CHAPARRAL

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SF Oil Spill

Few Rescued Birds Survive

By SUSAN McCARTHY

Last January, thousands of seabirds were killed or injured by oil released in the collision of two Standard Oil tankers. Between six thousand and ten thousand birds were affected, and about four thousand of them were brought in to the San Francisco Zoo or the hastily-set-up Richmond Bird Center. For about two weeks many hundreds of people came to clean oil from the beaches, to erect booms to prevent the oil's spreading, and to capture and clean hurt birds. Many birds were washed ashore already dead, black and unrecognizable, and the rest were caught as they came to land, exhausted. These birds were almost all pelagic birds who ordinarily never come to land and are not kept in captivity. Most were Western grebes, beautiful long-necked, long-beaked birds with mad red eyes. Next most common were scoters, sea ducks whose males have red, orange, and white bills. Also there were many common murres, small birds like penguins, almost all of whom died at once.

At the Zoo, where the staff was unprepared to deal with several thousand uninvited oily wild birds, they were housed underneath the lion house and later in a disused concrete pen under tarpaulins. Less than half the birds survived even to be treated and only forty eventually lived to be released. Ten birds can still be seen at the Zoo. At the Richmond Bird Center, in a paper warehouse lent by the University of California, sixty percent were treated and eighteen percent lived to go, compared to the Zoo's bit over two percent. After being cleaned the birds could not be released because their feathers were damaged and corroded and had lost essential oils and waxes. But those birds maintained in captivity had a tendency to contract fungus diseases. Some developed sores along their keelbones from resting on straw all day. Others developed arthritis (bumblefoot) in the joints of their feet. One bird, a very young grebe, quickly grew very fond of humans, and when he was released showed great confusion and distress before leaving with the older grebes. A week later his body was washed ashore. He was an exception, for more birds died of shock and fear.

All the birds that survived the oil spill have been released now, but the Richmond Bird Center is still open in Berkeley, under the name International Bird Rescue. Supported by its membership dues, it cares for the few birds that come in each week, coated by small patches of drifting oil, and waits for the next oil spill, which Standard Oil claims will not occur. If it does, Bird Rescue believes it can save well over half the birds. They would hope to release almost all the birds within two weeks, avoiding the fungus diseases, the sore keelbones, the arthritic feet, and the occasional birds who become overly accustomed to being cared for. They now know how to stimulate the seabird's preen glands and how to replace the oils in the plumage. They are in touch with people connected with the Santa Barbara spill and the researchers of the British Torrey Canyon spill.

Proportionate to the care spent on them, only a few birds survived this oil spill. But about sixty years ago, when oil was spilled in San Francisco Harbor, killing as many thousands of birds, no one cared at all.

Male surf scoter coated with oil from the **Oregon Standard-Arizona Standard** collision last January.

There will be a staff meeting for the *Chaparral* at 8 p.m. on Thursday, November 11. Old and new people welcome.

Good Stuff

The seminar series on "The University: The Highest Stage of Capitalism" offers a view of the old "radical" movement and where some of their heads are at now. It also illustrates what the "old radicals" aren't thinking about. Their thoughts are not to be confused with Venceremos, the new radical movement, or the third world movement in general. Try to make the land use session if possible.

Brooks Hall in San Francisco is putting on a car show this week featuring a Chaparral. That's a sports car, not your old slow talking, slow walking funny magazine (although a few of the past shiny issues were out of sight). Cars should be admired, not driven, and some of the good ones are beautiful!

The Senate Chairman will be elected tonight. Drama on campus is scarce now that the Franklin hearing is over. Visit a Senate meeting for a change of pace. There are lots of candidates, including Herb Borock, last year's parliamentarian. Herb was always good for a well-turned resolution. And he, at least, read the constitution. Sheer poetry.

The Campus Report headlines mention a lot of faculty members, a couple of big time administrators, and one staff member, John Keilch. The *Chaparral* concludes that the only way to get your name in heads, if you're a lowly staff member, is to get fired. The question is, can you do it more than once? John? Bill?

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Men of Coral Sea Cry SOS

By JEFF WRIGHT

Five a.m. is a terrible time for a demonstration. It is cold, dark, wet, and too early for most people. Even at the best of times, it is difficult anymore to raise a crowd for a peace rally. But at five a.m. on Monday, November 8, close to a thousand people began to gather before the East Gate of the Alameda Naval Air Station.

Lining the streets and clumped in front of the entrance, these civilians were there to show support for the *S*top *O*ur *S*hip movement aboard the U.S.S. Coral Sea, an aircraft carrier docked at Alameda and scheduled to sail for the coast of Vietnam on Friday, November 12. The political feelings in evidence were as varied as at any moratorium march—ranging from those of rabid revolutionaries to the Vietnam veterans, to the gentle non-violent people, and the good liberals. One contingent sported a Vietcong flag; an elderly lady held a sign: "A West Virginian admires your courage." Chants showed a dichotomy—some yelled "Turn the guns the other way!", others pleaded "Stay home for peace."

Gestures to the motorists, open hands, peace signs, and fists were all thrown out in abundance along with leaflets. Some Navy men, particularly the younger ones, grinned in acknowledgment and nodded or returned the fists and peace signs. In most instances, people drove past unresponsively, but some showed hostility with their middle fingers upped.

The men of the Coral Sea started their resistance movement with a petition to Congress to forestall departure of their ship to Vietnam. Support has come from the Berkeley City Council, which passed a resolution in favor of this petition, and encouraged residents to "aid in the welfare and legal protection of these men." Going beyond the Council, Berkeley churches recently announced that they will provide sanctuary for any sailors willing to accept the legal consequences of going AWOL.

The rally in front of Alameda was called for five a.m. to intercept both the men returning from their last weekend liberty and the workshifts changing at the same time. According to an S.O.S. statement, "each time another sailor commits himself, the need for civilian support and encouragement grows. Massive, publicized support is their protection against being singled out and buried under military repression."

But there is no realistic chance that the Coral Sea will not sail on Friday, just as was the case in San Diego in August with the U.S.S. Constellation, after a similar campaign. The men of the Coral Sea are highly conscious of the fate of those resisters who took sanctuary in a church in San Diego, only to be later apprehended and flown straight to the brig of the Constellation at sea. Before actual militant rebellion by the petitioners becomes reality, these men will have to feel much more secure about the movement than they do now.

The Coral Sea will probably not be stopped, and the next carrier scheduled to go in January may also leave. But GI resistance has shown amazing strength in the last two years, and is a growing threat to the military. The movement in the navy has spread from the San Diego action, and the possibility exists, and is enhanced with time, that in the near future a carrier will be confined in port for lack of obedient manpower.

At any one time, three aircraft carriers lie off the coast of Vietnam, fighting the air war in Indochina. If the resistance movement among the sailors becomes more pervasive and powerful, Nixon's war strategy may soon be in dire jeopardy.

