

Effects of 40 Years of Irradiation Studied

Nuclear power plants, which have an expected lifetime of about 40 years, contain various types of safety equipment for use in case of an accident. Much of this equipment, such as electric cables, contains polymeric materials. It is vital when designing new plants to know how such materials will age under the long-term, low-level radiation environments that occur during normal operation, since the equipment must be ready to perform adequately in the event an accident occurs.

Ken Gillen (Physical Properties of Polymers Division 5813) and Roger Clough (Chemistry of Organic Materials Division 5811) have been investigating the problems of polymer aging—the mechanisms of the aging of rubbers and plastics at the molecular level.

“Since safety cables in a nuclear plant are designed for the life of the plant, they must be able to withstand an accident any time during the 40-year plant lifetime,” says Roger. “However, long-term exposure to normal operating radiation can age them significantly. Our job has been to devise methods to determine how cable insulation materials will change under operating conditions with the eventual goal of creating age-simulated cables for testing in postulated accident conditions. Simulating the aging by accelerated tests helps us predict whether both new and older equipment might survive the accident.”

“For years the cable industry has proceeded under the assumption that the total radiation dose received by a material governs its damage, independent of the dose rate,” says Ken. “In other words, if radiation over a 40-year period equals 40 megarads, then they assumed that subjecting material to 40 megarads in two days will produce the same results.”

“Recently, NRC had Sandia check these assumptions,” says Roger. “For many materials we determined that the lower the dose rate for the same integrated total dose, the more severe the damage. So high dose rates over a brief period do not give an accurate forecast of the durability of materials over 20 to 40 years. Previous testing methods have underestimated the long-term effects of low radiation exposure by not taking into account the occurrence of dose rate effects.”

“Our cobalt 60 test facility was designed specifically for this program,” says Ken. “It provides elevated temperatures and radiation which can be applied separately or jointly. In addition, we control the atmospheric environment, changing it, say, from air to nitrogen.”

The test facility consists of a water-filled, stainless-steel-lined pit 15 feet deep. Cobalt 60 at the bottom provides radiation doses for samples which are lowered into the pit in individual temperature-controlled aging cans. Up to 24 different experiments can be performed simultaneously and a large range of dose rates (from 1 megarad/hour to 2 kilorads/hour) and temperatures (ambient to 200°C) are available. An umbilical cord—really a large-diameter plastic tube—connects the watertight



ATOP THE COBALT 60 test facility are, left, Ken Gillen (5813) and Roger Clough (5811). The grating keeps them from a dunking in the 15-foot-deep, water-filled pit where aging cans (like that held by Ken and Roger) are inserted. Behind them is the temperature-control console.

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aging cans with the control panel at surface level. This allows for control and measurement of temperature, electronic monitoring of sample changes, and introduction of selected atmospheric environments. Since the cobalt remains at the bottom of the pit at all times, there is no need for a lead-lined handling room and long-term aging exposures can be conveniently accomplished without interruption. This facility is dedicated exclusively to polymer aging tests and its range of capabilities makes it one of the most versatile radiation-aging facilities in the world.

Ken and Roger say that their work is very satisfying because it is basic research with immediate practical applications. Says Ken: “We study detailed chemical processes involved in degradation of materials using very sensitive techniques. And our sophisticated equipment permits high precision.”

“Our results could dramatically affect the way industry carries out qualification tests for materials,” says Roger. “Our findings are being incorporated in industry standards. And the concern over degradation of materials exposed to radiation is

becoming worldwide with extensive research programs now being carried out in both France and Japan. The International Atomic Energy Agency in Vienna has contacted us to help them form an international committee to look into polymer aging and to monitor work in this area. Since these aging tests are expensive and time consuming, increased international cooperation would be advantageous. In fact, we are currently sharing radiation facilities in a cooperative research program with France.”

Many other Sandia organizations have extended valuable support to the program—especially the analytical group in 5820. The aging work is part of a larger effort on nuclear reactor safety, the Qualification Test Evaluation Program in Lou Cropp’s System Safety Information Division 4445; Lloyd Bonzon is the program manager. Larry Bustard (also 4445) is now working with the high-intensity adjustable cobalt array (HIACA)—another versatile Sandia facility. He has been testing for synergistic effects that show up during an accident, and correlating his findings with the results obtained by Roger and Ken.

Afterthoughts

Our military might--From the KAFB Bulletin: "The Wear of Non-Pierced Earrings. AFR 35-10, para 1-12b(1)(3), is not intended to restrict the wear of non-pierced earrings. When we refer to earrings not extending below the ear lobe in AFR 35-10, we are referring to the earring itself, i.e., long dangling earrings." Who says the all-volunteer force is not a success?

* * *

Golden words--Would you care to guess which magazines led the pack last year in numbers of readers? First was Reader's Digest, 16,849,086; next, National Geographic with 10,557,463; and third, Better Homes & Gardens, 7,350,829. It's true that intellectuals tend to sniff at the Digest, regarding it as inspirational pap, but I incline to the view that some reading--like exercise--is better than no reading, and it's abundantly clear that RD strikes the right chord, whatever the reservations of the deep thinkers.

* * *

In the mail--From Don Schubeck (3654), a flyer to join the International Stop Continental Drift Society. ISCDS lists as its aim the cessation of sea-floor spreading, cooling of orogenic magmas ... and the end of all subduction. Right on! And they're giving Pres. Reagan the Jolly Good Fellow of the Society award for his efforts in arresting the leftward drift of North America. If you join, you get a STOP CONTINENTAL DRIFT bumper sticker.

From Al Smiel (2152), a letter from Fotec Inc. of Boston. Under a heading "Export Information," Fotec discusses its electronic and fiber optic offerings and concludes, "We do not currently have a representative in your country, but we can accept orders directly... You may order units at U.S. list price." Maybe we should apply for our own seat at the UN.

* * *

"The solace of work that is essentially vain, futile or meaningless is style." (Farmer's Almanac) *js

feed back

Q. I find the spotlight used during Sandia colloquia to be very distracting when slides are used by the speaker. The light seriously degrades the quality of the slide. If it is deemed necessary to keep a light on the podium [the speaker is usually over by the slide], it should be smaller, farther from the screen, and dimmer.

A. The Colloquium Committee has been irked by this same distraction for some time. Video Services Division assures us they are doing the best they can with the present lighting and camera equipment. Our library of colloquium tapes now constitutes a valuable asset and we are reluctant to discontinue taping. We hope to solve the problem by obtaining better equipment: a more sensitive camera and a remote control system. Education and Training Division is actively pursuing funding for this improvement.

Crawford MacCallum
Colloquium Committee Chairman

Q. Concerning metrification, who are we [Sandia] trying to fool? Claims are made about how wonderfully we have done in metrifying the world, but consider:

1. *We make drawings in metric [even if we think in English].*

2. *Order analysts change to English so local shops will bid.*

3. *We receive the parts and take them to inspection, then inspection changes the drawings to English.*

4. *We send drawings to plants and they redraw in English so they can manufacture.*

Seems to me the only people winning this chase are the calculator manufacturers.

A. In the mid-1970s, the IMOG Task Group on Metrification was faced with a major dilemma. The weapon designers didn't want to use metric unless they were assured that production and inspection would be done with metric machines. The production agencies took the position that they would do little to convert or buy metric machines until the designs were specified using metric dimensions.

This impasse was overcome by deciding that new weapon designs would be predominantly metric and that high priority would be placed on the purchase of metric inspection equipment at the production agencies. The intent is that if we design using metric dimensions and inspect to the metric definition using metric equipment, we have a metric part regardless of the intermediate manufacturing steps. Using this concept, pressure is put on the designer to "think metric" and pressure is placed on the manufacturing agencies to convert their manufacturing capability to metric.

The Livermore Laboratory mechanical inspection has the capability to inspect most parts to the metric definition and that capability should be used.

