Gerald Ward (center) confers with firemen after an accident in his lab filled portions of Spalding Laboratory with lethal fumes. Photo by R. Gruner

Who'd Listen To Us? Techers Considers Life Beyond

by Alan Silverstein

In a surveying, elegant approach to the question of extraterrestrial intelligence, Dr. Ber­
nard Oliver, Hewlett-Packard Re­
search and Development Vice Presi­dent and Caltech graduate, presented this season’s first Wat­
son Lecture Monday night at Beckman Auditorium. The topic he discussed: popularized such pop­ular interest that at the sched­
uled 8 p.m. starting time the auditorium was full to capacity and there was a line outside stretching all the way to Gates. No­
theless, Dr. Oliver’s speech was so fascinating that nearly all those present stayed to listen to it on the outside speakers.

The lecture began with a broad overview of the theorized Big-Bang creation of the cosmos. Dr. Oliver emphasized that the­ories on the subject have been changed and expanded significantly in the last few decades and that we are even now uncertain of many of the details. He followed the primordial fireball through stellar precipitation and ignition of the Population II (lighter element) stars, then explained the formation of second genera­tion Population I stars with their accompanying heavy element planets.

Ten Billion Life Sites

Looking at our own solar system as an example Dr. Oliver showed that the field of starts possibly inhabited with what we would recognize as life is nar­rowed considerably upon taking into consideration star type, planet size in relation to volcanic origins of the hydrosphere and lithosphere, and orbital radius, which affects tidal forces and solar wind strength. Locally, only the earth and Venus were fully bio-possible, and only on this planet did green algae convert carbon into oxygen and carbon (the latter being found mostly in limestone today). The primitive atmosphere of methane and ammonia created amino acids, then the replicating proteins, and this created-life reshaped the surface of the planet to the biosphere it is today.

The lecturer spent a good portion of his time laying the preceeding groundwork without directly discussing the possibility of extraterrestrial life. Having done so, however, he then point­ed out that “there isn’t anything (in what I have discussed)...that is peculiar to earth.” Not every star is a good sun, he explained, and not every planet is a good earth, but he estimates there are or were ten billion “life sites” in the universe.

Getting in Touch

Dr. Oliver now began to discus­sing intelligent life in the uni­verse; specifically, whether or not there are other intelligent beings: how to contact them. Here the first and about the only large uncertainty in the problem be­came apparent. It is necessary for inter-species contacts that the two sides be living simulta­neously, but the density of civilized planets depends heavily on the longevity of the typical intelligent species. Dr. Oliver op­timistically put the average life­time of an intelligent species at a billion years, saying that we could consider ourselves a suc­cessful species if we make it that long.

On that basis he estimates that at any given time there are a billion civilizations in the universe; i.e. about one for each year of typical longevity. More.

Continued on Page Three

Beatty parking lot at 9:00 a.m. Cars needed. Sponsored by C.E.A.C.

Take a Seat

Take a Seat on Your Grass

Y Noon Concert today on the plaza, featuring sopha Bill Dower and Jim Brubaker. Bring your own lunch.

Guitar Returns

To Winnett

The Caltech-P.C.C. Newman Community will resume its weekly guitar masses this Sunday night at 7:30 p.m. in Winnett Lounge. All are invited, bring a friend.

Womens’ Sports

The gym will be available Thursday and Thursday nights.

Continued on Page Seven

ASCIIT Compresses

The ASCIT Bod had a pro­foundly significant meeting last Friday. Nominations for secre­tary were opened (sign up on Flor’s door in Winnett), and adjournment was decided upon. Students can rest assured that no action was taken that could possibly take advantage of their $22 per annum investment in this corporation. (The pre­ceding was an undue snide remark.)

Eat Jelly Doughnuts

Starting Thursday, Oct. 24, free doughnuts will appear in Flor’s office in Winnett at 4:15 p.m.

Earn Jelly Money

Two jobs in Winnett Center

Two Shoulderheads

by Shmuel Schmuckputz

Wednesday’s IHC meeting saw a visit from Dan Dyo of the Pasadena YMCA to ask the house presidents to announce to their houses the need for volunteers for the Big Reves program, which provides first- to third­ graders with an older male to compete somewhere for their nonexistent fathers. The program demands only four to six hours a month. Interested persons should get in touch with their pres­i­dents.

