

China Scholars to Give Seminars on Far East



Elegant costumes, colorful dancing, and soft lighting set the stage for the Chinese Students Association and the Caltech Y's China Night, held last Saturday evening in Beckman Auditorium. —photo by Ctein

Senior Division Champions

Debaters Win Big

St. Louis, Mo., MONDAY — Caltech debaters Bryan Jack and Bruce Seaman walked away with the senior division championship in the fourth annual Gateway Classic Collegiate Debate Tournament, held last Friday and Saturday at the University of Missouri in St. Louis.

The Caltech debaters defeated a team from Washington University of

St. Louis to capture the division title. Coach Wiley Wright's duo took the negative side of the topic, federal wage and price controls, to gain a split decision over Washington's Norman Silber and Kevin Dougherty in the final match. The Caltech debaters finished the meet with seven wins and two losses.

Some 46 teams representing 22 colleges and universities from 10 states took part in the Gateway Classic. The tournament was established by St. Louis University and taken over this year by the University of Missouri-St. Louis when the former institution dropped intercollegiate debate.

Four Houses Vie

for Interhouse

Sing Trophy

by Roger Goodman

The Annual Interhouse Sing competition will take place tomorrow night, February 19, at 7:30 in Beckman Auditorium. Everyone is invited to attend this free event. The master of ceremonies will be Alumni Association Director James Black, and the judges will be Professors Jenjoy LaBelle and James Morgan, and Dean David Wood.

Four of the seven Houses will enter a chorus of at least 12 members, in an attempt to win the trophy now held by Ruddock. Previously, Blacker was victor for six years.

In the small group category, Ruddock will enter both a quartet and a sextet. The third category—random entertainment—has attracted performers of western folk songs, German folk songs, American music, Italian arias, and the harmonica. In addition, the audience will be treated to selections by the Caltech Glee Club while the judges' scores are being tallied.

What is Chinese Society really like today?

What is Mao's goal for China?

What are the trends in science and technology in Communist China?

Does China contain natural resources that the world will need?

Does Chinese youth have any real power since the cultural revolution?

What is the immediate future of Chinese International Relations?

What does the future hold for Taiwan?

These and many more questions will be dealt with in a two-day symposium on Contemporary China, Thursday and Friday, February 18 and 19, in Winnett Center. The Y,

Humanities Division, ASCIT, and the Grad Student Council have joined forces to bring to campus over a dozen China Scholars and China Watchers who are eager to share their experiences, research and opinions with the Caltech community.

Thursday will be devoted to issues of mainland China, its culture, economic and scientific development, etc. On Friday we will turn our attention to international questions like China and the Third World, Taiwan and the Future, Sino-Soviet Relations, and the Military Influence of China in the World. The speakers include Professor Francis Hsu from Northwestern, Loren Fessler of the

American Universities Field Staff, Thomas Robinson, K. C. Yeh, and Mel Gurtov of Rand, Joseph Anderson Shih of Berkeley, Joseph Chen of SFVSC and William Brugger of the Contemporary China Institute in London. Others are Richard Baum of UCLA, Ned Munger of Caltech, Ming Min Peng of Michigan, Stanley Chan of Loyola-LA, Emmanuel Hsu of UCSB, Ross Terrill of Harvard, Louise Bennett of the AFSC, and Edward Martin of the State Department. Sessions are at 12:30, 4:00, 7:00 and 9:00 each day.

In addition, there is a unique opportunity for a number of students to spend Saturday with the

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The CALIFORNIA Tech

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Volume LXXII

Pasadena, California, Thursday, February 18, 1971

Number 18

ASCIT Elections Posponed To Be Held February 26

by Philip Massey

With ASCIT elections Friday, February 26, nominations for only nine offices have been received. Running are: Aaronson (Ru), Chow (Fl), Seita (Pa), and Watkins (LI)—President; Dahmann (LI)—Vice President; Hurn (LI) and Tristano (Pa) Secretary; Matoi (Pa) —Treasurer; Krueger (Pa)—Director of Student Life; Duncan (Pa) and Long (BI)—Director for Academic Affairs; Davis (Da), Kessides (Ru), Luhmann (Fl), Maroani (Pa), Persner (Pa), and Price (Ri) —Directors-at-Large (2); Horn (Pa) —IHC Chairman; McDuff (Ru)—BOC Secretary; and the team of Beckman, Levin, and Neches for Tech Editors.

Carl Imparato is Elections Chairman. Elections will be held in the houses, and in Louise Hood's office in Winnett Student Center. A new By-laws resolution, passed after last year's elections, calls for candidates running unopposed to receive 50% of the votes for election. If this

percentage is not reached, nominations are re-opened for a week for that office, at the end of which time the person takes office if there are no further candidates. If a candidate is running opposed, he needs a 40% plurality to win. ASCIT Candidates have been speaking in the Houses since last Tuesday and will continue until the night before elections.

Nominations deadlines were last

Monday, but there are offices still open, and nominees for these offices will be accepted up to the time of the election. These unapplied-for offices are Social Chairman, Activities Chairman, and Athletic Manager. See any present ASCIT officer (along with \$4) to become nominated.

ASCIT Candidate statements for the *California Tech* must be in by Monday, February 22, at 9:00 p.m.

AC or DC?

Seminar on Smogless Car

Are electric autos feasible? Can older cars be switched to low pollution fuel? What are the implications of the 1970 intercollegiate Clean Air Car Race? These and other topics will fuel a public meeting on "Everybody's Goal — A smogless Car" to be held next Tuesday at 7:30 p.m. in 22 Gates. The program is a part of "Engineers' Week," held under the auspices of the Institute for the Advancement of Engineering.