D. M. Olson—8100

Events Calendar

March 5-6—"The Mikado," Albuquerque Opera Theater, 8:15 p.m., Popejoy.
March 5-21—"To Kill A Mockingbird," Albuquerque Little Theatre, 242-4315.
March 6-7—Gun Show, N.M. Gun Collectors Assn., antique and modern

weapons, 8-5, NM State Fairgrounds.
March 9—Seraphine Trio, 8:15 p.m., Keller Hall, UNM.

March 12-13—NM Symphony Orchestra, Nina Beilina, guest violinist, 8:15 p.m., Popejoy.

March 12-13—The Rio Rancho Theater Workshop presents "The Curse of An Aching Heart," (Roque Feliciano, 1551, appears in this melodrama), 8 p.m., 2 p.m. matinee on 13th, Rio Rancho City Hall.

March 14—Oswald Ragatz, organist, 4 p.m., First United Methodist Church, 243-5646.

March 14—Travel & Adventure film, "The Amazon by Raft and Ship," 7:30 p.m., Popejoy.

March 15—Audubon Wildlife film, "Naturalist Afield - Part II," 7:30 p.m., Popejoy.

March 15—Engelbert Humperdinck concert, Tingley Coliseum, 243-3208.

March 16—Rod Steward concert, Tingley Coliseum, 268-6767.

March 17—"Backstrap Weavers of the New World," illustrated lecture (a program in conjunction with the Fiestas of San Juan Nuevo exhibit), 8 p.m., Maxwell Museum.

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Supervisory Appointments

Q. Why can't Gate 11 be kept open at least half an hour later on days when it snows? It's bad enough driving on the icy roads, much less having to get to work and walk so far in the cold and on icy sidewalks.

A. Manning gates is expensive. Gate 11 is primarily a convenience gate opened only during rush periods. Under our present schedule, we use 4½ manhours per day to keep Gate 11 operating, and that equates to about \$16,000 per year. While we appreciate the inconvenience caused by inclement weather, adding to the cost of security would not seem to be a very good answer. We try to accommodate special circumstances but cannot implement a gate manning procedure based on our highly variable weather conditions.

D. S. Tarbox—3400

Q. Several years ago the security people stated that immoral behavior on the part of Q-cleared employees might be considered a potential security risk because of the dangers of blackmail.

With the current permissive attitude of society toward morals, are the security people still concerned with the morals of Q-cleared employees?

A. It would be inappropriate to give a simplistic "yes" or "no" answer to this query.

Sandia security policy concerning the subject commented on in this Feedback is set forth in Section 5 of the *Sandia Security Handbook*. This document is available in each organization or at any of the security organization offices. If the author of the Feedback would like to discuss a specific issue, he/she should feel free to contact any security supervisor.

D. S. Tarbox—3400

Q. Some dependents of SLA employees do not have ID cards to permit them on Kirtland AFB. Mine have "Sandia Base" IDs which are not accepted on KAFB since Sandia Base does not exist. How can current ID cards be obtained for dependents?

A. The Badge Office has been issuing ID cards to SNLA employee dependents since 1978. Simply bring your dependents to the Badge Office between 1:00 and 3:00 p.m. The ID's will be made and you will be on your way in a few minutes.

Between the hours of 6:00 a.m. and 10:00 p.m., the Air Force Security Police usually allow properly marked vehicles to enter through the gates without being stopped. After 10:00 p.m. and before 6:00 a.m. all vehicles are stopped and occupants must display ID which authorizes KAFB access. The Air Force reserves the right to stop and identify vehicle occupants at any time while entering, driving through, or leaving the Base.

Thank you for your inquiry.

D. S. Tarbox—3400



BILL HOLLIS to supervisor of Financial Division 8213, effective March 1.

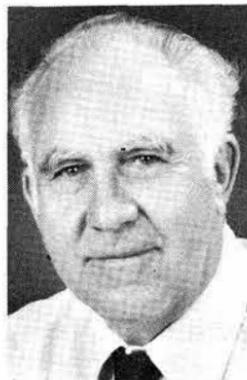
Bill first joined Sandia at Albuquerque in 1961 in auditing, later became a section supervisor in vouchering. He left in 1964 to join the faculty of Ft. Lewis College in Durango, Colo.,

where he taught accounting until 1969. He entered a private financial investment business and later returned to his teaching position at the college. In 1979, he joined Sandia in Albuquerque and, since October, has been in Customer and Supplier Accounting Division 3255.

His educational background includes bachelor's and MS degrees in accounting from Oklahoma State. He is also a licensed CPA in Oklahoma and Colorado.

He and his wife Chris have two children in college in New Mexico. His outside interests include camping, hunting and fishing as well as activities in his church.

* * *



VAL BLACK to supervisor of Model Shops and Inspection Division 8414, effective March 1.

Val began his career at Los Alamos in 1947, working in the Van deGraaff Accelerator Design Group. In 1949 he transferred to Sandia Albuquerque where

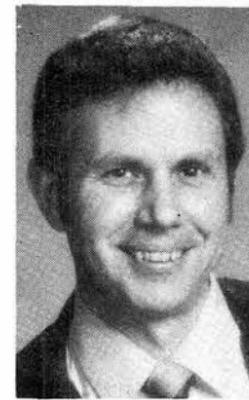
he worked in a weapons project group. In 1962 he came to California to take part in the Dominic test series, transferred to Sandia Livermore but worked onsite at

LLNL for a few years in the field test division. In 1966 he transferred to weapons project work at SNLL and took part in the Gas Buggy project. He moved into the Engineering Technology Department in 1975 where he has remained until the present.

Val's education includes a bachelor's degree in mathematics from Brigham Young University and a BS in ME from UNM where he also did some graduate work.

He and his wife Rhea reside in Livermore and have four grown children and six grandchildren. (One son, Ken, works in 8412.) Val's outside activities include hiking, backpacking and bicycling. He also works with young people through his church.

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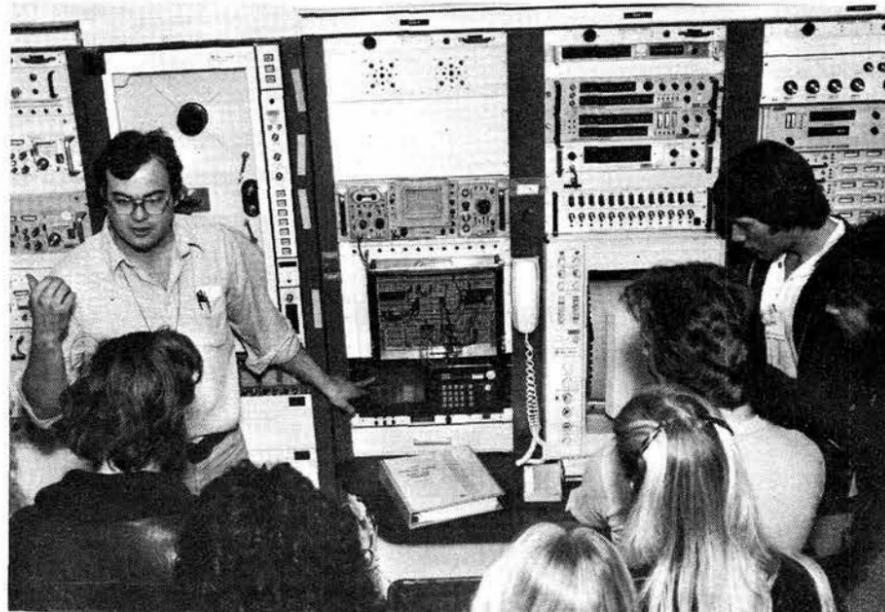


LARRY BERTHOLF to manager of Applied Mechanics Department 8120, effective March 1.

He joined Sandia Albuquerque in 1966 as a staff member in Computational Physics and Mechanics Division and, in 1969, was promoted to division supervisor. In 1980, he became supervisor of the Scientific Network Design Division.