Also at that meeting came a consensus of two persons in Ruddock for at least three separate occasions of hard­ass attempts to persuade certain freshmen in other houses to move into Ruddock. In addition, the IHC recommended that next year’s rotation draft work as it did not work for all freshmen, regardless of sex, being placed in the same pool.

The IHC decided to take on the task of trying and punishing those who rip off food service, since the BOC cannot quite deliver enforcement in that area; ripping off food service apparently is not a sufficient enough assault on their image to force other members of the Caltech community. To be discussed at the next meeting is the extension of the IHC’s power with regard to punishments.

The house presidents will this week post expressions of student unhappiness about the cut in Heath Center hours for those with such feelings to sign. These passed on the the administration possible.

showerheads should get them back to Ruddock as soon as possible.

by James Llewellyn

Spalding Laboratory was the scene for a possibly dangerous mishap yesterday evening, Octo­ber 17, when an unwatched chemical process over-reacted and filled a portion of the building with possibly lethal gases. Four­fifths responded at approximately 5:20 p.m. to the east end of an attempt to contain the fumes.

Gerald Ward, a graduate stu­dent stated that he had left some polyethylene oxide disiocyanate, an intermediate product in his experiment, on a heat mantle and apparently he either set the temperature too high, or it had short circuited. This caused the flask containing the chemical to break, allowing it to reach water vapor in the air, and with itself internally, forming free isocyanate, carbon monoxide, nitrogen dioxide, and traces of cyanide gas, all lethal.

The situation was brought under control when Ward and two Pasadena YMCA entered the building wearing gas masks. The chemical was quickly placed in a hood and covered with ammonia.

“The lab will smell for a day, but there are no problems now. The air conditioner can handle it,” stated Ward after returning from his lab.

No serious injuries were repor­ted, although Caltech Security Officer Dick Bazzel complained of a “woozy” feeling, and reported to Huntington under his own power.

A serious injury could have occurred when Caltech Physical Plant employee Ted Wiley en­tered Spalding with a gas mask case from Noyes only to discover that the mask had been removed by person or persons unknown.

After it was all over, Ward was heard to say, “Let’s go shoot some pool now.”

The CALIFORNIA Tech

Volume LXVI

Pasadena, California, October 18, 1974

Number 4

Lethal Fumes in Lab: Reaction Goes Too Far

Today is Add Day

SPECTACULAR action during water polo game last week. Photo by G. Bone

Today

Inedible

As It May Seem

Chandler Has
Good Food -
Dear Periods,

I appreciate horror stories, especially when they are as well written as yours. However, I would have to think that Caltech is sinking into a bureaucratic morass. But it would be even worse personally to malignize the registration procedures, or trying personally to collect all the unpaid bills (and they are many) that are left at the Entrance. At least proving that you're right—that bureaucracy is here to stay—I have referred your letter to Meunier, Pings, Huntley, and Morrisey for action on the respective issues.

Professor Pings and others tell me that there was indeed severe confusion and inconvenience to many graduate students at registration. He has taken steps to revise procedures to minimize the likelihood of a recurrence at subsequent registrations.

The problem of overdue bills is another matter. Caltech has delinquent accounts, including bills, loans, etc., amounting to about $100,000. If you can devise and prove a successful different procedure for collecting overdue bill due Caltech, we will be glad to substitute it for our current procedure.

Since yours was published as an “open letter,” I am passing a copy of this reply to The Tech for publication as well.

With best personal wishes, and in continued friendship,

Sincerely yours,

Harold Brown

Worst Is Yet To Come! Shoot Up Early For Flu

The inoculations will be offered to all members of the Caltech community on Friday, October 25, between the hours of 10:00 a.m.—noon and 1:30—5:00 p.m. at the Health Center. To avoid delay in receiving inoculations, scheduling will be arranged by the Personnel Department in cooperation with the Health Center. Your supervi- sion or division secretary will advise you as to the exact time.

After October 18, any resched- uling should be made through the Health Center by calling extension 2994. Depending on the response, we may need to schedule an additional day for inoculations.

The Department of Health, Education, and Welfare advises that a highly purified influenza vaccine is available for the 1974-75 “flu season.” This vaccine will provide the maximum protection available against influenza, with a minimum chance of reactions.

Based on a recent recommend- ation from the Department of Health, Education and Wel- fare, only one inoculation is recommended. The charge will be $5.00 for those under 65, payable at the Health Center. There will be no charge for students presenting their identification cards.