The hard-working Chaparral staff is not anonymous. Here they confer in a typical orderly staff meeting in the plush editorial offices of the Storke Building. The secret identities (clockwise, starting at the Bloodrock T-shirt): Tina Swent, Tim Coburn, Jeff Wright, Dave Szonyi, Alan Wachtel, Tom Crystal, Tim Clark, Dirck Jahsman, Mark Cushing, Allan Wernick, Tink Ramey, and Susan McCarthy. Unaccountably missing: John Shoch and Williamson M. Evers.

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Can Pre–Meds Survive?

By JEFF WRIGHT

An unusually large number of Stanford undergraduates are intent on becoming doctors of medicine. The Academic Information Center reports that interest in and application to medical schools has greatly increased over the last two years and that in the first year of an advising program, over four hundred students have been assigned pre-med advisers. Especially surprising are the numbers of juniors, seniors, and even graduates, prior majors in government, or engineering, or "general studies," who have just decided to include the required courses for entrance to medical school. Almost all of the nation's 108 medical schools require one year each of biology, chemistry, including organic, and physics, with labs. Half the schools also require a year of math. Consequently, these courses at Stanford are swamped. The Chemistry Department, for example, has seen the enrollment for Chemistry I shoot from 500 in 1969 to 900 this fall. In a poll taken by the department, two thirds of this year's Chem I students admitted they were taking the class with the intention of applying to med school. Other classes in the pre-med scheme, like Bio 21 and 24, Physics 21, and Math 10 are similarly inundated. Dr. Donald Stilwell of the Stanford Medical School, a longtime pre-med adviser and sponsor of the pre-medical society, agrees that even though interest in medicine rises and falls in cycles, this year's pre-meds are especially numerous. An inordinate number of people have been showing up for pre-med discussions and informational meetings.

Swarms of red hot pre-meds surging through the University's facilities have evoked some expressions of skepticism. On registration day an exasperated graduate assistant behind the Bio 21 class list was heard to say: All of you people think you want to be doctors, but you don't know why you're taking this course. Your advisers told you it was required for med school, so you're taking it, right? Listen, if you are going to be a doctor, you need to know how to play golf. You should be signing for a golf class. P.E. is down that way.

And the feelings of at least one librarian in Falconer Biology Library have been expressed by a photograph of a snarling bat with spread wings that sits on the main desk, captioned, "I don't care if you are a pre-med!"

TWO IDEALS

Explanations for this sudden widespread interest in medicine are suggested by some revealing comments. "Medicine is one profession in this country, perhaps the only one," said a pre-med adviser, "for which you can bust your ass studying for seven straight years and be guaranteed a high salary. You become a doctor, and you can expect, sooner or later, to acquire a position of respect and prestige in your community. Just keep moving your feet over this academic treadmill, make top grades relentlessly for a long enough time, and you know you'll make it."

In popular ideology people are motivated to become doctors by two ideals: Money and Humanitarianism. These probably influence Stanford pre-meds to varying degrees, along with more complex rationalizations.

If a student supposes that one day he will have to provide for himself, and will have to find a position in society to do so, then medicine seems to be a profession by which he can make a living, even a comfortable, secure one if he desires. Doctors can make money and help people at the same time. An appealing picture—a myth perhaps—claims that a doctor would not be compelled by economic necessity to tag on to a huge corporation, or to take up political lobbying, or to fight against ruthless competition. According to official reports by the Carnegie Commission on Higher Education in Medical Schools and the Public Health Service, this country desperately needs more physicians. The nationwide shortage last year was estimated at 52,000, and the general shortage of medical manpower was characterized as the most serious of any major occupational group in the country. If a student can survive medical school, he knows he will find a job, performing a personal service to people in need. He looks forward to a great degree of individual control over the circumstances of his life. Medical care is needed all over the world, and ideally, the scope of the profession covers a wide range of interesting, absorbing activity, from pure research to pure practice, from professional conferences to hospital drama.

EASY LIBERALISM

Perhaps the special appeal of medicine is the personal contact with human beings. Some people see the general practitioner as an intermediary between technical science and "real life." "Of course," said the pre-med adviser, "some doctors want to play god, and come close to being accepted as such." But even without playing god medicine can be gratifying, as it offers urgent and direct opportunities to alleviate suffering. Dr. W. Albert Sullivan of the University of Minnesota Medical School put it this way: "Seminarians are saying their field isn't scientific enough for them, and the engineers say theirs isn't people-oriented enough." Like Goldilocks, then, *pre-meds can* smack their lips and say, "Ah, but this one is just right!"

On a tumultuous college campus in an ever more polarized society, training to serve humanity through medicine can be especially inviting. "Medicine makes it easy to be a liberal," said one fifth year med student. As reactionaries square off against radicals, doctors can claim a neutral position, desiring only to heal everyone in equal measure. When wars were chivalrous, both sides traditionally honored the sanctity of the Red Cross. No pre-med should forget the pictures of last Spring's hospital sit-in—in the aftermath of the police charge, white-coated medical students were photographed caring for injured protesters, right under the heavy sticks of the deputies. Should a revolution

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Future Doctors...

Crichton Raps Med Schools

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come, doctors will be valuable to both sides, and to those caught in the middle as well. Until then, social position and usefulness are assured to those who can make it through school.

PRE-PLANNED CERTAINTY

For some, though, the pre-medical curriculum is a relief to troublesome "existential" questions about what an education should be. Many pre-meds have very little choice. Certain basic sciences are required for all medical schools, and beyond that certain majors such as biology are helpful in gaining a good MCAT score and acceptance to a good school. There exists a pre-planned certainty in a pre-med's classes, especially if he is trying to finish it all in two years or less, that one can appreciate if he has ever agonized to determine his own educational priorities and the value of Stanford classes in terms of his own personal growth. The pre-med's classes are simply required, and any self-indulgent introspection will be detrimental to making those grades.

Pre-meds may suffer the least anxiety over which classes to take, but they suffer the most, as a rule, over which grades they should make. "You'd better believe it's hard to get into med school," said the pre-med adviser, "but make all A's and you'll have nothing to worry about." The stereotype of the red-hot pre-med is generally recognized: pre-meds are never at the demonstrations, but they are always in the library, and probably just as well, for they need the grades now if they are ever to help people as doctors. One concern voiced by a fifth year medical student at the first meeting of the pre-medical society was that even though it is difficult for a student to master the scientific facts of medicine, any intelligent mind with good high school preparation could expand enough to take in med school. He felt that it is most difficult and most important for students to learn how to deal with people and how to act effectively to improve social conditions. Too often the narrowness of pre-med education militates against developing warm human empathy and an awareness of social reality. And a psychiatrist at the Medical School agreed that, especially as one concerned with emotional problems, he would have done better as an undergraduate to study Greek tragedies, rather than the required physics vector systems.

LOST IDEALISM

Indeed, if what they told us in Psych I is true, that highly competitive, inconscient, dehumanized schemes of living in this country are driving people crazy, giving them ulcers and high blood pressure and a higher incidence of schizophrenia, then is a sincere humanist correct in joining a competitive, inconscient, dehumanized run toward accreditation as a doctor? Whose suffering is being eased if the pre-meds have ulcers from their last midterms, and piles from sitting at their desks too long? Considering the class interests of certain doctors, and the priorities established for certain medical institutions, very real questions can be asked as to whether the medical profession is part of a solution or part of a problem.