Larry's education background includes a bachelor's degree in mechanical engineering from Washington State in 1962 and a PhD from the same school in engineering science in 1966.

He and his wife Carol, son Gary and daughter Gail plan to move to the Livermore-Amador Valley soon. Larry is a life master in duplicate bridge, his favorite pastime.



CHABOT COLLEGE students from a computer systems class visited Sandia Livermore recently, touring the microprocessor development lab and flight test telemetry instrumentation section. Explaining the telemetry receiving equipment here is Wayne Albright (8463). Other hosts were Don Stoner (also 8463) and Doug MacMillan (8411).

North To Alaska



TIM BARTEL (right) and backpacking companion—a medical researcher from Maine—after conquering Al's Peak in Alaska's Brooks Range. Many mountains are named after bush pilots who mapped the area.

[Have you taken an unusual vacation? Call us about it on 4-1053.]

For most of us the rationale for going on vacation is "to get away from it all," but only in the continuing context of our quotidian comforts. But Tim Bartel (4747) really means it when he wants a change from the hum-drum.

Last summer Tim drove alone from New Mexico to Seattle, took the ferry for a thousand miles through the Canadian and Alaskan coastal islands, debarked with his van at Skagway, Alaska, hiked the historic Chilkoot Trail (famous from Klondike gold rush days), and drove up to Fairbanks.

"The ferry, a state-owned enterprise, is called the Alaskan Water Highway," says Tim. "There were no accommodations as such on the ferry—very few staterooms. Hundreds of people spread their sleeping bags on the large open deck. During the cruise I saw humpback whales, seals, and dozens of bald eagles.

"I went backpacking with four people I met in Fairbanks. I hadn't made prior plans—just decided to play it by ear. One was a medical student from Philadelphia, another a medical researcher from Maine, and a couple from Anchorage who planned our trip. She was a PhD and he a postdoc—both from Cornell—who worked for the Alaskan state government's land management office. And the med student brought along a very well equipped medical kit. More suitable backpacking companions would be hard to find."

From Fairbanks the party flew north to Bettles, a "bush pilot" town accessible only by semi-scheduled airline. The community has a population of two dozen or so—bush pilots for hunters mostly, who fish and hunt in the off season. Most of them are individualistic, outdoor types from the "lower 48." An Eskimo settlement is nearby.

"The town had a real frontier environment," says Tim. "The people didn't care about government, what was going on in Washington, or even about who is presi-

dent. They disdain newcomers and lower 48 folks and were suspicious of us when we first arrived. After we returned from the wilderness, we were more accepted.

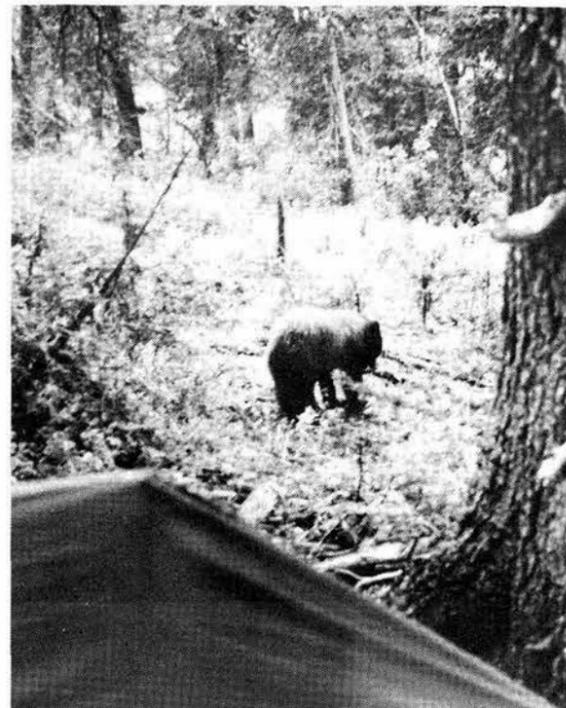
"The five of us clambered aboard a circa 1950 float plane which dropped us off within the Brooks Range, about 180 miles north of the Arctic Circle. It's a national park area but with no provision for rescue—we didn't even have to sign in like at other parks in the U.S. and Canada. You get into trouble, you get yourself out of it—if you can. Alaskans like it that way.

"The plan was to spend 15 days backpacking and canoeing. The longest trip I'd previously done was two days. We hiked 100 miles and climbed three mountains in 12 days to reach the canoes the pilot dropped off at the Koyukuk River—then we paddled another 100 miles back to Bettles. One mile of tundra bush walking is worth three miles of hiking anywhere else. The area was virtually devoid of people—we saw a backcountry ranger and we were the only people he'd seen in 35 days of hiking that summer. Animals abounded—caribou, moose. We saw one grizzly on the other side of the river feeding on blueberries—but we ran across many grizzly tracks. Since they were all wild animals unused to people, they avoided us.

"It never really got dark—the midnight sun and the Northern Lights were always with us. Fortunately, the weather cleared up after the first day and we had crystal-clear, New Mexico-type skies for the rest of the time. In the mornings the temperature was usually around five degrees, forty in the afternoons, and it dropped to zero at night. The evening silence was usually broken by the cries of nearby wolves. As we came down the river, we saw the seasons in reverse until it was very green around Bettles."

Tim drove back on the ALCAN Highway—a two-lane asphalt road in Alaska but mostly unpaved in Canada. There are filling stations every 50 miles, but most had closed after Labor Day—the end of the "tourist" season.

"I went 300 miles between fillings once," Tim says. "The road itself is very winding



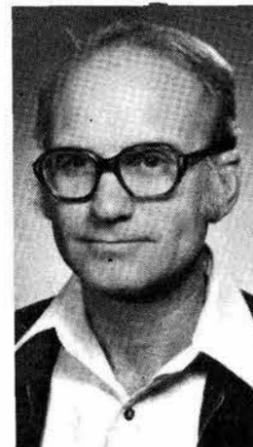
BLACK BEAR at Banff hurriedly leaving campsite after being discovered.

and quite dangerous in parts. I drove a semi-reliable 1970 van with 140,000 miles on it—the trip added 7000 miles not counting the 1000-mile ferry ride. On the way back I stopped off at Kluane National Park in the southwest Yukon Territory and backpacked for five days. Unlike Alaska, in Canada you have to register in their parks. The rangers were nervous about my going off alone in the wilderness, but when they learned I'd just come from Alaska's Brooks Range, they let me go.

"I was in Whitehorse, Yukon Territory, with seven days left of vacation when I calculated that Albuquerque was still over 3500 miles away which made me realize just how far Alaska really is. I stopped off at Banff and Jasper Parks in British Columbia and entered the U.S. via Montana. After all that driving, in Utah I hiked to unwind in a park full of people, a sort of reentry shock. Finally, I reached New Mexico in time to return to work the next day."

Logistics: Fare on the Alaska Water Highway ferry between Seattle and Skagway is \$515 for the vehicle and \$60 per "walk-on" person. Reservations for vehicles may be made by contacting the Alaska State Division of Tourism, Pouch E-57, Juneau, Alaska 99811. Reservations must be made well in advance. Individual round-trip airfare from Fairbanks to Bettles and the bush plane to Brooks Range, including canoes, came to \$400. Food costs per person came to \$40 for the 15-day backpacking trip.

Death



Dennis Oliver of Mechanical Design Division 1545 died Feb. 19 after an illness. He was 47.

He had worked at the Labs since August 1967.

Survivors include his widow, two daughters and a son.

For Munchers: Who's Who in Snack Food

by Susan Harris, Sandia Medical



It's time for an evening of television. For a snack you ponder: will it be the pretzels, the potato chips, the popcorn, fresh fruit, the peanuts, or the crackers and cheese?

We'll describe here how they stack up nutritionally in terms of calories, salt and fiber.

The emphasis in this ranking is on calories since excess poundage is a common problem.