California Studs Offered Free Money

Undergraduate college stu- dents who will require financial assistance to continue college in 1975-76 are invited to file a State Scholarship application. Approximately 13,485 new State Scholarships will be awarded in March 1975 for use in 1975-76. Although a majority of the new scholarships will be awarded to high school seniors, it is anticipated that some 2,700 awards will be available for currently enrolled college students who are not already in the State Scholar- ship Program.

State Scholarships may be used at any one-year or two-year college which is accredited or is a candidate for accreditation by the Western Association of Schools and Colleges. The new awards will range from $500 to $2,500 at independent colleges, $300 to $600 at the University of California, and in the amount of fees charged to students at the California State University and Colleges (approx- imately $1,820). Since the program is limited to tuition and fees, no payments are made for students who attend community college until they complete their educa- tion at a community college and transfer to a four-year college. Students planning to attend a community college during the 1975-76 academic year may have their scholarships held in reserve for them until such a time as they attend a four-year college.

Applications are no longer required to be below a specific age to apply.

Applications are available in the Financial Aid Office of every California State College or directly from the State Scholarship and Loan Commission, 1410 Fifth Street, Sacramento, California 95814. Applications must be filed with the State Scholarship and Loan Commission by midnight, November 22, 1974, and a 1975-76 Parents’ Confidential Statement must be filed with the College Scholarship Service by midnight, December 1, 1974. All applicants must complete the Scholastic Aptitude Test no later than December 7, 1974 to be considered. Scores from Schol- astic Aptitude Test examinations completed in prior years will be accepted.

Frankly Speaking... by phil frank

There exists on campus an organization which is fighting to help alleviate one of the pressing problems facing us today: trying to breathe the Pasadena air. The Clean Air Car Project (CACP) is Caltech’s attempt to help solve this crisis.

The Caltech Clean Air Car Project was established in 1970 as the result of a challenge by M.I.T. to a clean air rally from Boston to Pasadena. Today, 60 other schools participated, competing against Caltech’s two car project has reported many times to the State and Federal Gov­ ernments on the effects of pol­ lutants and their impact on the usefulness. One recent CACP car was offered to a joint staff of the California Air Resources Board immediately after graduation, and the makers of Datsuns are in the process of loaning CACP a car for six months to see what improvements they can make on it.

The CACP welcomes quêtes

Continued on Page Six

THE CALTECH FORUM

An Open Response from President Brown

by James Llewellyn

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Continued on Page Six
History of Movies

by Dave Malone

Every Friday evening (except this week in 1974 the ASCIT Movie else, be found blasting full of sound and fury, this week it’s Slaughterhouse-Five, next week it’s the first annual Roadrunner Festival. And standing behind it all is the ASCIT Activities Director, who, over the past several years, has brought such spectaculars as M*A*S*H, a Space Odyssey, Patton, War and Peace, and Fractured Flickers. Strangely enough, the movie program originated under the auspices of the now-defunct ASCIT Social Chairman’s office which was then under the auspices of Craig Brokow (who can still be found rampaging on the football field), way back in the 1970-71 school year. Since then, with the help of a bylaws amendment, the Activites Director has held sole responsibility. The illustrious list of movie directors now includes Brokow (’71), Lee Kordor (’71-72), Steve Kelm (’72), Ed O’Rourke (’73-74), and Bob Loveman (’74). Who will be next? Only the movers of reality know for sure.

At any rate, Loveman continues to promise high quality flicks…as long as his budget holds out. He refuses to tell us what’s coming up, though.

The ASCIT movie can be found in Baxter Lecture Hall, which is in Baxter, which is right next to Beckman Biology Building (Arnie), which looks exactly like Baxter, almost every Friday at 7:30 and 9:30 p.m.

Big I: Looking For Fools

The Big I needs three assistant editors. Each assistant editor normally arranges a section in the yearbook. This year, the ASCIT editor put the yearbook together. Since the yearbook will be put together throughout the year, the work should take a few hours every week, but during the third week it may need more time. Each assistant editor is entitled to a salary of $100. Although previous experience should prove helpful, only interest in the yearbook is essential. Anyone interested should please contact the ASCIT editor. Also, interested parties would be better off just putting a note in his mailbox at Winnett Center or Flora. Also, if anyone is participating in any other manner or has some suggestions, photographs, etc. for the editor. Your help will be welcome!

