warriner def. Gary Herberger (P), 6-3, 6-4; Cormia-Mueller defaulted; Hays-Yount def. Spitzer-Van Pelt, 6-4, 9-7; Tokheim-Warriner def. Wallerstein-Kobawashi (P), 3-6, 6-1, 6-3.

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# Thinclads face Whittier, Redlands, Tigers at Oxy

by Steve Emanuel

Caltech's varsity track team will face its first real test in a four-way meet with Whittier, Redlands, and Oxy Saturday afternoon at Occidental College. The Oxy Tigers perennially have one of the best small college track teams in the nation. This year is no exception. Backed by Olympian pole vaulter Bob Gutowski, and milers Larry Wray and Ty Hadley, the Tigers figure an easy win despite having to compete against three schools.

The Beavers rolled up 107½ points last Saturday in a four-way meet, but, considering their opponents, it will not have much bearing on this weekend's meet. Tech's main strength lies in the half-mile and, of course, the javelin. It should be only a matter of time before Tony Leonard and Mike Rusch both get below two minutes in the 880. Rusch ran 1:59 in last year's conference meet and should run way below that this year. Vic Johnson, who broke Phil Conley's frosh record last year, figures to place up high in the javelin throw, the Tech specialty. He is backed by Chuck Luke and Lanny Lewyn, both very able throwers.

A problematical entry is Bob Emmerling in the mile. Emmer-

# Newman hot as hoopsters lose

Occidental and Chapman downed the Caltech varsity hoopsters last week, to stretch to five games the Beaver loss streak. Occidental pulled away in the final minutes to hand Caltech a 74-58 loss, and Chapman built up a big first half lead to take an 82-80 win, on Wednesday and Saturday of last week. Both games were held in the victors' gymnasium.

Caltech was in contention throughout the first three quarters of Wednesday's game, trailing by only two points, 47-45, with ten minutes left in the game. Then Occidental scored 15 straight points to sew the game up. Fred Newman scored 24 points for Caltech, while Tiger Ted Tiffany led Oxy with 18.

Chapman, led by Art Bias and Bob Hamblin, pulled to an early 15 point lead and maintained it throughout the game. Bias made several spectacular driving layins to continually confound the Beaver defenses, while Hamblin controlled the rebounds and scored 22 points for Chapman. Bias had 21 points and Newman led Caltech with 18 points.

# The Sports Corner

by Dick Van Kirk

With the basketball season just about over, most Caltech students can breathe a sigh of relief and walk around with a clearer conscience. While it is difficult to find a good alibi for poor attendance at basketball games, it is a commonly known fact that "nobody goes to track meets, or baseball games, or swim meets." It's perfectly logical in many persons' minds that they will not be asked by others to help support the spring sports program with their attendance, merely because of the above reasoning. I certainly hope this attitude is not characteristic of the majority of the student body. With teams capable of winning the conference championship in most spring sports, it would be a shame if most of the students did not get a chance to watch these teams in action. Admittedly, the basketball team's losing record is not conducive to good attendance at these games, in spite of the traditional acceptance of basketball as a "major" sport. However, with most of the spring contests being held in the afternoon, I can see little reason why larger crowds should not be present at these events. At each home baseball game, about 4950 of the 5000 seats in the baseball stadium are empty. I'm not saying that we should try to fill the stadium, but a more sizable Caltech rooting section might make the players feel a little more enthusiastic about playing. The old adrenalin flows a little bit easier when you have that sort of an external stimulus present.

Plug of the week dept. . . . Frosh baseball practice begins Monday. All frosh who are interested are urged to report, as this year's squad has several good prospects due to report. Jack Peterson will coach the 1957 edition of the frosh baseball team. Also, don't forget to try to make it out to the gymnasium to watch the Caltech-Pomona-C Claremont basketball game Saturday night. It's the season finale for the Beavers, and they might just surprise the Sagehens with an upset win. Come out and see for yourself.

ling ran track for Oxy for three years before transferring to Tech. He is undoubtedly one of the finest runners Tech has had in a long time. He has only one year of eligibility left, and is undecided whether to take it this year or next. If he runs this year, he will be a most welcome addition this Saturday.

Of the remaining two teams in the meet, Redlands is far the stronger, paced by Fred Fuller and Dean Smothers. Fuller, a 49 second 440 runner, also holds the Bulldog school record in the 220 low hurdles at 24.2. Smothers leads the field team as a 22-foot broad jumper.

It should be a very close fight for second place between Caltech and Redlands. These two teams will meet again next term on more even grounds in a dual meet.

on campus or off, it's

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by Chester Field

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## A Campus-to-Career Case History



Ken Boekeloo (center foreground) at the scene of a cable installation project in Detroit.

## Ten years along in his telephone career

After graduation in 1947 from Kalamazoo College with a B.A. in Physics and Mathematics, Ken Boekeloo joined Michigan Bell Telephone Company as a trainee.

Today, ten years later, Ken is a Division Plant Superintendent in Detroit. Eight district supervisors report to him, and they supervise some 1700 people. Ken is responsible for the installation and maintenance of plant facilities valued at \$135,000,000 including more than 500,000 telephones.

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"The way the telephone business is growing, you can advance just as fast, and just as far, as you're able. . . . And all along the way, from the student period through each assignment, the training and experience you get really prepare you for advancement.

"If you like to make contributions and take responsibility, and if you value the opportunities a growing business can offer, then the telephone company's the place to look for a career."

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BELL TELEPHONE SYSTEM

LETTERS

(Continued from page 2)

Footnote Number One: Maybe an engineer can only look at things through engineer-eyes, a humanist through humanist-eyes, etc. In which case, everyone is more to be pitied than censured, and the answer is possibly a little more empathy all around.