Potato chips go to the bottom of the heap because their high salt content along with their calorie level (about 10 per chip, thanks to being fried in oil) make them highly unrecommendable for snacking.

Next up the totem pole would be peanuts. Although rich in protein and fiber, peanuts are high in calories (about 840 a cup, even dry roasted). Salt, too, can be a problem.

Crackers and cheese? Cheese is rich in protein and calcium but is also high in calories (about 100 per ounce) and salt and contains no fiber. Cheese and crackers can be a meal—something to keep in mind as you put them out as a snack.

The average snack of fresh fruit—for example, an apple—contains about 100 calories. So an apple, orange or pear would be a good choice—relatively low in calories, contributing some fiber and no salt.

The saving grace of pretzels is that they're low in fat (about one gram/ounce compared to 11 grams/ounce for potato chips) and therefore low in calories. Pretzels are high in salt, but you can buy unsalted ones or shake off some of the excess salt.

And so, our snack food winner is . . . popcorn: low in calories (about 50 per cup if popped with oil, 25 without) and high in fiber. Don't erase popcorn's benefits, however, by adding gobs of butter and salt.

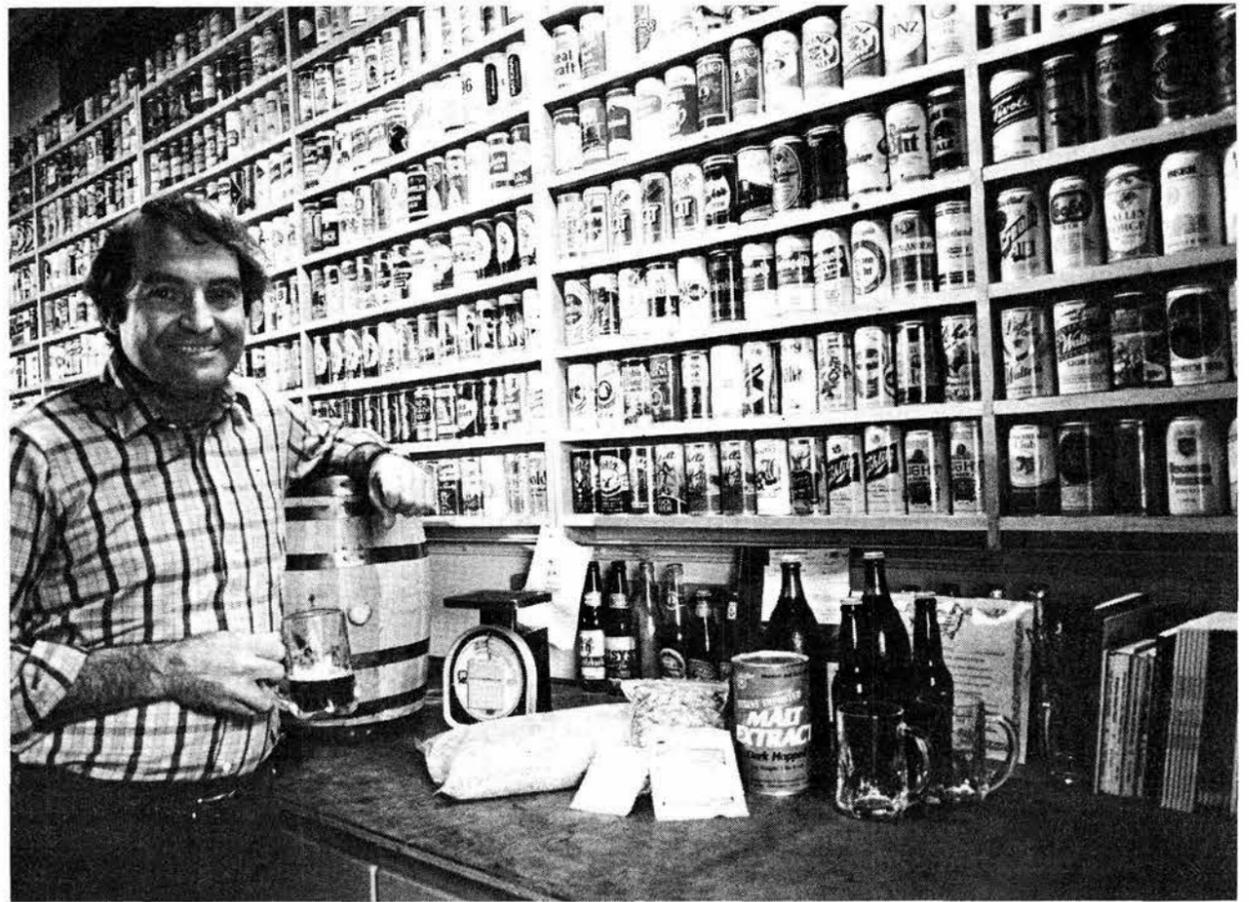
What if you'd like to munch totally guilt free? Enter the fresh vegetables. Crunching on carrots, celery, broccoli or cauliflower florets involves very few calories, little salt, and some fiber. For variety and added flavor, a low calorie salad dressing makes a good dip.

Congratulations

Arthur (1583) and Cindy Romero, a daughter, Carolyn Nicole, Feb. 6.

Tom (4422) and Vicki Kerley, a daughter, Katherine Michelle, Feb. 18.

Roger (2455) and Cindy Woodrum, a daughter, Stacy Lynn, Feb. 21.



DISPLAYING beermaking ingredients is hobbyist Dick Baughman (5154). On the table are barley, hops, malt extract, brewer's yeast, and brewer's salt. On the wall is Dick's beer can collection—648 samples (all unopened and full of beer) of rare and not-so-rare U.S. brands.

Dick Baughman Brews Beer

Beer. It has a proudly proletarian ring—the working man's beverage. But the heady brew also has history, tradition. It's one of mankind's oldest drinks, having first been concocted in ancient Egypt. Although the Romans remained inveterate wine drinkers, their legions carried six-packs from the Nile to northerly climes whence the barbarian hordes—the ones who later became the English and Germans—took to the old African brew and went on to become the world's foremost beermakers. However, in our era it is truly an international drink since fine beers are made in practically every country of the world.

Dick Baughman (5154) has always been aware of beer's proud history and of the finer points of beermaking: "I started making home brew 25 years ago in Cleveland," he tells us. "At that time, there were no home brew shops and brewer's yeast was almost impossible to obtain. Now you can buy malt extract syrup and make your own beer in a few hours.

"The hobbyist makes the malt extract from scratch, starting with barley grains. As the raw, or dry, grain is exposed to moisture, it starts to grow. This growth is halted by heating. Each malt has its own color which is determined by the temperature to which it's heated. For instance, very light lagers are from grains that have been heated to low temperatures—about 140 degrees. The darker colors result from heating between 170 and 180 degrees. The malt colors are light, pale, amber (or crystal), and black patent (the stuff from which Guinness stout is made).

"Then you put the malted grains," continued Dick, "in a mashing tun, or kettle, and cook at 150 to 154 degrees to produce maltose sugars which can be fermented by yeast. What you have now is malt extract. This tedious procedure

is avoided by buying the malt extract which usually already has hops mixed in. Hops, by the way, is a flower and only the female plant is used for beer. Hops gives beer a longer shelf life and its bitter flavor.

"You put the ready-made malt extract in a one- or two-gallon pot, add water and special brewing salts (to increase the water hardness), and boil for a couple of hours. Then it's transferred to a nonaluminum container, and yeast and dextrose are added—the latter to increase the alcoholic content. Seal and allow to ferment. When the beer is done, transfer it to a large glass vessel or individual bottles and let it age or 'lager' (German for aging) for a month or two. I can make a fine beer this way for about 17 cents a 12-ounce bottle.

"To prime the beer, I add one cup of sugar to five gallons of completely fermented beer. That's enough to give it fizz or carbonation as it ferments in the bottle. Too much sugar and the bottle blows up—too little and the beer will go flat. Trying to bottle the beer before primary fermentation is complete is tricky and I don't recommend it."