Dr. Robert H. Cannon, Jr., assistant transportation secretary for advanced systems development and technology, U.S. Department of Transportation, will be chairman of the colloquium.

Other participants and their topics:

Mahlon Easterling, Caltech visiting professor of applied science, "The 1970 Clean Air Car Race — Purpose and Results."

Michael Lineberry, graduate student in engineering science and captain of Caltech's 1970 Clean Air Car Race teams, "Caltech's Entry in the Clean Air Car Race."

Wally Rippel, Caltech graduate student in chemical engineering, and winner of the 1968 transcontinental electric car race, "Will Electric Cars Ever be Feasible?"

Professor Lester Lees, director of Caltech's new Environmental Quality Laboratory and professor of environmental engineering and aeronautics, "Suppose We Switch the

Older Cars to a Low Pollution Fuel."

A question and answer period will follow the talks. One of the two clean air cars that carried Caltech's colors in the 1970 cross-country race will be on display outside the lecture hall.

News Briefs

Admissions Committee Seeks Student Help

Any students who are planning to be at home during the spring break and would like to assist in interviewing freshman applicants in their area are urged to leave their name at the Admissions Office. Faculty members of the Admissions Committee will be interviewing chiefly during the weeks of March 15 and 22. While the committee can not guarantee employment, it would appreciate the opportunity of drawing on undergraduate help.

Math Research Prize Still Up For Grabs

Any math troll interested in winning a \$150 math prize would be well advised to see a mathematics department faculty member. The E. T. Bell Undergraduate Mathematics Research Prize is awarded for the best original mathematics paper written by a Caltech junior or senior.

Continued on Page Eight

Academic Exchanges OK To A Begin Next Year

by Phil Neches

Starting next academic year, Caltech students will be able to arrange to spend between a term and a year at any of several liberal arts colleges. To date, Williams, Antioch, Oberlin, Pomona, and Swarthmore College have joined Caltech in this informal exchange program which requires only the approval of the appropriate dean (in our case, Dr. Huttenback), dispensing with the customary paperwork and red tape involved in a formal transfer.

Dr. Huttenback stated that the plan will operate with "a minimum of administration." This means that responsibility for such things as transfer of credits from the visited school to Caltech and payment of fees at the visited school will be the responsibility of the individual student. Arrangements for transfer

of fees, for example, would involve the sort of red tape which this plan seeks to avoid, Dr. Huttenback indicated.

Good Standing Only

This opportunity to take classes elsewhere will be open only to students in good academic standing (that is, "not flunking out"). Caltech students would be able to take (or audit) any course at the schools they visit.

Since most of the colleges involved in the exchange program are on the semester system, a one year visit would be both the minimum and maximum. (The program allows visiting another college for not more than one year).

Different Goals

Each of the colleges involved in the program has somewhat different goals. Swarthmore, for example,

Continued on Page Three

Throop Beat

Throop To Fall?

by millikan troll

The powers that be in Throop and OCA (Office of the Campus Architect) should shortly arrive at a decision on the fate of the oldest building on campus, Throop Hall. Several courses of action are being considered. First, a major amount of money could be invested in adding shear walls to Throop, buttressing it up from the inside. Secondly, the building could simply be abandoned as soon as executive office space can be made available elsewhere on campus.

Rumors that the dome might be removed are being downplayed, since such a move would be very expensive and would not solve the problem (Christmas tree trolls take heart).

Happily, Throop survived last Tuesday's shake-fest with no structural damage. Cosmetic damage is another story, however. Most offices on the first and second floors sport cracks and patches where plaster used to be.

Study Abroad?

Several avenues of providing for Caltech students who wish to study abroad are being explored. One would be to make use of overseas campuses associated with Occidental College, with which we are associated. They have campuses in Germany, France, and Japan.

Another tack would be to take advantage of Caltech's membership in the American Universities Field Staff, which operates summer courses in Rome and Singapore. The Rome program would include airfare, room and board, and tuition for about a kilobuck (similar details for the Singapore program are as yet unavailable). The courses would include "art, cultural courses, language, and stuff."

EQL Grant

The proposal for a NSF (National Science Foundation) grant by the

EQL (Environmental Quality Laboratory) remains pending before RANN (Research Applicable to National Need), a part of NSF. RANN replaces IRPOS (Interdisciplinary Research related to Problems of Our Society) as the branch of NSF which deals with this sort of thing. CIT sources expressed optimism about the chances for obtaining the grant. (PS: Where would we be without acronyms?)

Overheard on radio last Tuesday: "... the earthquake was so severe that it broke the Richter Scale at Caltech." ... "The time is 6:15 a.m. The water temperature here at Civic Center is 58 degrees." ...

This week's Etaoin Shrdlu Award goes to the 22 people who are running for ASCIT offices, and to the 699 who aren't.

Proposition 18

Opponents of Proposition 18, the controversial gasoline tax revenue-sharing amendment defeated in last November's election, outspent proponents of the measure by about 22 to 1 according to figures released by Ed Brown, Jr., California's Secretary of State. The opponents, calling themselves "Californians Against the Street and Road Tax Trap" spent \$348,785, while supporters of the measure spent \$15,275.