Apparently, something happens to idealism in medical school students. This has been studied as a sociological phenomenon at the University of Kansas by Everett C. Hughes and associates:

Medical students enter school as lay idealists: they believe that medicine is service to man, and that its study will give them the practical techniques to enter this service. During the two pre-clinical years, they find that they have no opportunity to serve patients, and that knowledge they acquire is not only impractical, but comprises too large a body of facts to hope to master. The consequent reaction, strengthened by the formation of a student society and culture, is to select the facts to learn based on their usefulness in examinations and to postpone idealism into the future.

In medical school naivete is dispelled, and lay idealism ossifies before the practical exigencies of "getting through." In the end (it is hoped) idealism re-emerges as "sophisticated positivism."

Even pre-meds must admit that in reality doctors can be corrupt, and cynical, and callous, even beyond the bounds of "proper scientific objectivity." Not all doctors are appreciated either, as the volume of malpractice suits attests. And more than others the medical profession gets trapped in bureaucracy. Perhaps medical students are uniquely suited for red tape, being readily able to transfer their concern for grades and requirements to a general obeisance to routine and convention.

Medicine can be a uniquely good profession, or it can be practiced in a distinctly bad way. The problem for the mass of new pre-meds will be to salvage their humanity and spirits over the long run. Those who defer their compassion and their lives until the grind is over may find that it is never over.

The following article is reprinted from the October 16, 1970 issue of the *New York Times.*

By MICHAEL CRICHTON

A 17-year-old who wants to be a doctor faces eleven to fifteen years of training, at a total expense of more than $50,000, before he is ready to begin practice. This extraordinary investment of time and money is one of the most remarkable facts about American medicine. In America, doctors are literally the most educated people we have. The accepted mythology, with its glorification of this extended, expensive training, is that nobody who has the dedication to embark upon such a lengthy program of study could possibly emerge unequipped for the job he had to do.

Yet one can argue that much of medical education is misdirected, and that many physicians are inappropriately trained. If you don't believe this, ask your pediatrician about Jean Piaget—or ask him why he routinely vaccinates against smallpox. Or ask your internist whom you see yearly why he doesn't do tonometry as part of your checkup.

How can a person be a student for more than a decade yet be inadequately trained? The answer lies in a complex of historical, social, scientific and administrative factors. A full answer must include both the years of formal training, and the later refresher courses—or the lack of them—for the private physician. But central to it all is a single massive conceptual fallacy: the goal of the doctor-scientist.

Most medical education is inexplicable, except as a program to produce a doctor-scientist. In countries such as England, there is no foolishness about a doctor-scientist, and most physicians hold only a B.S. degree; the M.D. is relatively rare. But in America for the last century, the image of the clinician-researcher has been increasingly the model, and it is now central dogma for medical educators, who accept it unquestioningly. Even the public seems to draw a certain vague satisfaction from thinking that their doctor, now taking their blood pressure (and in doing so, performing a job far below his training) could walk out of the office and into the laboratory, where he would do great things.

In fact, the notion is nonsense. Most M.D.'s either go into research or clinical practice. Few do both—and even fewer do both well. Every university center has a handful who are superb, and are widely and justly admired. But to train every young doctor to be like these men is as foolish as trying to make every young athlete run 100 yards in under ten seconds.

Eight years after secondary school, four years after college, the man with an M.D. is neither fish nor fowl: if he wants to do clinical work, he needs another three to five years of hospital experience, if he wants to do research, he probably has to go back to school (or to the National Institutes) for further training in mathematics and other subjects. One may ask what the student has been doing for all these years. The answer is that he has been working very hard to master subjects, such as the fine points of gross anatomy and organic chemistry, that in later years he will blissfully forget. The doctor-scientist orientation produces a nasty side effect: it takes incoming medical students who are interested in people, and transforms them into doctors interested in diseases. People don't like to be thought of as diseases, as "beautiful cases" of pathology. Medical students who complain about the "dehumanizing influence" of their education are talking about the same thing. Many become psychiatrists by default, since psychiatry seems to be the only warm, human preserve in an otherwise cold, stainless steel, scientific profession.

The practicing doctor, his years of training behind him, makes two disquieting discoveries. First, he finds that he must practice a great deal of unscientific medicine—dealing with the 70 percent of his patients who have no demonstrable illness, but varying complaints. This calls for behavioral training which he almost certainly lacks. Second, he discovers that his training is rapidly outdated, but the refresher courses run by university doctors are generally abstruse, heavily scientific and lacking the practical details on patient care that he needs. The courses are expensive and a doctor must also accept loss of income from his practice while he is away; many doctors quit going after a few disheartening experiences.

There is great prestige in the idea of the doctor who is also a scientist. It is also fundamentally phony. Even during the Renaissance, there weren't many Renaissance Men, and in a highly complex technical field like medicine, there are even fewer. In the long run the profession will gain greater prestige by training its men appropriately, and abandoning its illusory ideals.

(Michael Crichton graduated from Harvard Medical School. He is the author of "The Andromeda Strain" and "Five Patients.")

Meandering South from Saratoga

This week's outing is a hike at Castle Rock State Park, a favorite of the author's because of its intimate forests, high meadows, and sweeping views out over the Santa Cruz Mountains. This is a good hike for a clear day, when Monterey can be seen from the overlooks along the trail, or a rainy one, when the madrone forests are a showroom of multicolored polished wood and a dashing stream leaps full over Castle Rock Falls.

Castle Rock Park is one of the newest in the California State Park system. Twenty-six acres around Castle Rock, owned by the Sierra Club and long a favorite of local rock-climbers, served as the nucleus of the park. Approximately 900 acres of additional land was purchased by the Varian Foundation as a memorial to the late Russell Varian (of Stanford University and Varian Associates fame), including Goat Rock and the developed area around the ranger's residence. These two parcels of land were given to the state in 1968 as Castle Rock State Park. Park personnel and local conservationists are pressing for the expansion of the park area to a total size of more than 2,500 acres, to be used for hiking and primitive camping.

You don't have to wait until the completion of the park to hike there, though. In April of 1969, the present trail through Castle Rock Park was built as the beginning segment of a riding and hiking trail that now connects Castle Rock Park on the skyline with Big Basin State Park to the west. The trail was built with the volunteer labor of over 2200 persons in one weekend. Since then, thousands of hikers have tramped it. The trail is well-marked by signs and small tin circles with a green fir tree printed on them posted at frequent intervals.

GETTING THERE

Begin this hike at the Castle Rock Parking Area south of Saratoga Gap on Skyline Blvd. From Stanford, you can drive by two different routes to the park. The most scenic route takes Page Mill Rd. or La Honda Rd. (less steep and winding than Page Mill) to Skyline Blvd., and then proceeds south on Skyline. If you want less mountain driving and a somewhat faster route, go south on Interstate 280 to Saratoga-Sunnyvale Rd., and proceed west to Saratoga, then take Big Basin Way to Skyline Blvd. In either case, driving time should be somewhere between 45 minutes and one hour. The parking lot is located 2.7 miles south of Saratoga Gap, just past the Castle Rock Tree Ranch—watch for a turn-out and a rather small sign. Bring lunch and water on this trip.