If you want to brew your own, Dick recommends the following equipment: a one- to two-gallon boiling kettle (the larger the better), a stirring spoon, a fermentation container with a tight-fitting lid and airlock, a siphon tube, beer bottles, and a bottle capper.

"Wash and sterilize everything in chlorine bleach," says Dick. "Unwanted bacteria can quickly spoil a batch of beer. The beauty of home brew is that you can make any kind of beer you want—from light to dark—and of higher quality than most commercial brands." And a recently passed law allows each adult in a household to brew up to 200 gallons of beer yearly for personal consumption.



ED VEGA executed this steel and copper sculpture as a commission under the 1% for Art program. The work can be seen at the San Mateo Minipark between Constitution and Indian School. (Photo by Brian Walski, Albuquerque Journal.)

Our Town

'1% for Art' To Give Our City Eye Appeal

Works of art in public places, a hallmark of many European cities, can do much to relieve the drabness of the urban scene. In a city like Albuquerque, where plants and trees find our natural aridity less than congenial, artworks can enhance the desert landscape—and they don't need to be watered. This is the rationale behind a city measure, passed in 1978, creating the "1% for Art" program. It provides that projects in the city's capital improvement program—parks and recreation, library, zoo, open spaces, and others—would include an amount for works of art equal to one percent of the total cost. At the same time, an Arts Board was created to carry out the program.

Since that time, two bond issues have provided funds for the program. The Arts Board has committed all of the 1979 funds (\$181,305) and is currently discussing sites and types of art to be acquired with 1981 funds (\$311,547).

The first large piece of sculpture to be completed under the one percent program is in place at the San Mateo Miniparks, north of Lomas. The sculpture, by Albuquerque artist Ed Vega, is a large, 10-element work made of steel and copper.

Vega, chairman of the Art Department at the U of A, was selected for this commission from some 40 artists who submitted designs for this site.

Other 1979 bond-funded projects include:

- a bent wood and batik banner, installed in the Palo Duro Senior Center;
- a mural at the Jackson Elementary School Minipark;
- a fountain sculpture to be installed this spring at the Rio Grande Zoo entrance;
- a ceramic tile mural, of dogs, to be placed above the main entrance to the Animal Control Center;
- a work of sculpture for Tiguex Park;
- "sculptural bus shelters" by four artists for use in the Lomas Parkway project;
- a competition for a work of art for Candelaria Farms at the Rio Grande Nature Center;
- an interior work for the Prospect Park Branch Library, to be commissioned this spring;
- a project to provide play sculptures in the Trumbull (SE) neighborhood;
- illustrations from Don Quixote by New Mexico artists are being prepared for the Library's Center for the Book.

Marjorie Neset is the city coordinator for 1% for Art. She encourages artists to get on her mailing list and thereby receive project announcements. If you're interested in being a member of the jury to select art works, then contact her in care of the Community Cultural Affairs Program, P.O. Box 1293, Albuquerque, 87103, or call 766-7816.

Sympathy

To Mae Lovelace (1471) on the death of her father in Albuquerque, Feb. 17.

Speaker

R. L. Iman (1223), "Some Aspects of the Rank Transform in Analysis of Variance Problems," invited paper, SAS Users Group International annual meeting, Feb. 16, San Francisco.

THIS IS A RATHER INSOUCIANT BOWL OF CORNFLAKES WITH AN AMUSING BOUQUET . . .



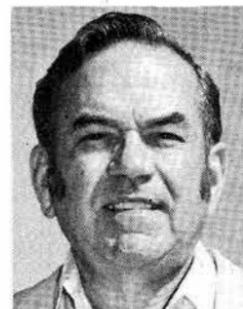
. . . Researchers at Cornell U. have "found a micro-organism that can turn milk into 'wine, sherry and brandy'—and half or less the cost of grape wine. The organism ferments lactose, the sugar in milk products, in this case working on a concentrate of whey diluted with water. One hundred pounds of whey can produce approximately 335 fifths of wine, with 10%-15% alcoholic content, similar to grape table wines. Heated for two to three weeks, the wine becomes an amber sherry. It can also be processed into brandy. All three drinks taste 'real,' say the samplers . . ."

—Research Institute Recommendations

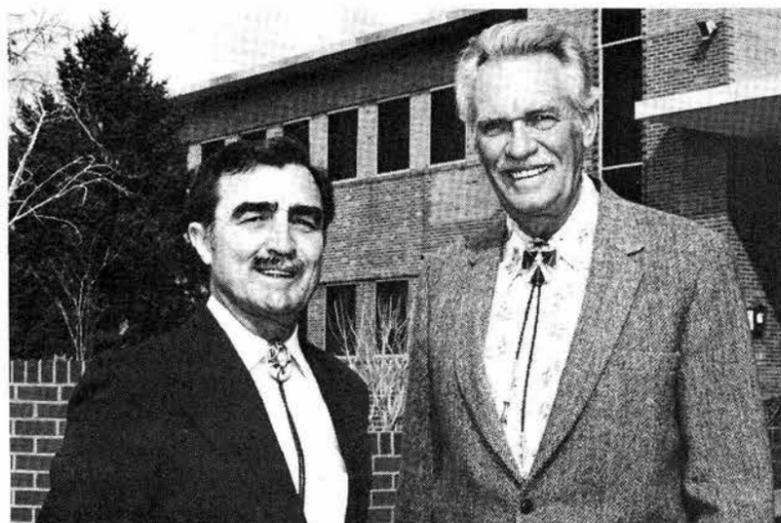
Retiring



Dick Richards (2423)



Tom Chiado (3436)



Harold Brueggemann (2456) and Russ Foster (3710).



Ernest Tavasci (3425), Jim Scott (4700) and Ed Strance (3742).

Take Note

"New Mexico Solar Heating—Yesterday Is Tomorrow" is the title of a new exhibit at the Albuquerque Museum that runs until March 28. Tracing the evolution of solar development in New Mexico, the exhibit looks at solar development from Indian culture through Spanish influence to today's contemporary designs.

* * *

Mary Campbell (3523), president of the local chapter of the American Association of University Women, reports that Gerda Krefft (3511) and Arlene Price (3330) are the featured participants in a "Families & Work Project Workshop," sponsored by AAUW, to be held March 6 from 9 a.m. to 3 p.m. at the downtown YWCA. The workshop, open to the public, will focus on problems within a family arising from outside employment of family members.

* * *

The Sanado Woman's Club is running its annual Art Show on March 8 and 9 at the NCO Club East. On the 8th, hours are 4 to 8 p.m., on the 9th, 10 to 12 noon. A luncheon starts at 12:30 on the 9th, and Helen Hardin, Indian artist, will be the guest speaker. Reservations: Carolyn on 266-9927.

* * *

The March meeting of the American Society of Quality Control features balloonist Maxie Anderson, who will discuss the need for quality and reliability in ballooning equipment. The Coronado Club ballroom is the locale, and the meeting begins with dinner at 7 p.m. Reservations: Bruce Coleman on 4-5340 or Bob Hannigan on 4-6255.

* * *

"Engineering as a Career" is the subject which Marv Torneby (3531) and José Morreale (2331) will discuss on "Somos Bilingües en KOAT" on March 14 at 7:30 a.m. (Channel 7). Julia Gabaldon (3163) presides.

* * *

You get up in the morning, find your home phone doesn't work, and resolve to call Mt. Bell's trouble number, listed in the front of the directory, when you get to work. Trouble is, that number (1-551-1651) doesn't work from phones with our 844 prefix. Karen Anderson (5520), who reported this to us, finally got through after enlisting the operator's help.

* * *

Medical's next *Go For Health* presentation brings Larry Morgenstern, an MD in obstetrics and gynecology, to discuss "What is Menopause and How Is It Treated?" The lecture takes place on Tuesday, March 16, in Bldg. 815 (outside) and runs for an hour from 12 to 1 p.m.