Contributors to the campaign against Proposition 18 were:

So. Calif. Auto Club	\$13,000
Calif. State Auto Ass'n	11,000
Auto Club of So. Calif.	9,000
Texaco Inc.	20,000
Standard Oil of Calif.	75,000
Shell Oil Co.	50,000
Union Oil of Calif.	20,000
Sun Oil Co.	2,000
Douglass Oil	5,000
Phillips Oil	15,000
Humble Oil	12,000
Standard Oil of Indiana	5,000
Getty Oil Co.	5,000
Marathon Oil Co.	1,000
Mobil Oil Co.	30,000
Gulf Oil Co.	20,000
Int'l Union of Operating Engineers - San Francisco	2,500
Int'l Union of Operating Engineers - Los Angeles	1,000
Interinsurance Bureau	10,000
Interinsurance Bureau - S.F.	2,000
San Diego Rock Products	5,000
So. Cal. Rock Product Ass'n	2,500
Calif. Asphalt	1,000
Calif. Trucking Ass'n	1,000
Highway-Heavy Chapter EGCA	1,000
Boise Cascade Corp.	1,000
Sully Miller Co.	15,000
Custom Farm Service	2,000
Miscellaneous	6,785
TOTAL	\$348,785

Information from the office of the Secretary of State [Edmund G. Brown, Jr.]

Visiting Seminar

Talk on God

by the Y People

"There's an apocalypse happening... If you graph on a log-log scale the speed man has been able to travel vs. year of time passed, there is a super-exponential slope change. The value c, the speed of light, falls in the mid-eighties. So we are reminded by Adrian Melott, a physics graduate who is currently studying at Starr King School of Theology. Adrian, along with 12 other seminary students will be visiting campus next week (February 22-26) under the auspices of a program of the Caltech Y.

The variety of views expressed by the visiting seminar is indicated some of their responses to our question "What is your God Like?" Eric Behrens feels that "He's not 'my' God. Too many people think that God is more or less what an individual thinks He is. Actually God has a very real existence apart from our thoughts which He has revealed in Jesus Christ. I do not believe in a God that man creates. Unless He reveals Himself to us in His own unique Being, he's not God; to call Him 'your' God reduces Him to an anthropomorphic projection: He becomes a meaningless visualization of what anyone wants Him to be.

I believe that He revealed Himself by becoming incarnate in Jesus Christ. To know what God is like, read the Bible, the eyewitness account of those who were there when He assumed human form and of those who encountered Him working in history."

In contrast, Eric Bond tells us that "My God is very much like yours only he lives in a big house down at the end of the street. He gets along well with the mailman on our block who happens to be a hippie. I used to rake God's lawn - he pays fairly and always knows a few funny new stories-but his son came out from Des Moines about three weeks ago (where he is studying biochem), and lately he has been raking the leaves on God's lawn. Oh yes, God drives a '62 Pontiac coupe, hardtop, white-walls."

The seminar will be living-in at the student houses as well as at the Community House on Holliston. In addition to being available for unlimited bull sessions, they will present drop-in seminars at Winnett on Tuesday, Wednesday and Thursday. **Continued on Page Eight**

Ed Hedgcock

Rebuts Handte

In an article in the February 11th edition of the *Tech*, Malcolm Handte suggests that a direct "tax on people" might reduce the rate of population growth or favorably alter its pattern.

Unfortunately, Handte is vague on the nature of his tax. In a parenthetic comment, he considers an annual head tax of \$500 and remarks that such a tax would provide as much revenue as the federal income tax now provides. I assume that this is roughly the type of tax Handte has in mind and that Handte intends that the parents of minors be held responsible for their children's taxes. Handte believes that the graduated income tax, and, in particular, personal exemptions, contribute to overpopulation. Presumably, Handte would alter the federal income tax in such a way as to make it compatible with the spirit and the revenues of his new tax.

Handte is attempting to alter the pattern of reproduction by changing the tax structure. By levying a regressive tax, he hopes to limit family size, especially in "lower socio-economic groups." The direct effect of Handte's head tax is to raise the fixed costs of living by the amount of his tax. The tax would supplement the already unavoidable costs of food, housing, and medical care. Presumably financial pressures would make current family sizes undesirable, if not insupportable, at least for the less affluent. Handte errs in assuming, however, that these pressures would force the desired changes in reproduction. Equally, he underestimates the social costs of such a policy.

In order for Handte's tax to influence a couple's decision to have children, they must recognize the financial burden an additional child would place on them, and have access to contraception or abortion. Unfortunately, for many of the groups that Handte is concerned with, such is not the case. Among the relatively poor, financial deprivation is seldom the limiting factor in determining family size. If the burdens of supporting a family are anticipated, the alternatives are either not understood or not available. Among the moderately wealthy, individual preference, and **Continued on Page Six**

Communal Living

Theory and Practice

by Dennis Dibartolomeo and Christopher Goldstein

Within the past few months there has been an intensified interest in communal living in this country, particularly among the younger segment of the population. Students here at Caltech have also been involved in this upsurge of interest and probably have equal to, or more questions, than the average student or ex-student.

One of the first questions asked is "What is the difference between communal living and just living off campus with a bunch of other Techers to conserve money?" The answer is that living together off campus is the absolute minimum beginning of what could be a "communal experience."

Greater Commitment

Though one can only speak in general, the difference is that there is a much greater commitment on the part of the individuals who would participate in communal living. Living together off campus generally requires agreement to share expenses, to be honest, and to show some minimal consideration for one's roommates. The commitment of those in a commune would go much deeper - a personal concern for the needs and happiness of one's comrades, as well as the basic considerations of economic existence. This does not mean everybody has an emotional obsession with everyone else; it does mean that all must try to keep a unifying good feeling within the group. Disagreements between specific members of the unit would be smoothed, and, hopefully, worked out by the unit as a whole.

It is indeed hard, if not impossible, to qualify the experience of communal living with words. Those who have had a true communal experience can attest to this without exception. To bring the real experience to interested persons at Caltech, a number of students are initiating a three-fold investigation of communal living with the help of the YMCA. All who are interested are heartily invited to attend the meetings which take place every Wednesday at 2:00 p.m. in the Y Lounge.