Two trails begin at the parking lot. We will be taking the Skyline-to-the-Sea trail, which starts at the south end of the parking lot. The trail climbs moderately through a forest of second-growth Douglas fir, oak, and madrone to an old dirt road. Follow this road to the right (west) a short distance to Castle Rock, 0.4 miles from the parking lot. Castle Rock is well-known to local area rock climbers, and you will no doubt see several there. There is no view, except from the top of the rock. A privy is located nearby. The trail turns to the right (east) of Castle Rock and descends steeply through a lovely forest to Castle Rock Creek, where it joins a second trail coming down a dry creek bed from the west end of the parking lot. This second trail is easier than the first, and makes an excellent return route, avoiding the steep climb back up to Castle Rock.

The combined trail now follows the stream valley on the south side of the creek, crossing shortly to the north side and then continuing on to a small open area. Here the trail branches. The left fork goes down the creek an additional quarter mile to the top of Castle Rock Falls. The creek makes a broken fall of approximately 40 feet over a sandstone cliff covered with moss.

SWITCHBACKS

The right fork of the trail turns up the north slope of the valley in a series of switchbacks. Extensive erosion of the hillside and obscuring of the trail has occurred in this area because people have cut across the switchbacks. At one point along the trail, a beautiful little meadow has been scarred by two ugly brown swaths where hikers have cut across the meadow (the trail goes around it). Please don't contribute to this destructive practice—stay on the trail.

The trail finally reaches the top of a hill near some large sandstone outcroppings, with a good view over the mountains to the east and south. As we continue, the trail winds around the hill, crossing two small gullies, to Goat Rock. From the trail, Goat Rock appears to be a large sandstone outcropping about 20 feet high. Climb to the top, and you will be rewarded with a superlative view out over the Santa Cruz Mountains (in particular, the San Lorenzo River watershed) all the way to the Monterey Peninsula to the south, a distance of 45 miles. The face of the rock drops 100 feet in a sheer cliff. The distance from the Castle Rock Parking Area to Goat Rock is about 1.6 miles via Castle Rock, or 1.2 miles via the second trail leading west from the parking area.

From Goat Rock, the trail runs along a ridge through a series of beautiful high meadows to a gap below Varian Peak. From the gap, a new trail is being constructed which will follow the open northwest slope of Varian Peak, with spectacular views of the upper San Lorenzo River Watershed. Our trail turns to the right (east) side of Varian Peak and travels up and down through a beautiful madrone forest. On the north slope of Varian Peak is a very fine view out over the upper San Lorenzo River watershed. The trail then turns sharply to the east and comes to a large meadow. The meadow is about 3.2 miles from the Castle Rock Parking Area. A group camping area is located at the far end of the meadow.

RANGER'S RESIDENCE

Cross the meadow and ascend a series of steps in the rock on the north side of the meadow to the Ranger's residence. The ranger will be happy to answer any questions about the Park. A parking area here is accessible from Skyline Blvd. by a dirt road. Watch for a turnout on the west side of Skyline Blvd., 1.7 miles south of Saratoga Gap, with a large sign reading "Los Altos Rod and Gun Club" at the entrance to the dirt road.

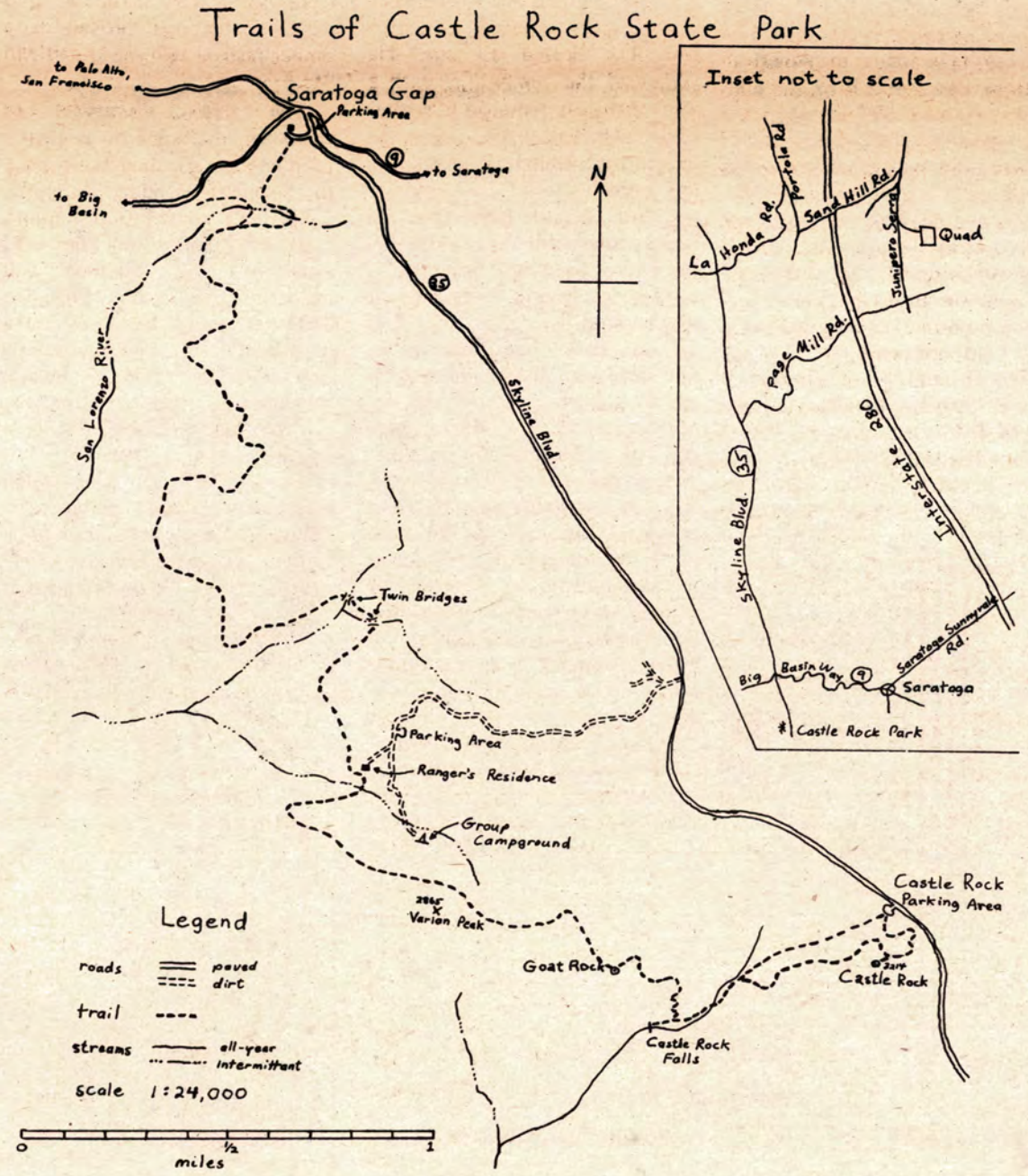
Follow the small green trail markers around the Ranger's residence to find the trail again, which travels along a brush covered slope for about half a mile. The trail then joins an old dirt road, which it follows to the left to Twin Bridges, through a forested canyon. From Twin Bridges, the trail continues to follow the old dirt road, which is much decayed. This road winds through open and brush-covered slopes, turning into the forested canyon of the San Lorenzo River after about two miles. A side trail takes off from here to the left; it can be followed all the way to Big Basin State Park (about 18 miles from this point). Our trail continues up the canyon, crosses the infant San Lorenzo River, and proceeds up another stream valley to come out at the entrance to the California Division of Highways Maintenance Station at Saratoga Gap. We have covered a distance of 3.6 miles from the ranger's residence or 6.8 miles from the Castle Rock Parking Area.