Intelligence

Continued from Page One over he pointed out that we come rather late in the probable-intelligence period, in that the first heavy elements were first used in star-formation ten billion years ago and were not greatly depleted until four billion years later, roughly where we came in. He thinks it likely that intelligent life has been around for several billions of years.

There Is Too A Starship! How would we contact them? Dr. Oliver discarded interstellar travel almost out of hand due to the enormous energies, times and distances involved. Chemical rockets are useless, he explained. Then he argued that even with the best rockets available within natural law, a perfectly efficient matter-antimatter annihilator (“don’t ask me how we would make the fuel tanks”), interstellar travel is still out of the question because to take a 100-ton payload (enough for ten people) out for a decade on real time at 7/10 of c would require 33000 tons of propellent or 261014 Nk of energy. Two billion years’ worth of U.S. energy use at present rates, by current standards it’s unfeasible, he said, but “perhaps it’s a comfort because they can’t get here?” (He deliberately rules out UFO’s.)

Dr. Oliver feels that the only thing we can do is to look for intentional or accidental radio wave transmissions by extra-terrestrial. The Cyclops program, with which he was involved, spent six months and $100,000 on the question of how best to communicate with other civilizations and concluded the following. The lecturer gave many better for obvious reasons to listen before trying to construct the antenna system, in the best place to listen would be in the microwave band. Specifically, he expressed a preference for a certain frequency range just below the 1.66 GHz hydrogen line emission and argued for a hydrogen line. In this range, which it calls the “water hole” because of the emission lines it lies between, the only radiation that would cost only half a billion dollars a year, less than one percent of the defense budget, to build onto the system gradually for 10 to 20 years. Dr. Oliver estimated the military spending because it does nothing for man except set him at odds with his fellow human beings. There’s no doubt that at the end he was making a sales pitch—but his reasons were excellent, his logic sound, and the possible gains appealing.

Dr. Oliver ended for another fifteen minutes to answer questions from the audience, which were numerous. In closing his formal lecture he said, “Childhood’s End may await us in the water hole,” and asked you to answer the final question.
The California Tech

Musicking Away Your Time -- Two

Last week, due to limitations on space, the editors cut an article on classical music activities available on campus, and when published gave the impression that the ASCiT Musical and the various Glee Clubs were the only ones. The editors apologize, and hope to rectify matters by ignoring the Clubs completely in the second half.

The Chamber Music Workshop is available to non-beginning students in woodwinds, strings and French horns. The workshop is conducted by Alice and Eleonore Schoenfeld on Thursdays from 5 pm on 19 and 25 Baxter. Call Kathleen Kong at 449-5553 for more information.

Dr. Laurie Jones is starting a Chamber Orchestra this year. They are planning on appearing in the Los Angeles Bach Festival. Rehearsals are currently 7 to 9 pm Wednesdays at Occidental. If you are interested, call Dr. Jones at 259-2878, 258-2600 or leave a message at x2297.

There is a free, non-credit course in interpretation and performance of classical music, given by Mr. Jim Boyk. It meets from 4 to 6 pm Wednesdays in Dabney Lounge. This class is for performances and listeners. Mr. Boyk also gives piano lessons (for a fee). For information, call him at 383-5766.

For guitar lessons, Mr. Daryl Denning is the man to see. He has group lessons on Tuesdays, from 4 to 6 pm in the Instrumental Music Office in the Fleming building, and private lessons (for money) may also be arranged with him. You must make him what he is, and give each member of the audience a chance to interpret his own reactions. The most effective section of the second part was probably the pastry mask sequence. Here, two potential lovers proceeded to slice off, tear off, and devour each others' masks (with subtility and grace, of course), gradually bringing metal plates underneath into view. Unfortunately, just as the female began to give signs of acquiescing, the male became sick and ran offstage. The evening ended with a spotlight on a representation of all the links of the chain of life. There was an immediately noticeable tidewater at the main gate. It was more than a minute the Mummeneschanz performed last Friday evening in Beckman Auditorium. It was also a spine-chilling, and an evolutionary performance.

The three members of the Swiss troupe, Andres Bossard, Floriana Frasenzo, and Bernie Schuch, performed their roles with alacrity, and with the exuberance that can only be found in the mime, where lack of dialogue allows only the language of the body.