Theory and Practice
We are planning to bring a **Continued on Page Four**

Notice to ASCIT Candidates:

Statements for publication in next week's issue of the *California Tech* are now due on Monday, February 22, by 9:00 p.m. in the *Tech* office in Winnett Center. Copy should be typewritten and double spaced. Under no circumstances can we accept late or handwritten copy.

-The Editors

ASCIT MOVIE:

A FISTFULL OF DOLLARS

with Clint Eastwood

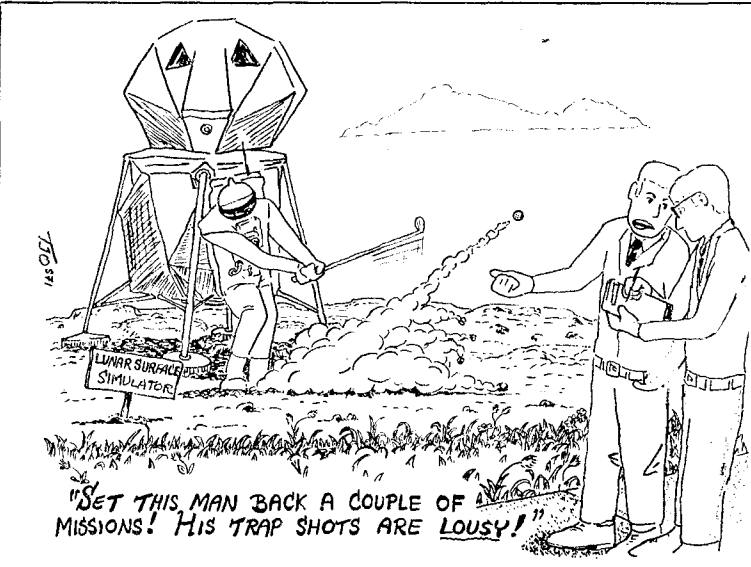
FRIDAY: 7:30 p.m. and 9:45 p.m.

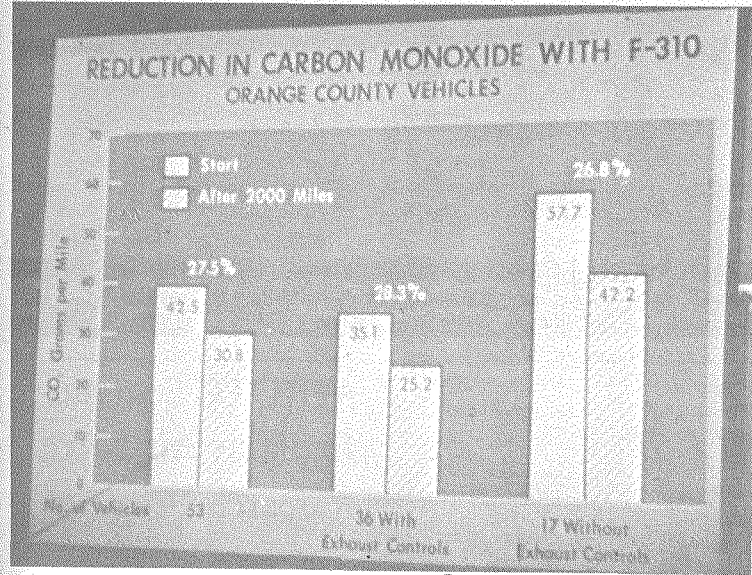
22 GATES

Admission 50c

Next:

How I Won the War





F-310 Controversy Aired

by John Tristano

Dr. Barusch of the Chevron Research Company gave a speech on the history and development of F-310 at the Chemistry and Society seminar last Thursday. F-310 is the controversial gasoline additive that allegedly cuts air pollution significantly.

Dr. Barusch stated that Standard Oil originally initiated the research that led to the development of F-310 to try to eliminate the lead buildup in the engine valves. When valves have large lead buildups, lower gas mileage, occasional engine damage, and poorer combustion leading to more air pollution is the result.

When this additive was finally ready to market, the company was faced with a public demanding cleaner air, not valves. So the research group hired Scott Laboratories to test their gasoline containing F-310 against the worst polluting gasoline on the market.

Exchanges

Continued from Page One

seems especially interested in balancing its liberal arts student body with some science and engineering students. Pomona College has requested more formalities, including having a transcript sent in addition to the dean's recommendation.

MIT may join the informal exchange program later in the year. Exchanges with MIT will not, however, be possible right at the start of the year, barring any unforeseen developments.

Any students interested in spending some time at another college should see Dr. Huttenback both for more information and to apply.

GUITAR INSTRUCTION

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The result was that the gas with F-310 decreased emissions significantly. The company then conducted another test in the Pasadena area, randomly picking an assortment of autos whose owners did not use Standard gas already. The results of this test showed an average drop of 13.9% in hydrocarbon emissions. It also showed a gain in mileage of about 8%.

A question and answer period followed. When asked about allegedly misleading advertising practices employed by Standard Oil, in particular those starring Scott Carpenter, Dr. Barusch justified them by saying, "Most advertisements are gross exaggerations and these are not as flagrant as some of those on TV."

He also stated that Standard Oil supports large-scale public transportation. They did not support Proposition 18 because it diverted money away from highways. (Standard Oil donated \$75,000 to the defeating of the bill, the largest donation made).

China

Continued from Page One

guest speakers in an unstructured conference discussion up in the Angeles Forest at a comfortable conference site. Anyone interested in this conference should call the Y office immediately.