This trail obviously lends itself well to a shuttle trip, with one car stationed at the Castle Rock Parking Area, and the other at Saratoga Gap or the developed area near the Ranger's residence. For those who have to end at the same place they begin, I would recommend taking the trail from the Castle Rock Parking Area to the ranger's residence and then back again, as I consider this section to be the finest part of the trail.

For more information about the effort to acquire more land for Castle Rock State Park, and the future development plans for the Park, write the Sempervirens Fund, P.O. Box 9294, Stanford, California 94305. For more information about the trail system (including the trail to Big Basin State Park), write the Santa Cruz Mountain Trail Association, c/o Big Basin Redwoods State Park, Big Basin, California 95006.

—PHIL FARRELL

Trails of Castle Rock State Park



Pedal Power in Menlo Park

"Politically, we bicyclists have been meek little creatures." The lady who made this comment defined an attitude that she and other bicyclists wished to combat at the Menlo Park, Calif., Bicycle Festival, October 17, 1971. The large number of adult bicyclists present prompted me to conclude: if bicyclists of this country united, they would have much to gain, and nothing to lose but their case-hardened chains.

Bicyclists, however, resist efforts by their leaders to "organize" them. I was reminded of other mass meetings that characterize the political convulsions of modern California. This gathering had a more genial, but equally serious intent: bicyclists were fighting for their territory on the street. I would not exaggerate to suggest that many of them, as San Francisco urban commuters, were fighting for their survival.

There was a widespread feeling among bicyclists present that provision 21200 of the California Civil Code ("Every person riding a bicycle on a highway has all the rights . . . applicable to the driver of a motor vehicle") was less a statement of fact than an assertion of distant hopes.

Though a bicycle festival can serve many purposes, this meeting was primarily a physical demonstration of bicyclists' growing political muscle. The number of bicyclists present made this possible. 3,000 joined in a mass ride, forming a column two miles long, four abreast, led by the city's mayor, Ira Bonde. They wound their way through suburban landscapes south of San Francisco.

Motorists stopped to stare at this long, bobbing dragon of bicyclists, many in colorful costume, wheeling down the streets with an unusual audacity. Some bicyclists felt that several motorist illusions received their coup de grace that afternoon. The most prominent myth fractured, one bicyclist suggested, was this: "Ah, those quaint bicyclers! How they love to live in the 1880s!" Confronted with 3,000 people living in the 1880s, several motorists returned home wondering if there had been some unannounced rollback in the calendar. For a short time the norm of life had been changed in one small part of the country.

The slain illusion said to run a close second was, "The next thing you know those bicyclers will be sitting on flagpoles again!" And third, "Why, bicycling is for KIDS!" This third illusion particularly exercises adult touring enthusiasts in the bicycle clubs. They quickly point out that over half the bicycles purchased in California last year were bought by, and for, adults. Some bicyclists in the mass ride favored stopping at stores along the way to dispel a fourth notion of autoamerica, "Bicyclers, unlike motorists, don't BUY!" However, time was short and a few good ideas had to be saved for next year's event.

The mass ride amounted to one of the few times in American culture, based as it is on the auto as its defining artifact, when the auto yielded at the insistence of police to a parade of alternative vehicles.

Local governments in the surrounding areas cooperated heartily with the bicyclists. The Dumbarton Bridge authority was an exception. At first they said they did not want to close the bridge to auto traffic because of safety hazards and the time loss. Festival sponsors then soft-pedaled their request: allow only a token number of expert bicyclists to cross the bridge. They would require only three minutes to cover the narrow stretch where they would obstruct traffic. Finally, however, bridge officials would not approve. They feared that a precedent would be born which might grow to be a problem child for them. Indeed, access to the bridge is what the bicyclists wanted. Bicyclists had not yet reached the point where they might consider a defiant ride-in to press their point.

b. Clifford Graves, the grand old man of the international bicycle touring cult, poses with his mount. He had just returned from a tour of southern France. On the morning of the festival he flew up from San Diego, carrying his bicycle, of course, on the plane. Then he pedaled from the San Francisco Airport to Menlo Park.

a. A demonstration race has become the standard spectacle at most bicycle festivals. In the bicycle world, however, the "racing" and "touring" partisans champion such disparate visions of bicycle use that they often have little to say to each other. The San Jose Bicycle Club put on a demonstration race at the Menlo Park Bicycle Festival.

Besides the mass ride, the day's offerings included a demonstration race, a children's rodeo, and guided tours of the adjacent, scenic bay-and-foothill regions. But the focus of all these activities, lest the political steam expend itself in a diffuse and vapid manner, was a symposium on bicycling, chaired by Clifford Graves, President of the International Bicycle Touring Society.

Occasionally one meets a true elder statesman in a particular sport. He is the old aristocrat who epitomizes the best traditions of a certain way of life. Clifford Graves struck me as such a man. His bicycle is like an appendage of his body. Perhaps because of years in touring, he seems to be a man who has ceased to age. He addressed the symposium with a vigor that many younger bicyclists envied. He had just returned, he said to me at lunch, from touring in France.

"You should have been in Paris, young man!"

"I have been in Paris," I said. "Are you referring to the women or the wine?"

"No, young man. La greve! The subway strike! Everything was at a standstill. I would never have made it to the airport without my bicycle!"

I indicated that I had endured the long transit strike of 1967 in that very city, so I understood the problem. Immediately, we shared the camaraderie of survivors. A Paris transit strike is one of the finest, living arguments for the merits of bicycle commutation in urban areas. The horns of stranded motorists, who had left their jobs at 5 p.m. and progressed three blocks by midnight, were jarring enough to send me searching for Marcel Proust's cork-lined room. In a mass transit strike, the bicyclist escapes immune, but the larger vehicles—the autos—are trapped. They look like contemporary dinosaurs with iron innards, blank white eyes and four wide black feet wandering confusedly around the urban canyons grunting anxiously to each other with their horns.