* * *

Other Sandians retiring, not included in our photos, are Joseph Maestas (3426),



PRESS CONFERENCE—At Sandia's PBFA facility, Senators Pete Domenici and John Warner (R-Va.) field questions from the press during a recent visit to the Labs. The legislators had earlier talked with President Dacey and received briefings on Labs programs relating to weapons, energy, microelectronics and safeguards. At PBFA they were updated on the particle beam fusion program. Senator Domenici is Chairman of the Senate Budget Committee while Senator Warner heads the Strategic and Theater Nuclear Forces Subcommittee.

Dale Hanely (3715), Lorella Salazar (3511), Carl Northam (1137), Delia Stites (3741), Pauline Vandelinder (2614), Martin Rhoads (2436), Grover Edwards (3311) and Herman Romero (3417).

* * *

The military are getting excited about non-residents driving through the Zia Park housing area to get to and from the west side of the Base. Don't do it, they say, unless you enjoy citations. Their notice says nothing about bicycle traffic and, as far as we know, bicyclists may continue to pass through the housing areas.

* * *

Share a Cross Country Ride is the name of a new service offered by the Que Pasa Rec Center and, while it's aimed at the young military on-Base, Sandians may have a teenager or college student at home who needs transportation to some distant place. Or who could furnish such transportation on a share-the-cost basis. The service operates out of a card file of clients who list their travel aims and dates. Call D. J. Walker on 4-5420 for more information or to sign up.

* * *

The Duke City Business and Professional Women's Club is sponsoring a speaker's bureau for the Albuquerque Shelter for Victims of Domestic Violence. Marcella Flores (1553) is the coordinator for the bureau. In existence since 1976, the shelter currently helps over 40 women and 75 children every month. Victims are those whose resources are limited or non-existent and for whom the shelter is the only alternative to being abused in their own homes. Groups interested in learning about the shelter can call 247-4219.

* * *

Were you a member of the Highland High class of '62? Jewel Glavey (255-4790) is trying to locate classmates for a 20th reunion.

The General Services Administration is conducting another spot bid sale on 143 used government vehicles on Wednesday, March 17. The offering includes pickups, sedans, carryalls, school buses, station wagons, vans, forklifts and travelalls. The vehicles may be inspected March 15 and 16 from 8:30 to 3:30 at the GSA Motor Pool, 1800 12th St. NW, and the sale begins at 10 a.m. on March 17 at the West Side Theater on Kirtland AFB, Bldg. 485. Under a spot bid, offers are submitted in writing to the sale officials who select the highest offer. Thirty-two (32) of the vehicles and the forklifts are from Sandia Labs.

* * *

The Albuquerque chapter of Professional Secretaries International is conducting a workshop for secretaries at the Hilton Inn on Saturday, March 20, from 7:30 a.m. to 4 p.m. Senator Jack Schmitt is the keynote speaker, while Carolyn Mills of Mills & Associates will present a seminar: "Effective Communications and Interpersonal Work Relationships." The \$40 fee covers the seminar and its materials, an exhibition, lunch and a fashion show. Register by March 10: 892-9300.

* * *

A free demonstration of the *Stressaway* method of stress reduction will be held on March 11 at 6 p.m. in room B-5 of the C-Club. A six-week class meeting twice a week will be started if enough interest is shown in this yoga-based approach to stress.

* * *

Information on the Elena Gallegos land grant and its possible acquisition by the city under a proposed quarter-cent sales tax will be available tomorrow, March 6, at two shopping centers— at Coronado and at K-Mart, Atrisco and West Central SW. The grant land stretches from the crest of the Sandias west to a line 1½ miles east of Tramway Blvd.

To Retire: Hardest Part Is Decision To Do So

By Ted Sherwin

[Editor's note: Ted Sherwin retired last month after many years as head of Sandia's Public Affairs department. We thought his experiences in preparing for and being in retirement would interest our readers. Later, Ted plans to write about the adventures and experiences of other retired Sandians, scattered far and wide. On-roll as well as retired Sandians are invited to send their ideas, suggestions, comments to Ted, care of the Lab News.]

* * *

As one who has recently switched from the TGIF to the WCIIM (who cares if it's Monday?) club, I can tell you that the hardest thing about retiring is making up your mind to do it. Once you've done that, everything begins to fall into place, and almost immediately you begin to feel that you've made the right decision. Then, human nature being what it is, every thought and action tends to support and reinforce your decision. Maybe that's the power of positive thinking at work, but the fact is that the more you get into the details of what retirement will be like, the more attractive it becomes.

If you've spent over half your life working for one company, doing a job you enjoy, associating with people you like, making good money and living well, it's hard to seriously consider giving all that up, even though "the good life" of retirement is something you've dreamed about. In a sense, you've become a prisoner of a familiar routine, and the thought of changing your life so drastically makes

retirement a frightening alternative to some, especially the workaholic.

"What will I do all day?" "How will it affect my home life?" "Will I be bored? Start smoking again? Overeat? Get sick?" These and many other concerns go through the minds of those contemplating retirement, and for some the honest answers add up to a good reason for continuing to work. For others, the same honesty will convince them that the time to retire is while you are still able to enjoy the things you've been saving for.

Many employees have in mind an age at which they'd like to retire, and they talk about it eagerly with their families and co-workers, but when that age arrives they begin to find lots of reasons why it doesn't seem like a good idea. Kids still in school, aging parents to care for, a need to buy a new car, pay off the mortgage, take that big trip, etc. In many cases, just the specter of inflation, and the thought of having to live on a fixed income is enough to cause a few years slippage in retirement plans.

To weigh the pros and cons honestly, one must have an honest desire to retire soon. It's like trying to kick the smoking habit. If you enjoy smoking and really would hate to give it up, there's not much point in going through the drill. But if you really do want to quit, then once you've made the decision, you'll feel awfully good about it.

Considering the pros and cons, and trying to get a better idea of what it's like "out there," should be easier soon for on-roll employees. Employee Benefits Division has asked the Tech Library to compile a bibliography of the best books currently available on retirement plan-

ning, and the books on the list will all be available in Albuquerque. In addition, the magazines Sandia has sent to employees approaching retirement age—"Modern Maturity" and "Fifty Plus"—provide good information on retiring and retirement.

Now a few words about the mechanics of retirement at Sandia. You've recently read about the simplified and speedy service Benefits' Vern Henning can give you if you want to know what your annuity would be. Don't be reluctant to check it out. Everything is completely confidential, and you don't need to worry about your job being posted just because you are seen going into Vern's office.

Once you get the basic economics in mind, and read the handout sheet of information for employees considering retirement, you can start to make some definite plans—even if the decision is "No way!" If it looks good, and you can see that light at the end of the tunnel, try to decide upon a termination date (end of the month is usually better) and start the ball rolling. You'll need to let your supervisor know, of course, as far in advance as you can, and preferably at least a month. Then there are a number of details you'll need to take care of, after counseling by someone in Benefits. Do you wish the surviving spouse option? What about your insurance beneficiary? Have you chosen your retirement gift?

Then there is the business about how you wish your account balances in the Bell System Savings Plan or Savings & Security Plan to be paid to you. That's something that will take a little thought and discussion, and we'll cover it in our next article.

Corporate Cup—Set for the weekend of May 22 and 23, the CC this year has expanded to include field as well as track events. Namely, the long jump, high jump and shot put—for both men and women. We've taken the trophy in '80 and '81, competing against outfits like Los Alamos, Digital, IBM and GTE, but this year may be different as APS fields a team that's likely to be tough. Meanwhile, Coach Henry Dodd (4752) needs to see all Corporate Cuppers, veterans and newcomers, at a noontime meeting in Bldg. 815 (outside) on Tuesday next, March 9. Plan to come.

* * *

Biking—The annual Diabetes Association Bike-A-Thon is scheduled for March 28. You can get an entry form by calling 266-5716.