Check with the Y for further details on the Symposium and Conference.

a film by FRANCOIS TRUFFAUT

"the wild child"

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Beckman on Beckman

Jokipii Disputes Millikan

by Peter Beckman

Professor J. R. Jokipii told how even Nobel winning physicists are occasionally wrong when he spoke on "The Life History of a Cosmic Ray," at Beckman Auditorium Monday night.

He was referring to Caltech's own Robert A. Millikan who believed that cosmic rays were hard gamma rays. Today physicists know that this is not the case; cosmic rays are extremely energetic particles that travel at velocities close to the speed of light.

These rays cannot be created by normal stellar processes; instead, most scientists now agree that they are created by the titanic stellar explosions known as supernovas. These occur, on the average, every hundred years. As a sun explodes it hurls protons, electrons, and nuclei away at tremendous velocities.

Biblical Literature Anyone?

Interesting Courses Offered

by millikan troll

Registration for third term is now upon us. Undergrads will shortly (if they haven't already) receive the official course schedules and milieu of IBM cards which accompany preregistration.

Three changes should be noted which are not included in the schedule of classes. PS 115 (Seminar on National Security) with Dr. Elliot will not be offered next term, nor will Ma 226b (Ring Theory) with Drs. Crawley and Wales. A new course will survey educational problems and their possible solutions. (See the article on it elsewhere in this issue)

For the benefit of our readers, especially freshmen, we offer a list of some interesting courses available next term:

AY 2 *Current Problems in Astronomy* (3-0-6) - A seminar providing an opportunity to study individual topics in astronomy, radio astronomy, and solar and space physics. Physics 1 is a prerequisite. Instructor: Dr. Zirin.

AY 15 *Introduction to Radio Astronomy* (3-0-6) - Dr. Cohen - Primarily aimed at juniors and seniors who are not astronomy majors, this course will deal with

Zap, Kbang, Twang

These particles travel randomly across the galaxy along the lines of magnetic force creating a most tenuous of gasses that permeates the entire galaxy. The radiation pressure of these particles helps keep the galaxy from collapsing towards its center according to some scientists.

As the particles travel they emit radio waves; this is the background radiation that is picked up by radiotelescopes. Eventually, after bouncing around the galaxy for a few million years, most cosmic rays manage to escape into intergalactic space. This loss of cosmic rays is made up of the new cosmic rays that are formed by the supernovas.

Up, Up, and Away

Very few cosmic rays enter the solar system because they are repelled by the solar wind. Of those that do enter only an infinitesimal fraction strike the earth. When a

cosmic ray strikes the atmosphere it splits into secondary rays. These secondary rays ionize the gas through which they travel and create radioactive isotopes such as Carbon 14. In fact, cosmic rays are the primary ionizing agents in the atmosphere.

Cosmic rays were first discovered about 60 years ago by Victor Hess, a German physicist, and they have been the objects ever since. Where Millikan and his contemporaries used gas balloons to study the rays in the upper atmosphere, today's scientists use Mariner probes to gather information about them in space. The study of cosmic rays has gone a long ways, but it will continue for a long time to come.

Next Monday at 8:30 p.m. Professor Roger W. Sperry will speak at Beckman Auditorium on "Mental Specialization in the Cerebral Hemispheres of Man."

radio emissions from the sun, planets, interstellar gas, supernovae remnants, and quasi-stellar radio sources. For prerequisites, consult the instructor.

BI 3 *Biology and Social Problems* (2-0-4) - Dr. Sinsheimer - His topics may include such diverse matters as over-population, genetic engineering, distribution of limited medical resources, environmental pollution, biological warfare, and the ethics of human medical research.

ChE 10 *Chemical Engineering Systems* (3-3-3) - Dr. Shair - The principles of engineering, chemistry, and economics and their relationship to the needs of society are studied by means of topics like artificial kidneys, air pollution, saline water recovery, and fixation of nitrogen.

EE 5 *Introduction to Linear Electronics* (2-0-4) - A.C. circuit analysis, networks and their characterization in time and frequency

domains, amplifiers, gain, frequency response, and the use of operational amplifiers to synthesize output functions of input voltages provide the grist for this course, an expanded version of the last three weeks of last year's version of EE 4. This course is being offered by the first time anywhere, and features Dr. C. A. Mead at the blackboard.

EN 11 *Literature of the Bible* (3-0-6) - Dr. Hallet Smith - The Old and New Testaments and the Apocrypha are treated for their literary interest. The history of the English Bible, with attention to newer translations, is reviewed. Reading may include modern fiction, poetry, and drama dealing with biblical subjects. English 7 is a prerequisite.

Env 1 *Engineering Problems of Man's Environment* (3-0-6) - Dr. Brooks - Man's physical environment includes air, water, and land, all of which are vital for survival as well as for esthetic enjoyment. This course, by selected case studies.

Continued on Page Four

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Commune

Continued from Page Two

number of persons who are now or have in the past been involved in one or more aspects of communal living. This will include a Hopi Indian, a psychologist now living in a commune near Stanford University (which facilitates various encounter groups), and possibly a member of the Synanon community of Los Angeles.

The second part of the program, now being developed, is a week-long communal experience in the Angeles National Forest north of L.A. We hope to build large plywood hemispheres in the wilderness to house about 20 people. This will take place during Caltech's spring break, and, though we know it is not entirely possible to develop a true sense of community by this experiment, we are hoping the participants will get together beforehand to work out some scheduled activities which may make up for this shortcoming.