(Name withheld by request.) February 11, 1957.

EDITOR'S NOTE

Although neither editor is the author of the editorial under discussion, I feel constrained to add a few pertinent remarks.

The question of the phraseology of the editorial is unimportant. Since both the writer of the editorial and the writer of the letter show a healthy concern with results, if it is conceivable that the less ambiguous phraseology of science may aid in the solution of humanistic problems, why must it be discarded for a less effective tool? I might point out, as an example

of such humanistic problem solving through the use of scientific phraseology, the advancements of contemporary literary criticism achieved by utilization of the more precise terminology of psychology.

Nor do I agree that making lists, per se, should be foreign to the humanist. Until the late nineteenth century, humanistic activity was quite properly concerned with the material that is now almost exclusively the domain of science.

Moreover, the editorial did not suggest simply "to increase the number of humanities courses," but contained the subtly different suggestion "to increase the number of required and elective humanities courses." True, the problem is an internal one, requiring the development of new attitudes,

but these are only rarely self-generating. In most cases, a stimulus, such as a well-taught course in modern philosophy, is necessarily prior to the realization of such attitudes. Having been an observer during this process, I have quite a bit of confidence in the value of appropriate humanities courses when presented intelligently.

I doubt that the scientist and the humanist view life in the diametrically opposed manner suggested as a possibility in the footnote of the letter. Outstanding scientists have frequently been outstanding philosophers; Einstein and Schroedinger did not fail to see the philosophical significance of their scientific work. But in any case, "a little more empathy all around" would certainly be a good thing

MAGNITUDE

(Continued from page 4)

time project in mathematics and astronomy.

Other members of CD attending Tech include Bruce Allesina, Ted Bate, Bob Chandos tomorrow, and Gary Schmidt. Some of their names may be seen in future issues.

Two summers ago CD hosted the eighth annual Westercon, West Coast Science Fiction Conference. This coming July, CD will sponsor another Westercon to be held in Hollywood. At that time there will be an art exhibit, a preview of experimental films, some speeches by prominent authors, and other

(as any nomothetic axiological relativist could tell you).

Frank Kofsky

festivities. The 1955 Westercon featured talks by Ray Bradbury, Anthony Boucher, R. S. Richardson (of the Mt. Wilson and Mt. Palomar observatories), and A. E. Van Vogt.

"What they do know..." Editor Stapenhorst says that present subscriptions to Magnitude have practically no bounds. He reports of subscribers in Australia, Canada, England, France, Germany, and Sweden. And now the latest issue of Magnitude is available at the Tech bookstore for ten cents.

The magnitudes plotted in the first three issues have tended towards increasing brightness, but certainly not towards a limit. As implied in the latest issue, in a story called "Reality, Inc.," our desires to shape our reality may triumph occasionally, or may be killed in unusual ways.

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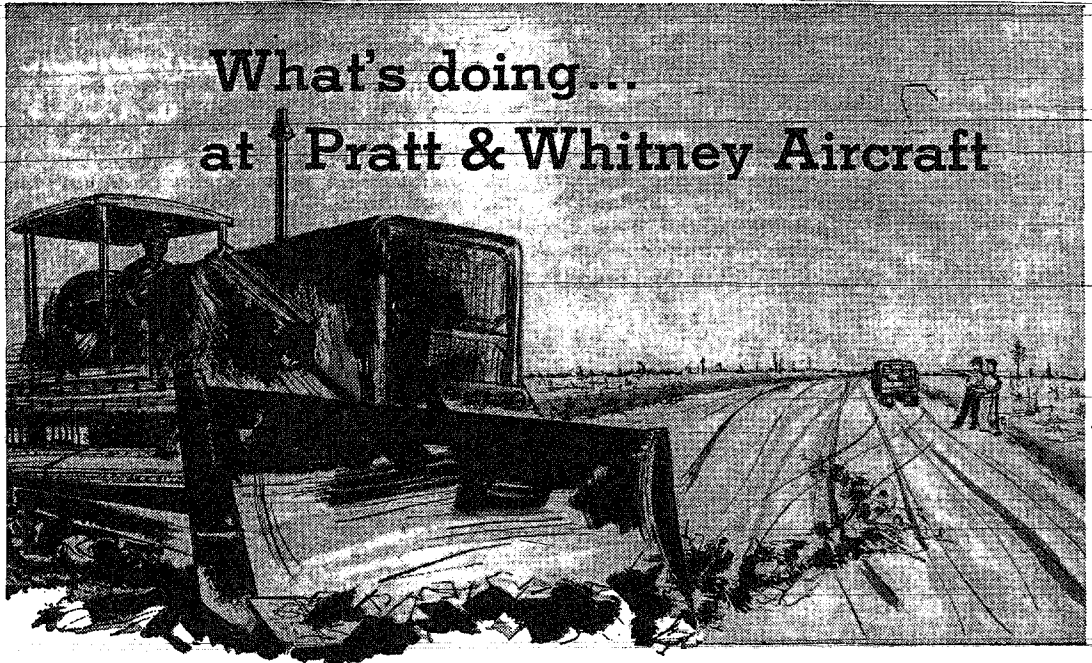
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Here, engineers and scientists will soon be hard at work dealing with new and increasingly complex problems relating to advanced jet aircraft engines. Working in close coordination with men at other P & W establishments - particularly the company's multi-million-dollar Andrew Willgoos Turbine Laboratory in Connecticut -

this newest section of the Pratt & Whitney Aircraft team will face a challenging assignment. They, too, will be concerned with design, testing and development of highly advanced, extremely powerful jet engines which will join a family already including J-57 and J-75 turbojets, currently playing important roles in the growing military and commercial air power of the United States.

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