A public meeting of the N.M. Bicycle Touring Society takes place March 17 at 7:30 p.m. at the 1st National Bank, Juan Tabo & Candelaria NE.

* * *

Kayaking—Designed to wet you down just short of drowning, the kayak is also a celebration of sheer physical discomfit. Still, if you hanker to ride the rapids, a kayak is probably the optimum craft but only when the occupant brings some level

of skill to the endeavor. So Tom Lenz from the C-Club has invited kayaker Jack O'Neil to talk at the Club on March 10, 4:45 to 5:30, in the El Dorado Room. He'll also discuss canoeing and rafting. Aim is to set up a class in kayaking.

* * *

Skiing—On the downhill scene, Coronado Ski Clubbers head for Salt Lake and places like Alta and Snow Bird on March 14 to 19. On Tuesday, March 16, the Club meets at the C-Club to elect officers for the next season. Start time is 7 p.m.

For cross country types, NMSTC does the Sandias tomorrow, March 6, meeting

Fun & Games

at the Aladin at 8 a.m. On Sunday, March 7, they head for the Winsor Trail out of Santa Fe. Meet at ANB at 8 a.m. Also on March 6, the C-Club is sponsoring a moonlight trek in the Sandias, starting at 6 p.m. A one dollar surcharge covers the wine, cheese and sausage. Tom Lenz, Rec Manager, is the contact on this at 4-8486.

* * *

Running—*Run for Yourself*, a 26-minute color film, will be shown in the El Dorado Room of the C-Club on Monday the 8th at 4:45 p.m. The movie follows a

group of MDs as they prepare for a marathon, looking at their training regimens and their performances in the actual event. One of the MDs was himself a heart attack victim.

There's a minimarathon this weekend, offered on Sunday by the city's Parks and Recreation Dept. Course for the 13-miler is the Paseo del Noreste bikeway, with the start at the UNM end. Blast off is 10 a.m.

* * *

Arts martial—If we told you that Grand Master Hong Chul Kim, 8th Degree Black Belt Tae-Kwon-Do, is going to be there, could you contain yourself until the event? Well, he is, and the event is Parker's Martial Art Invitational, March 13, at the east gym. It's free to see and things start flying at 10 a.m.

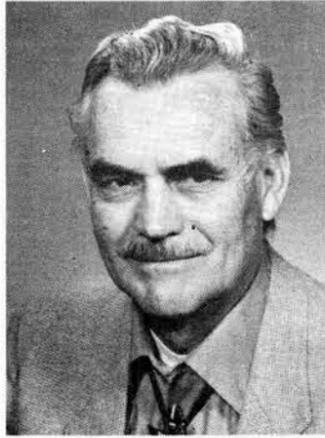
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Swimming—In the recent Lobo Masters Division swim meet, Charlie McClenahan (4232), representing the Kirtland Aquatic Club, took a first in the 200-yard backstroke and placed in four freestyle events. The swim club now has 48 members, who work out nightly at the Olympic pool from 7:05 to 8:45. Sandians and their families are eligible for membership, which costs \$5/month.

MILEPOSTS

LAB NEWS

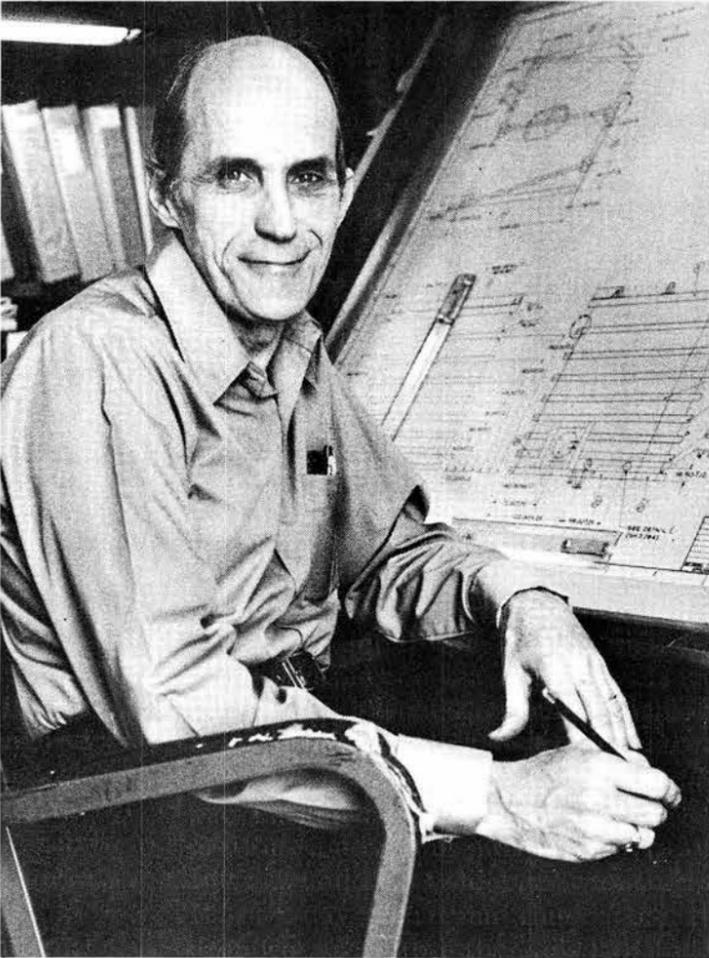
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Tom Heaphy - 3150 30