Practice

The final part of the program consists of an actual commune, starting third term, in or near Pasadena. This will be for approximately 15 to 20 persons, depending on what type of housing can be found. The living group will be coed and will incorporate non-Caltech students, possibly from PCC or Oxy.

If you are interested in one or more of these activities, please drop by the YMCA and leave your name.

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Courses

Continued from Page Three

explores the ways in which man is adversely changing his environment, how these changes are adversely affecting him and other forms of life, and methods of engineering control. Typical problems will include air and water pollution, solid and industrial wastes, harmful trace elements, thermal pollution, and land erosion.

IS 10 *Introduction to the Use of Computers (1-2-3)* — Dr. McCann — Provides one "culture" lecture a week on such topics as computer operating systems, machine languages, and computer modeling of a living system, and experience in solving problems on the computer.

PI 8 *An Introduction to Social Psychology (3-0-6)* — Dr. Nancy Beakel offers this course, which isn't even in the catalog. That just goes to show you ...

The Critical Ear

Different Strokes; Various Artists, Columbia AS 12

This is the Whitman Sampler of Columbia/Epic pop groups. Nineteen artists are represented. While I don't think the cuts are necessarily the best or most representative for some of the artists, 57-plus minutes of music for \$.99 isn't too bad. This album seems to be part of a new Columbia promotion scheme aimed at letting you try before you buy. They also have included records with magazine ads, and they are starting a program where they send ten sample records for \$3.00 (details in Different Strokes). It's nice to get some replacement for the listening room in the record shop.

Full Tilt Boogie; Janis Joplin, Columbia KC 30322

A great album. Janis was not easy to record, but this album is a complete success.

—James Henry

NEW GENERATION by The Chambers Brothers

New Generation is an example of the great versatility in the style of The Chambers Brothers. There are some really fine cuts on this album. "Practice What You Preach" is performed in a style somewhat similar to that of Sly and The Family Stone. "Pollution" is styled after Edwin Starr's "War." "New Generation," the title song, is in a

style similar to their own hit "Time." The rest of the songs are done with varying degrees of Latin Soul.



Smogless Cars

Continued from Page One

The meeting will be opened by Dr. Francis Clauser, chairman of Caltech's Division of Engineering and Applied Science. The program was arranged by a Caltech Engineers Week committee, headed by Dr. Rolf Sabersky, professor of mechanical engineering.

AFROTC Seminar Explains Air Force Research Program

On Wednesday, February 10, in the Noyes lecture hall, Lt. David A. Rice of the Advanced Metallurgical Studies Branch, Air Force Materials Laboratory, conducted a seminar presentation about the current research opportunities available in the United States Air Force. In attendance at the seminar were the cadets of the local AFROTC detachment and other interested students and faculty from the Caltech community.

The Air Force Materials Laboratory is under the auspices of the Systems Command of the USAF, the command which is responsible for advancing aerospace technology and applying it to operational systems. Although the Systems Command has fewer personnel than any of the other major commands, its budget is by far the largest. Therefore the selection of officers into the Systems Command is based upon high degrees of professional competence. For instance, Lt. Rice possesses two bachelor degrees from the University of Michigan, in ME and metallurgy, a master's degree from Michigan in metallurgy, and a PhD from the Colorado School of Mines. Before entering into active duty, Lt. Rice spent a year as a research engineer for the Zinc Smelting Division of St. Joe Minerals Corporation. Lt. Rice's primary responsibilities have been in

Continued on Page Seven

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Population

Continued from Page Two
not finance, fixes family size. Who will Handte's tax influence? Essentially that segment of the middle class who presently plan their families largely on economic considerations. This may, in fact, be a significant part of the population but I believe that these individuals can be approached more directly and through programs with less disastrous social consequences.

Handte's tax, would shift the tax burden downward onto the less affluent. Admittedly, those who were farsighted enough to restrict their family size might escape with something like today's taxes and maintain a comparable standard of living. Those who were not farsighted would suffer changes in the quality of life. In particular, the number of families who grow

beyond their means might increase. Families living near subsistence levels would be particularly prone to appreciate Handte's tax only belatedly.

The problem with Malcolm Handte's proposal is its fatal indirectness. He wishes to use a negative tax incentive, in particular a head tax, to limit reproduction. The tax carries with it social implications beyond encouraging couples to plan smaller families. Among the poor, the tax might contribute to social disintegration. Its regressive character threatens to lower the standard of living for all but the very affluent. Many parents would choose a compromise between the quality of their families only to be dissatisfied on both accounts.

What are more direct alternatives? Although the idea of influencing individuals through education has been abused and often reduced to cliché in this democracy, it still is a tool for social change. Potential parents can learn that the quality of a family, material welfare aside, is not determined by mere size. Understanding that their personal actions shape and are shaped by man's total milieu, people will accept family planning. In a nation of 200,000 it may seem Pollyannish to talk of persuading individuals. Indeed, with respect to environmental pollution, racial discrimination, and inexcusable military ventures, we cannot rely on such an approach. But in matters as individual, yet collective, as having children, I think a series of individual ententes, however many are required, is a proper goal.

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Swim Team Ends Home Season With Win Over Pomona

by Bob Kieckhefer

Last Friday the swimming team ended its home season with a gratifying 71-42 win over Pomona College. Techers won ten of the eleven individual events, and in many close races the superior conditioning of the home team paid off.

The meet started badly as Caltech's medley relay team was disqualified by a new rule introduced this season. Bob Coleman turned the tide, however, as he won the 1000-yard freestyle with a time just nine seconds shy of the Caltech record. Bob Harmon came from behind to capture third place in the 1000 by 2.4 seconds.