Clifford Graves had flown up from San Diego on the morning of the festival. He had stowed his bicycle in the baggage compartment of the commercial airliner and then bicycled from the airport to Menlo Park. He complained of increasing resistance from airlines when he requests that they transport his bicycle.

The symposium began when he introduced three friends of the bicyclist from the California State legislature: Senator Arlen Gregorio, Assemblyman Dixon Arnett, and Neil Good, Administrative Assistant to Senator James Mills. Mr. Mills could not attend because he was recuperating from a rib fractured and a collarbone broken at a similar festival two weeks earlie;in San Francisco.

The day's discussion of legislation danced around efforts to free state gasoline tax money to finance bicycling interests. California's constitution requires that all gasoline tax be used exclusively for building and maintaining roads. Bicycling enthusiasts would like to use some of this tax for bikeways along streets and scenic highways. Proponents of this legislation seek to circumvent the constitutional issue by arguing that bikeways, and other bicycle-related expenditures, would "enhance the safety and flow of automobile traffic." Constitutionally, such expenditures could be defended as "road improvements."

Once this assumption for using gasoline tax money is granted of course, the possibilities for bicycle and mass transit financing are considerable. For this reason the highway lobby opposes such legislation. Stakes are high: control of the millions in gasoline tax money. The lines are drawn.

Arlen Gregorio has proposed such a bill for bikeways. He has also encouraged the construction of bicycle parking facilities in government buildings. At one Department of Water Resources office, he noted four auto parking spaces, now enclosed with a wire fence providing parking for 120 bicycles! Ironically enough, by charging a mere $1 parking fee per-bicycle-per-month, DWR earns more parking revenue for bicycle use of the space than it had previously received from the four autos parked there! Dixon Arnett has proposed that bikeways be included as part of California's Scenic Highway program, but his bill died in the Senate Finance Committee. He indicated that there was meager awareness among legislators regarding bicycle issues. Neil Good discussed James Mills' bill, now signed into law, requiring that all toll bridge proposals include a feasibility study on adapting the bridge to bicyclist needs.

Senator Mills has also proposed a uniform licensing program for bicycles, which would be administered by the Department of Motor Vehicles. To sell a bicycle, one would need a "pink slip" of ownership, similar to the document now required in auto transactions. Each bicycle would have a number that could be fed into the central computer. Such a system would discourage bicycle theft by making it difficult to sell the stolen goods. Registration would also make it easier to return stolen bicycles when found to their owners.

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The symposium included much talk of actual and planned bikeways in specific cities. I was impressed by the thoroughness of Davis, Calif., system. Robert Sommer described how the University of California has incorporated bicycling easily into daily life. No American city, to my knowledge, has designed itself with more sympathy for the bicyclist. Where else does one find such a sign at the city limits? "Davis, 18,000 Bicycles, Please Be Careful."

Ted Noguchi, Traffic Engineer, announced that his city of Palo Alto, adjacent to Menlo Park, will soon have 74 miles of bikeways on its 172 miles of streets. William Marconi, Senior Traffic Engineer for San Francisco, has tougher problems than either of these cities. San Francisco streets are narrow, heavily trafficked, steeply graded, and densely populated. He indicated that San Francisco has succeeded in setting up some

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Crows Charge

Communications For War

The Army radios pictured here are veterans of Vietnam combat duty. The radios can easily get out to where the action is and, through the use of a digital scrambler, operate in a voice-secure mode.

By JOEL YUDKEN

The technical-sounding titles of two Department of Defense (DOD)-sponsored contracts, held by Professor Alan T. Waterman, of Electrical Engineering, do not suggest particularly warlike or military applications. Nevertheless, they are excellent examples of the mystical shell of ambiguity surrounding the issue of classified research in the University. This mystique, coupled with the loud remonstrations of many DOD researchers that most of their military sponsored work holds potential civilian application, has resulted in confusion for the layman. It is just this type of obfuscation which has prevented a clear understanding of the DOD research uproar on this campus, and for precisely this reason a careful investigation of Professor Waterman's contracts is warranted.

The first contract, titled ADVANCED RESEARCH IN PROPAGATION TECHNIQUES, was sponsored by the Army Electronics Command (ECOM), Ft. Monmouth, N.J. Although it expired in 1971, it illustrates how military funded research at Stanford has, over a period of several years, directly supported specific military missions and requirements, particularly the Vietnam war effort.

This research is a study of the influence of various conditions of the atmosphere (such as the formation of stratified layers in the atmosphere or air turbulence) on radio signal propagation between two points via a phenomenon called tropospheric scatter (troposcatter). Essentially, transmitted radio signals are reflected off "inhomogeneities" in the atmosphere to a receiver located out of the direct line-of-sight of the transmitter (beyond the horizon).

CLASSIFIED CONTRACT

Waterman's work in this area, for the military, extends as far back as 1953, and perhaps earlier. However, this particular research, as a project under an Army ECOM contract, seems to have begun in the early or middle 1960's. According to the *Stanford Electronics Research Review of 1966,* the title of the ECOM contract was *Applied Research in Electronic Warfare Techniques.* This was one of the Stanford Techniques Laboratory (STL) *classified* research contracts removed from campus in 1969 as a result of campus anti-war activities.

In the STL *Technical Report,* Waterman's research was listed as Project 2275, PROPERTIES OF TROPOSPHERE AFFECTING ELECTROMAGNETIC PROPAGATION. According to the abstract, "This project has been set up to deal with problems of the structure of the atmosphere insofar as it affects the propagation of electromagnetic waves. The concern is particularly with tropospheric inhomogeneities that play a primary role in beyond-the-horizon radio wave propagation." The ECOM contract, including this project, was part of the Army exploratory development (as opposed to basic research) program ELECTRONIC WARFARE. There is no reason to believe that the present contract, merely the earlier work declassified, would have lost its exploratory development status as well.

In 1963, transportable troposcatter equipment originally used by the Air Force was turned over to the Army. In 1965, when U.S. troop buildups in Vietnam began in earnest, the Army started to develop throughout Vietnam and Thailand what has now become perhaps the largest military troposcatter communications network in the world. This network is the "backbone" of the military's overall communications network in Southeast Asia. Besides troposcatter, this network also includes microwave, cable, and satellite communications links that tie it to the DOD's worldwide Defense Communications System (DCS).

HILLY TERRAIN

In the difficult and mountainous terrain of Southeast Asia, line-of-sight microwave communications were impractical. Troposcatter allowed for long-distance communications hops over hilly countryside, overcoming this difficulty. Thus with respect to Stanford DOD research in this area, there can be little doubt as to the "direct and apparent relationship to a specific military function or operation," as demanded by the Mansfield amendment.

Although this research has recently expired, that does not necessarily imply that Waterman's presently active contract is suddenly as pure as the driven snow. In fact, this contract, sponsored by the Air Force Electronics System Division, with its cumbersome title, RESEARCH ON THE INTERACTION OF THE LOWER ATMOSPHERE WITH ELECTROMAGNETIC WAVES OF MILLIMETER WAVELENGTH THROUGH LINE OF SIGHT PROPAGATION STUDIES, is very complementary to the troposcatter studies.