The evening began with the appearance of an amoeboid blob. The blob slowly thrived to life, and soon began efforts to ascend a small platform on a higher level at center stage. It succeeded, eventually, and was followed by a get twisted by nervous and frightened person?

The article was a description of the ASCiT Musical, and the various Glee Clubs were the only ones. The editors apologize, and hope to rectify matters by ignoring the Clubs completely. Rehearsals are currently 7 to 9 pm Wednesdays at Occidental. If you are interested, call Dr. Jones at 259-2878, 258-2600 or leave a message at x2297.

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BOOKS

Watership Down

One of the basic requisites for an American best-selling book is a complete lack of valuable contacts. Nonfiction works that make the best-seller list are usually either biographies of someone famous (unauthorized ones are the best) or books that deal with something controversial in a sufficiently pulmanized manner for the public (books on sex or other goodies). Fictional works tend to be of the Harold Robbins-Jacqueline Susann school of famous authors. I.e. “scandalous” books vaguely enough based on reality that the subjects never bother to sue. Millions of Americans, directly or indirectly, read or buy these “best-sellers” (notice that I said or buy not and). There are thousands of books bought for the purpose of filling bookshelves, so maybe it really is the sort of thing that the society wants. That is neither here nor there. The point is that, every once in a while, a book becomes a best-seller without being valueless. This is usually due to some mistake in impression on the part of the buying public. Watership Down is such a case. Most people think it is a book about rabbits. The book’s publishers (Mackmillan) have made every effort to classify the book. They print excerpts from reviews comparing Watership Down to books on . . .

The point is that, every once in a while, a medley of frequently used words, other books display an amazing mechanical aptitude. These are not, however, Orwellian animals. This is no clumsy political parable. The various rabbit warrens shown in the book, however, have certain applications to human life. One of the chief troubles is that will make us appreciate the status quo of the possible (as it turns out, inevitable) destruction of the warren and its inhabitants. Another warren has no enemies except for a farmer who feeds them, and in return keeps a few at a time. A third warren has made itself safe and secure by destroying the freedom and comfort of almost all the warrens in Helen Reddy, who sings to Helen Reddy, who sings to the purpose of filling bookshelves, so maybe it really is the sort of thing that the society wants. That is neither here nor there. The point is that, every once in a while, a book becomes a best-seller without being valueless. This is usually due to some mistake in impression on the part of the buying public. Watership Down is such a case. Most people think it is a book about rabbits. The book’s publishers (Macmillan) have made every effort to classify the book. They print excerpts from reviews comparing Watership Down to books on . . .
A Test For Your Flag

by Etoin Schroedl

Below is a list of geographic and demographic questions testing your knowledge of the United States, many of a rather tricky or obscure sort. 10 points for the exact order, no partial credit. The cities: Los Angeles, Calif.; San Francisco, Calif.; Seattle, Wash.

1. (10 points) What are the five largest cities in the United States? (1970 census) and their rank. Give yourself one point for a state belonging to the five that you put in the wring rank. Careful, Ernestina, these are not easy.

2. (10 points) Rank the following.

3. (10 points) Name the ten largest cities in the U.S. (population, 1970 census) and their rank. Give yourself one point for each city belonging to the top ten that you name, and one point for each city that you locate in the proper rank spot.

4. (10 points) True or False: The state of California has both the largest (population, 1970 census) and the largest county (by land area) in the United States.

5. (20 points) Name the ten largest cities in the U.S. (population, 1970 census), give yourself one point for each city belonging to the top ten that you name, and one point for each city that you locate in the proper rank spot.

6. (5 points) True or False: The state of California has both the largest (population, 1970 census) and the largest county in the United States (in terms of population 1970 census).

7. (5 points) True or False: The Hawaiian Islands are farther west from Los Angeles, Cal., than they are south.

8. (5 points) True or False: What is the largest (population, 1970 census) state capital of any state in the United States? (In fact, there are four states whose capital is the highest altitude above sea level!)

9. (5 points) New York City is the only one of a 1970 population of almost eight million persons, contained 43.2% of its state's total population. Give yourself two points for a state whose population is the highest proportion of a state's population of any city in the country. (Obviously, Washington D.C. is disqualified.) For five points, name the city which is second in size.

10. (5 points) True or False: The state of California has both the largest (population, 1970 census) and the largest county in the United States (in terms of population, 1970 census).