Easy Victory

This race was followed by Tim Hight's easy victory in the 200-yard freestyle. Next, Bob Miller returned to the swimming team to win the 50-yard freestyle. Coach Lawlor Reck wishes to thank the Page House track team for shaving a half-second off Miller's best time before the Interhouse track season.

Jim Jakway won the 200-yard individual medley in another close race as he beat his Pomona opponent by 0.6 seconds. This gave Tech a 22-21 lead before the diving events—a lead they never relinquished. Greg Beall and Alan Rice widened the lead with firsts and seconds in both diving events.

Bob Coleman and Bob Hall gave Tech eight more points as they finished one-two in the 200-yard butterfly. Pomona's top sprinter finally broke the string of Tech victories as he edged Bob Miller in the 100-yard freestyle by 2.2 seconds. Bob Coleman next won his third race of the day in the 200-yard backstroke, and Lou Fielder clinched the Tech victory with a come-from-behind effort to finish second.

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Finest Moment

Pomona Shafts Beavers 49-48

by John Tristano

The Caltech Varsity Basketball team enjoyed some of its finest moments during the past week.

On Wednesday they defeated Redlands in a league game. The game was of special interest because the two teams each had won one previous league game, and if the Beavers could pull off the victory they would have their best record since 1963 the year they beat Claremont twice.

The game started off with both teams playing about even, exchanging baskets throughout the half. The half ended with Redlands leading by two, 42-40. The second half started slow with the scoring even, but sporadic. Suddenly the Beavers caught fire hitting several shots in a row while fighting off a Redlands drive. The Beavers pulled

ahead to stay with the team and fans jubilant at the final buzzer. They had done it, they had removed themselves from the basement for the first time in eight years.

Close, But

On Friday an enthusiastic Beaver team took the court against Pomona. The entire first half was almost even; the point difference was usually no more than 5. The half ended with the Beavers down by 4.

When the second half started Tech controlled the opening tap. Gaining both the lead and the ball with 11 minutes left, they tried to force Pomona out of its zone defense in a slightly comical two minute stalling move. Pomona loosened its defenses slightly and the Beavers hit an open man under the basket to take a three point

lead.

Pomona called timeout and switched its defense slightly. They got a couple of missed shots by Tech and managed to work back up to a one point lead. The Beavers were not to be denied, however, and with 10 seconds left took the lead again 48-47.

Pomona called timeout to decide who would take that all important shot. They chose the shooting star of their first game, who hooked a shot from 10 feet with 2 seconds left and missed. Suddenly a Pomona player managed to get the rebound, a stunt that they were not doing very often, shot at the buzzer and hit. The Beavers suddenly fell in defeat after coming within a microsecond of their third league victory and their best record for over a decade.

Pressure Relaxed

With the pressure relaxed, Tim Hight easily won the 500-yard freestyle as Steve Bitondo lost his bid for second by 0.8 seconds. In the last individual event, Max Kay won an easy first in the 200-yard freestyle relay, Tech's "all-stars" almost scored an upset victory, but Pomona's top sprinter pulled ahead of the Techers on the last lap.

After a meet at Santa Ana J. C. yesterday, a well-rested team will invade Redlands tomorrow. Coach Reck and his statisticians predict that the Techers will score between 54 and 62 points, with 57 needed for victory in what should be a very tension-filled meet.

Track Team Opens Season With Relays at Pomona

by Martin T. Smith

The Caltech track team opens its season this Saturday at the S.C.I.A.C. Relays at Pomona College in Claremont. This weekend the competition centers mainly on relay events and field events which involve three-man teams. Caltech should be strong in the long jump, the javelin, and should have strong teams in the 4 times one mile and the 4 times 440 yards relays.

The team is banking on good performance from returning lettermen in most of the track events. Among them is sprinter and long jumper Gary Stormo, present holder of the Goldworthy Track Trophy. Charles Almquist ran very well last year in the quarter-mile. Also

hoping to provide many points are middle distance runner Tim Tardiff and distance runners Ratch Higgins and Martin Smith. Returning lettermen in the weight events are javelin thrower Charles Thoeli and discus thrower-shot putter Theagenis Abatzoglou.

Coach LaBrucherie is surely glad to have Steve Watkins, a strong quarter-miler, returning after a leave of absence. Also Stu Sando, four-time interhouse hurdles champion, is trying intercollegiate competition at last.

Additional aid is expected from a strong group of freshmen. Outstanding among them are Haywood Robinson in the sprints and Al Kleinsasser in middle distance events.

$(e^{at})' = a e^{at}$

AFROTC Program

Continued from Page Four

establishing a program for producing composite materials from liquid alloys by controlled solidification. In addition to this research he is currently monitoring three contracts on metal-matrix composite technology.

During his presentation Lt. Rice described many of the other research activities at the Materials Laboratory. One of the most interesting topics involved the production of new, extremely magnetic alloys. An Alnico 5 magnet weighing 20 ounces was capable of lifting a 4 lb. weight, Lt. Rice demonstrated. But a samarium-cobalt alloy magnet of only 3 ounces lifted a full twenty pounds. Furthermore, Rice described in more detail the art of directional solidification techniques using electron beam zone refining. Here temperature gradients as high

as 300 degrees centigrade per centimeter have been reached although this technology is still rather primitive.

During the presentation Lt. Rice gave convincing evidence of the unmatched research opportunities available in the USAF; For instance, at the Materials Laboratory is Lt. Tim Surratt who last year was a Tech grad student, now involved in research very similar to the work he was doing last year at Caltech. Lt. Surratt has extended an open invitation to all those interested in research and the Air Force to contact him at the Air Force Materials Laboratory in order to obtain first-hand knowledge of the opportunities and benefits of being an Air Force officer. His address may be obtained from the AFROTC detachment headquarters next to the coffeehouse.