The aim of the study is to make theoretical and experimental investigations of the effects of air turbulence, normal weather conditions, and rain on the propagation of millimeter wavelength radio signals over a 17 mile line-of-sight path in the lower atmosphere.

MANY APPLICATIONS

All three services have for a number of years been interested in the millimeter wave portion of the electromagnetic spectrum. The reason for this interest is summed up in the Army Research Office publication, *Military Themes For Oriented Research of High Scientific Merit (Feb. 1970):* "Among the many features which are of interest to the Army are (1) a definite sensitivity to metal, (2) an ability to "see through" dry material, such as cloth, wood, or camouflage, (3) a wide bandwidth capability, (4) a high degree of resolution, and (5) capability for active and passive detection by radiometry."

It goes on to say that "these advantages have led to the speculation that radars capable of detecting tanks or guns in the jungle are feasible or that multi-channel voice-communications systems may eventually be realized." The Army has in fact already developed millimeter wave imaging devices capable of piercing fog.

However, what is important with respect to this contract is what the Air Force is specifically looking for in the way of applications. The Waterman research is part of the *Millimeter Wave Propagation* project of the Air Force ENVIRONMENT exploratory development program. This program is concerned with the study of the atmosphere as it effects Air Force operations, particularly the propagation of electromagnetic waves through the atmosphere.

WEATHER WATCH

Like all the other armed services, the Air Force has major requirements for world-wide surveillance, and knowledge of the atmosphere through which it flies its planes and transmits radio and radar signals. No doubt, the use of millimeter waves as an indirect means of probing the atmosphere, to meet some of these requirements, may be of some value to the Air Force. Nevertheless, as will be shown presently, the Air Force has more compelling reasons for sponsoring research in this area.

The requirements of a large bandwidth to accommodate many radio channels and large information flows, and a secure and transportable communications system are all met with the use of frequencies in the millimeter range (greater than 30 Ghz, 1 Ghz=1 billion cycles/second). For example, it was noted in *Missiles and Rockets* magazine (Jan. 31, 1966) that "The 30 to 100 Ghz band alone . . . provides more than twice as much spectrum space as has been available for all uses since the beginning of radio." It further notes that "communications between a high flying aircraft and a satellite can be made jam-free and secure from

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stuff...

Continued from page one

The Gap is finishing up a sale on Levis by moving its stock down to San Jose for a sell-out next Thursday, the 18th. Peter Haas, president of Levi Strauss, has joined the Stanford board of trustees. Since Levi Strauss owns 51 percent of the Gap it seems to us that Stanford students should get free Levis. There must be some spinoff value to going to Stanford.

The Steak Special at MBJ on Sundays is tasty and cheap. The *Chaparral* made a run down there last week, and where else can you eat on Sundays?

Entertainment is not as scarce as heavy drama. The Early Music Quartet is well worth the listening, although the fare is steep. There is only one performance on Friday night. Yes, Virginia, the Beatles dug the old music, too.

Testing Waterbeds at the Magic Sun is a mellow trip. Good prices and nice vibes. Save water, sleep with a friend, and think of all the goose feathers that are still on the bird, or styrofoam at the Dupont plant.

Crows Continue...

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groundbased facilities because of the high antenna directivity, large bandwidth, and high attenuation of millimeter waves in the lower atmosphere."

The article also records that Stanford was one of the major universities doing military-sponsored millimeter wave research in support of these ends. This was Waterman's *Millimeter Wave Propagation* project, the forerunner of his present work. Interestingly, Waterman had another STL project in 1968, *Millimeter-Wave Propagation Through the Atmosphere,* that was part of a classified Air Force contract at Stanford called *Space Environment Studies.*

RESTRICTED RESULTS

As with the earlier contract, the millimeter-wave study clearly falls into the category of military research, despite its unclassified status. It is not necessary, as some believe, that a contract be classified in order to be relevant to specific military missions. How a contract fits into a broader DOD program is what often determines its real significance. Thus while both Waterman contracts were unclassified (or declassified) the Defense Documentation Center statement of their applications to military needs (see the SWOPSI report) was DOD restricted and unavailable to the public.

But military communications to many may not seem to be as dramatic as fragmentation bombs. Yet in the operation of a modern combat force, especially in the kind of war being fought in Southeast Asia, communications are equally essential to a war effort. In 1968, Gen. Westmoreland, the head of the armed forces in Southeast Asia, pointed out that "Move, shoot, and communicate" had been the guideline for military leaders on the field since the beginning of history. "Blended together, these functions can spell success in combat—the absence of any one of them can spell defeat. Each is no more, or no less, important than the others. And yet, I would offer that on the battlefield no plan of operation is given serious consideration without assured communications."

CIVILIAN USES

Some may still argue that despite military applications of this research, there are important civilian applications as well. Unfortunately, there is not enough room here to go into detailed arguments. But there are some points that should be made.

First of all, the DOD usually has a different set of requirements for the development of their systems than commercial enterprises. The DOD requires, for example, much more flexible, viable, and secure communications systems than do private enterprises, who are primarily governed by economic constraints.

These 120-foot troposcatter antennas in Vietnam are similar to the ones being designed at Stanford.

Thus the DOD is the foremost user of troposcatter communications systems in the Western world. Troposcatter is very expensive and not particularly well suited for commercial communications. In fact, if the U.S. withdraws its troops from Vietnam, that country will end up with a "greatly shrunk" communications system because the troposcatter links cost too much to run as viable commercial operations (*Electronics,* Oct. 26, 1970).

LARGEST CUSTOMER

The military is also the foremost user of satellite communications and microwave systems. It will hold this preeminent position for the foreseeable future. In fact the DOD is one of the largest customers of the civilian Intelsat satellite communications system. Furthermore, much of the military communications in Southeast Asia has been operated by commercial communications people.

The expected timescale before millimeter waves will be practical for commercial use is 10 to 20 years due to technical, political, and economic constraints.

Finally, it should be noted that the same industrial groups that bring us the military satellite system also bring us and control the commercial systems. Considering the present American foreign policy, even if the commercial systems are able to exploit millimeter waves to their full potential, it is unlikely that improved human understanding will be the result. It is unfortunately more probable that both military and commercial satellite systems will contribute to the increased American intervention in the economic and political affairs of other countries around the world.

(Joel Yudken is a Young Crow whose name is frequently misspelled.)

c. Dr. Graves chaired a symposium of legislators who discussed bicycle laws. Left to right, Neil Good, Administrative Assistant to Sen. James Mills, Dr. Graves, Sen. Arlen Gregorio, and Assemblyman Dixon Arnett. Sen. Mills was unable to attend the symposium because he had broken a rib and collarbone in a crash at a similar festival, in San Francisco, two weeks earlier.

Bicyclists...

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commuting and pleasure bikeways. Daniel Smith, project manager for a consulting firm, provided much useful data on costs. For example, $6,400 buys a mile of raised bumperblock barriers to protect bicyclists from autos.