A computer-performed organ concert will be presented Sunday evening, October 27, at 8:00 p.m. in All Saints Church, 137 N. Euclid Avenue (four blocks west of Lake). Works by Bach, Ives, Ussachevsky, Rimsky-Korsakov, and others will be featured.

The organ, built by Schlicker in 1962, has 88 ranks on six divisions. The instrument has been interfaced by Dr. Prentiss Knowlton of JPL with his own PDP-8 computer. The computer reads in a musical score encoded on punched or magnetic tape, does some bit-juggling, and spits it out to a custom-built interface unit which supplies voltage to the pipe valves. Some rather intricate programming was needed to convince the machine to do this, but after three years the software is quite reliable. Occasionally a glitch occurs; this does not cause merely a crash but rather a roar as nearly 500 pipes come on simultaneously.

A large amount of musical creativity is possible with this system. The computer can perform 768 independent functions (i.e. starting a note, stopping a note, turning on a rank of pipes, etc.) simultaneously. This facilitates such things as orchestral transcriptions played on six divisions at the same time, which would be impossible for a human organism. Also, any nuance or expression can be programmed in, which permits the combination of various artists' interpretations in a single performance. Rapid and thorough regeneration changes are trivial with this system and add much to the performance.

For more information on the concert or the system, see Dick Beaty in 203 Ruddock.

NOW LOCATED AT OUR NEW LOCATION
964 E. Colorado (at Mentor)

Organ Stimulation Is Scheduled for 27th

THE CALIFORNIA TECH

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For more information on the concert or the system, see Dick Beaty in 203 Ruddock.
Soccer to Break Streak?

On Wednesday the soccer team managed to complete a six game losing streak at the hands of Claremont-Harvey Mudd by a score of 5-1. Tech got on the scoreboard first with a pressuring attack that forced the CHM fullback to pass the ball back to his goalie. The goalie, however, was out of position, and the ball rolled by into the goal.

Tech maintained a strong attack for the rest of the first half, but their shots invariably bounced off of the posts, inches away from goals. As time advanced in the second half the Tech defense slowed and Claremont scored several goals with one man doing a keeper until he was right on top of the Tech goalie.

Tomorrow Tech threatens to lose their streak with a game against La Verne at La Verne. Last year this game was the only win.

by Chris Russell

Elysian Fields Rallye Club is presenting "UVOP for the Third Time," the third in its annual series of car rallyes starting out of the southeast corner of Montgomery Ward's parking lot (next to the Jack LaLanne spa) just off of Rosemead Boulevard four miles south of California Boulevard. Entry is $3.50 per car regardless of the number of people in it. For each seven cars entered, there will be one trophy awarded.

For those not acquainted with rallying, there will be a special classification for first-timers, who will compete only among themselves. A skill-gimmick rallye is not based on time, speed, or driving skill, but on the ability to interpret devilishly worded rules and route instructions, giving vehiculars an inherent advantage of real-worlders. The rallye presents a good opportunity for upperclassmen to get to know their new housemates as well as providing an inexpensive Saturday night entertainment. Registration is from 6:30 to 8:30 p.m. For more information call 449-4344 or see David Smallberg in Blacker.

Spacefiller

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The U.S., for any state, in this regard, (Hint: the proportion of teh city in question is not much lower than New York City's 43.2%) For another five points, name two of the cities occupying third through fifth places on this list (Hint: these top five cities happen to be the only ones containing a quarter or more of their state's population) OR name three states which each have two cities each of which contains ten percent or more of the state's population, and the cities in question. (Hint: there are seven such states, and no state has more than two such cities. On this part of the question you are allowed one wrong guess, so you may guess four times, but three must be right to earn the five points. Don't forget to name the two cities for each state that you guess, and both cities must be correct for the guess to be correct) It is not required to guess numbers for any part of this question, although you may do so if you wish. (Unnecessary hint: this question is both tricky and obscure.)

10. (10 points) This question concerns the changes in population of the states of the U.S. between the 1960 and 1970 censuses. There were three states that lost population, net, between 1960 and 1970. For five points, name two of these three states. (Useless hint: only one of these three states was among the three states which lost population between 1950 and 1960.)

You are allowed three guesses on this part. There were also, of course, states that grew very rapidly between 1960 and 1970. For five points, name five of the seven states that grew by more than 25% in this decade. (You are allowed a total of seven guesses on this last part.)
Glee Club
Rep Camp

Photos by R. Gruner