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News Briefs

Delbrück on Homo Scietificus

Continued from Page One

Delbrück to Give Chemistry and Society Seminar

Dr. Max Delbrück, Professor of Biology, will offer some thoughts on basic research at 4:00 p.m. on Wednesday, February 24 in Room 22 Gates for the Chemistry and Society Seminar Series. His title for the session is "*Homo scietificus* according to Beckett."

Violinist Itzhak Perlman To Perform At Beckman

Itzhak Perlman, a brilliant Israeli-born violinist will be heard in Beckman this Saturday at 8:30 p.m. The program will include works by Tartini, Brahms, Ives, Paganini and Sarasate. Tickets are still available at the Caltech Ticket Office.

Amateur Radio Club Schedules Important Meeting

Next Wednesday at 8:00 p.m. in Clubroom 2 there will be a meeting of the Amateur Radio Club to discuss the purchase of new equipment.

L. A. County Nurses Are Getting Desperate

The nurses and student nurses at the L.A. County Hospital have advised us that they would like Caltech students "to begin to function" by having some exchanges. If you are interested contact Mary Alice, ext. 725 or 727.

Other Cultural Gems Coming To Caltech

Sunday Evening at 8:15 p.m. in Dabney Hall the Di Tullio Trio will perform music by LeClair, Beethoven, Martinu and Haubiel. Believe it or not, this concert is free! At 8:30 p.m. next Thursday Moliere's *Le Misanthrope* will be performed at Beckman in French by Le Centre Dramatique National du Sud-Est, directed by Antoine Bourseiller. The following day Burch Mann's Ballet America will present "Big Country," a work based on American folk lore and folk history.

L. A. Philharmonic Offers Cut-Rate Student Tickets

The Music Center Box Office has announced that for \$2 each students may purchase the best remaining tickets for the L.A. Philharmonic concerts of February 25 and 26 (evening) and February 28 (matinee). These concerts will be at the Dorthy Chandler Pavilion.

ASME Will Show Films, Hold Traffic Seminar

The Caltech section of the American Society of Mechanical Engineers will show films of the construction of arch and cantilever bridges. The films will be shown in Room 4 Thomas at 1:00 p.m. on Tuesday, February 23. Everyone is invited to attend. The section officers extend a special invitation to Professor Housner to attend the

film showing.

The Caltech ASME will sponsor a seminar on "Transportation Planning for Los Angeles" on Tuesday, February 23, at 4:00 p.m. in Room 142 Keck. The speaker will be Mr. G. W. Skiles of the Los Angeles City Department of Traffic. Among the topics to be discussed will be mass transit, the environmental effects of transportation systems, and future transporation conditions in Los Angeles. Everyone is invited to attend.

Visiting Seminararians

Continued from Page Four

day afternoons at 4. Also featured will be discussion/dinners at faculty homes. Prime topics will include: Why would anyone want to go to a seminary in today's world? Why would anyone want to go to Caltech given the same conditions? What is the place of the Church in society? What is the relationship between science and religion?

The participants represent 8 different seminararies and over a dozen undergraduate schools covering both coasts and all points between. Two came from Pasadena's own Fuller Seminary while a third once sold Fuller brushes. A number of our guests have worked in civil rights, poverty programs, open housing, child care, and encounter groups as well as having furnished counseling on marriage, drugs, abortion and other matters of concern.

If you are interested in borrowing a seminarian for an afternoon, having dinner with one in a faculty home, or if you have any questions about this fantastic program, call Jerry Glashagel or Tom Douglas at the Y.



Two lovely stars, Chantal Darget and Christiane Desbois, will appear at Beckman next Thursday at 8:30 p.m. when Moliere's *Le Misanthrope* will be performed in French.

Sign Up Now

PME to be Held April 2,3

by Peter Beckman

The seventh annual Political Military Exercise, or PME as it is commonly known, will beheld Friday and Saturday, April second and third. This year's game will focus on Europe and the Mideast and possible crises that may develop there.

The PME is one of the most complicated and interesting games of world politics ever devised. About 30 teams representing the major powers and the countries of Europe and the Mideast will be involved this year. Each member of each team will impersonate some leader of his country; those representing the heads of government of each country will be team captains, but their authority within the teams will be no greater than that of their counterparts in the real world.

Acts of man . . . and God

Each player will attempt to advance the interests of his country and the person that he is playing in as realistic a manner as possible. This will be done through orders to subordinates who will be represented by the Control Board. This board will reply to the orders with

the answers or actions that it feels these subordinates would give in real life. The Board also acts as a clearinghouse for messages between countries and secret communications.

The Control Board prepares the opening scenario. This will approximate quite closely the world situation today. From time to time random "Acts of God" will occur as they occur in the real world. These will be used as little as possible depending on the realism that the players display in the game.

Croquet anyone?

What are the benefits of the PME? First, it is an enormously fast, enormously enjoyable game that makes jai alai look like croquet. It beats any product of Avalon-Hill in complexity, but it is not a war game. It is a game of international politics where each country must make out as best it can in world situations that are not only possible but probable. This will usually involve peace, not conquest.

The PME also allows the player to discover how he works under pressure and with other people who will disagree with him and may even work against him. In some ways the game resembles an encounter session as each player learns to work with his teammates in crisis situations.

Those interested in taking part in this year's PME are advised to sign-up early in order to get a good place. Applications must be in by March sixth, and forms are available in the YMCA office, Louise Hood's office, and many of the House lounges. The PME is free to Techers, but others must pay a one dollar fee.

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