So ended one of the first of many meetings that will be necessary if bicyclists wish to exert their influence. I was impressed, also, with what one man can do and with the sacrifices that individuals must make if they are committed to bicycle interests. I found that Roy Peterson, president of the Western Wheelers Bicycle Club, did much of the organizational work for the meeting. When I interviewed him on the day before the event, he was red-eyed and bone-tired. "I even had to take three weeks off my job to put full time into this," he said.

His wife, Carol, had also struggled day and night, writing letters etc. for the festival. The Petersons are two charter members among the new breed of bicyclists who, politically, are not content to remain meek little creatures.

—LEE FOSTER

Students Subsidize Mother Bell

Having trouble with your phone? Call your Telephone Company Business Office at 326-8201.

By SETH NEWMAN

Recently there has been a spate of articles about Ma Bell, some telling what a cheap mother she is, and others describing ways in which inventive people have waged a people's war against her. This article falls into the "cheap mother" category. The particular offense in question is a ripoff which is victimizing Stanford dorm residents: the 491 telephone exchange. The exchange is a marginal system at best and cannot provide any service needing more than the simplest technical features. Although in many ways it provides inferior service, students have until recently paid the regular rate and even now have not received all the rate relief they deserve.

Prior to August 1970 most dorm residents were served by the Toyon switchboard, which was leased by the University from Ma Bell's local firm—The Pacific Telephone and Telegraph Company (the "The" is part of the name). Service was poor; there was a phone at the end of each corridor and a system of buzzers to inform residents of incoming calls. Pay phones were in the lobbies for outgoing calls. The system had a single redeeming quality: it was free to the student user, and if you wanted better service you were free to buy it from PT&T on the same terms as anyone else.

In January of 1970 it was decided to BAP the Toyon switchboard. Eight months later a yellow prefab building was erected at the corner of Panama and Lomita Streets (across from Earth Sciences) and the 491 exchange was installed.

MORE BUSINESS

The reason for this construction was that PT&T assumed that the elimination of free dorm telephone service would result in requests for 2200 new residential telephones at Stanford. What is interesting here is that according to the California Public Utilities Commission (PUC), in May of 1964 there were 92,380 telephones in service in Palo Alto. Even assuming no growth since then, it seems unlikely that there was not a 2.5% reserve which could have handled those new lines.

In fact, that demand never really materialized, but Ma Bell had a solution anyway. It seems that San Jose State College had ordered a centrex system for their dormitories and then canceled out, leaving PT&T with a 2200-line centrex on its hands. Someone at Telco (*Tel*ephone *Co*mpany) assumed that all students everywhere are alike and that Stanford was just the place to unload an orphaned telephone exchange.

At this point, PT&T and the Stanford administration negotiated an agreement to put in 491. At the time the University denied the agreement, while Telco claimed it was Stanford's decision. In August 1971, a year after 491 went into service, I received confirmation of the University's complicity in the agreement. (This brings up a second interesting question: if the University is in the telephone business, why isn't it regulated by the Public Utilities Commission?)

CHICANERY

All of this chicanery would have been acceptable if 491 service had worked as well as that offered outside, which was what dorm residents with private phones had had in the past. Unfortunately, for technical reasons this was not possible with 491. In telephone parlance, 491 is a Western Electric type 711B Private Branch Exchange with certain centrex options (direct inward dialing and automatic number identification). The switchgear is of the step-by-step variety, a system invented in 1892 by an undertaker in La Porte, Indiana named Almon B. Strowger. (His competitor's wife was the town's operator. Strowger felt she was diverting all the stiffs and killing his business, so he resolved to put her out of business by replacing her with a machine.) The system was revised in 1896 and few major changes have been made since then.

Strowger's system is known as a branched switching system, which means that a call must travel over one of a fairly small number of paths to be completed. At each dialed digit there must be a vacant trunk if the call is to go through. Since the individual switches must be occupied for the entire length of the call, the system requires adequate trunks for every contingency at every point, and this can cause problems.

(An alternative system is known as common control/matrix and includes exchanges of the Crossbar and ESS varieties. Switching in these systems is controlled by a common computer-like unit and all lines appear as verticals in a matrix while connections are made by horizontals. In this way any horizontal can connect any two verticals and far fewer trunks are required, while the common controller need only be occupied to set up and take down the call. Local examples of this are the 321,326,327,328,329, and 493 exchanges. We will see later that if students had been assigned numbers in the local common controlled exchanges, many of the problems of 491 would not have occurred.)

PROTESTS INEFFECTIVE

In spite of the protests of students like me, 491 service was installed during August of 1970. Year-round residents of the dormitories woke up to find that the service they had previously enjoyed had been changed to 491. In September returning residents were confronted with an established fact, including those (like me) who had been assured that they could retain their 32X numbers. Students were offered single party flat rate residential service only — the cheaper two-party and measured service lines were not offered. Of course such extra-cost options as touch-tone were not offered (it is very difficult to provide touch-tone in step-by-step exchanges). During heavy traffic periods students found outside calls (491 requires a "9" to dial non-491 numbers) stopped with a "fast busy" indicating all trunks busy. Incoming calls also encountered this annoyance. Trunking problems to 32X numbers would never be encountered from 32X numbers, and trunking problems are almost always less severe on common controlled exchanges.

Various other failures were also common. Two that plagued us were cable failures that caused our telephone to go dead (brought on by otherwise unnecessary recabling for 491) and bad switches that arbitrarily assigned a second digit when dialing inside calls, forcing one to dial 9-491-xxxx and tie up not one but *two* of the few outside trunks. The final inadequacy of 491 is the absence of intercept/referral on unused numbers. This means that when a student moves out of his room a caller will encounter "I am sorry . . ." instead of the lady who says "the new number is . . ." Since most students presumably want their new number known, this is a serious inconvenience. For all this a student pays the same price as a customer buying real telephone service in Palo Alto.

COMPLAINTS

At the end of the last academic year the 491 system provoked a series of complaints to the PUC, among them one from Cedric Walker, who refused payment of his last month's telephone bill because of the lack of referral. The PUC returned Walker's check and stated that the "dormitory rate . . . [would not be] . . . increased" as part of the general rate increase granted PT&T. When students returned to their dormitories in September of 1971 they did find 491 service at the old *monthly* rate, but they also found that installation was now $13.00 instead of $10.00. In view of the PUC's promise to Mr. Walker it seems unfair that the student should have to pay the extra $3.00 (as one must to have telephone service), and that would seem to constitute a rate increase. This fee is especially unreasonable when you consider that on the 491 exchange installing a phone usually means simply turning a switch at the central office.

Returning students found that they were not entitled to a number of other privileges which were to be provided free by the telephone company as a result of the new regulations, but these have already been discussed in an article by Garry Hanken in the October 7, 1971, edition of *The Journal*, the law school paper.

It becomes obvious that 491 either wasn't necessary, or would not have been necessary if PT&T had done a little planning ahead; that the equipment and consequently the service is poor; and that Telco marketing has attempted to promote as normal or even desirable a service that is in fact inferior.

(More next week: Why is 321-2300 always busy?)