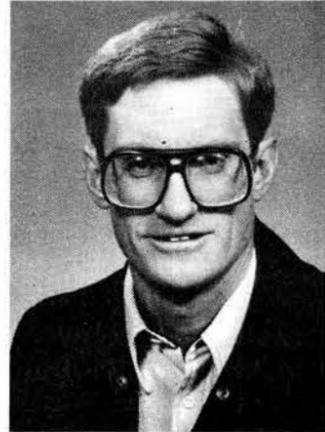
Dick Turnbough - 1482 25



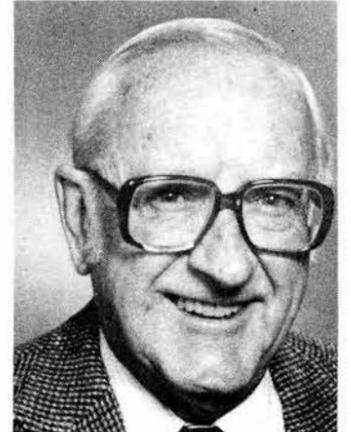
Don Ritter - 2452 15



Vern Barr - 8466 15



Ragon Kinney - 2324 15



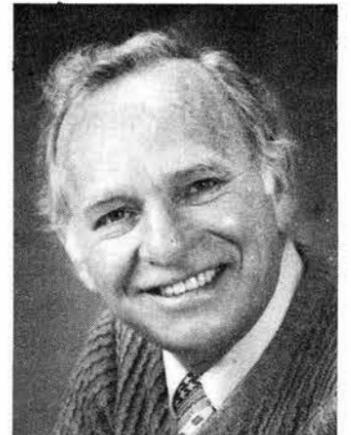
Jim Kelly - 3541 30



Rudy Johnson - 8312 25



Cliff Ruttle - 1583 30



Carl Holmes - 8413 25



Chuck Kyger - 2123 25



Don Nissen - 8313 15



Bill Stanton - 1587 20



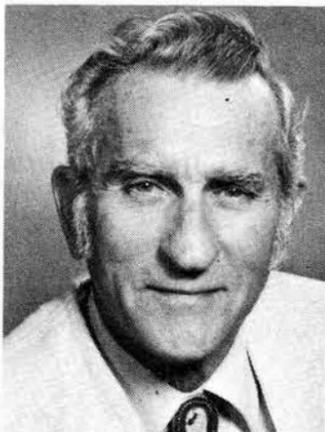
Dale Young - 2627 30



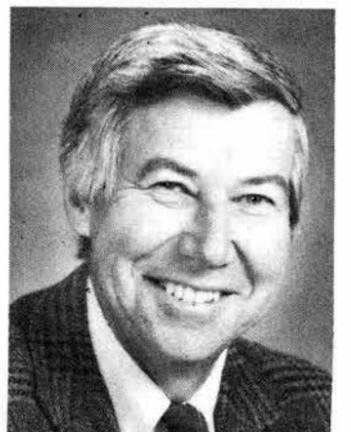
Onnie Perea - 3423 30



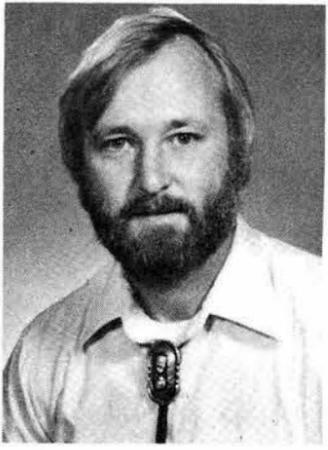
John Cordial - 8161 25



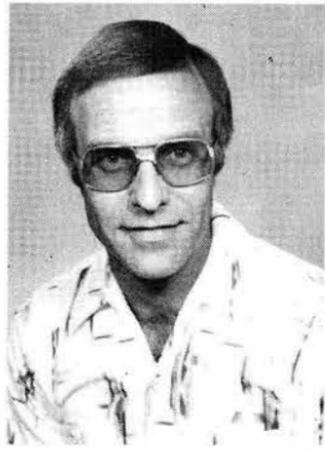
Joe Gregory - 1213 30



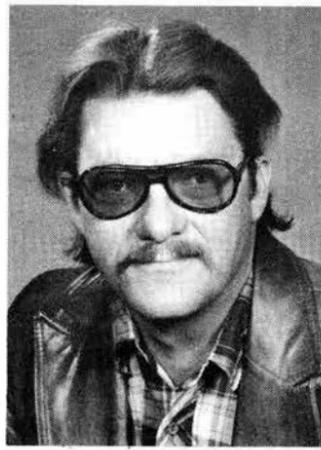
Joe Ambrulevich - 8213 15



David Kestly - 2345 15



Paul Stang - 1587 20



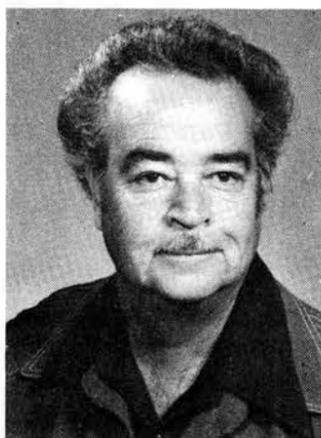
Fred Yost - 5832 10



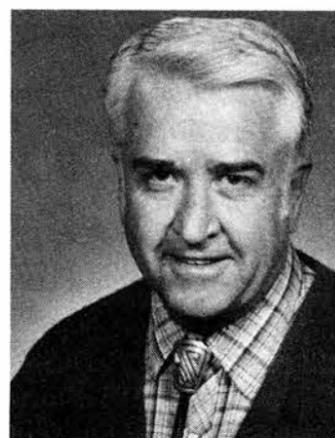
John Timmons - 3726 30



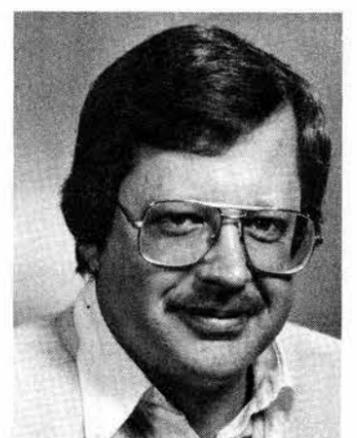
Ed Austin - 4314 25



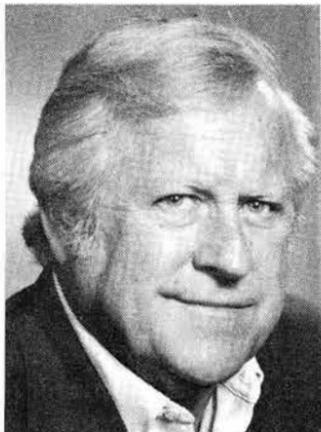
Joaquin Chavez - 3742 30



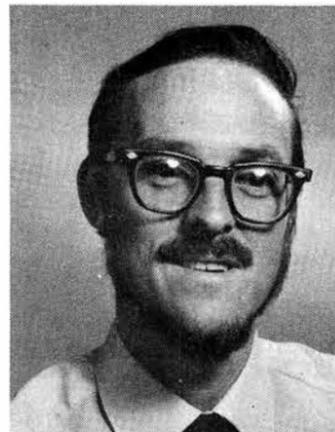
Mathew Roach - 1716 25



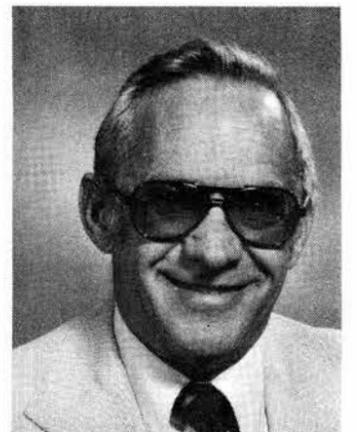
Doug Weaver - 2141 15



Elmer White - 3424 30



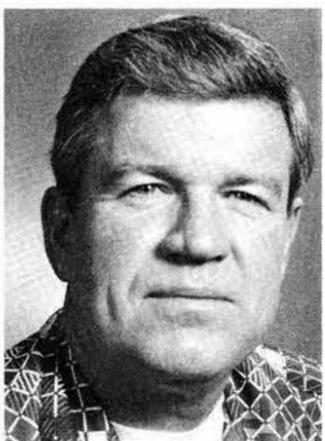
Tom Mayer - 1247 10



Don Bickelman - 1231 15



Henry Hanser - 8445 15



Paul Beeson - 5815 20



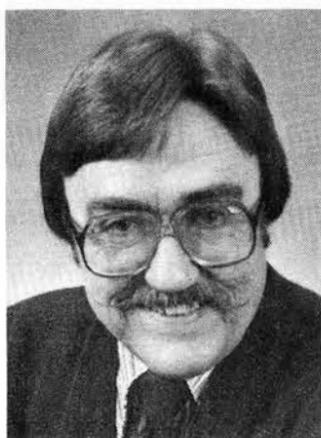
Clarence Karfs - 8316 25



Joseph Doyle - 3441 25



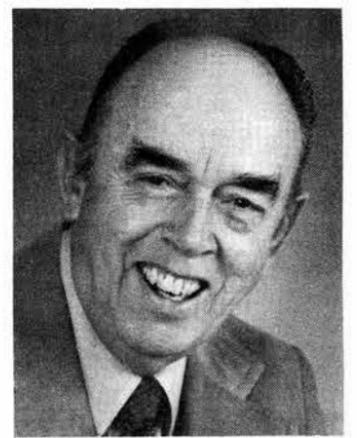
Art Jimenez - 3424 30



Jim Muir - 8461 20



Bob Jefferson - 4550 25



Charles Frost - 8315 15



My Favorite Old Photo

[Do you have a favorite old photo? Bring it by LAB NEWS, MO125, and tell us about it.]

Around 1899, this stagecoach ran between Paoli (note spelling on coach), Indiana, and New Albany, just across the Ohio River from Louisville. That's my grandfather, Edwin Kaye, in the stage with my great-grandmother—the picture was taken in Fredericksburg, Indiana, a town of about 150 people then and now. At that time the road was a turnpike and now it's route 150. My grandfather still lives in Fredericksburg—he's about 85 and has been married 66 years. (Larry Costin—5532)

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Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (MO125).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and DOE employees.
6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name & organization.
9. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TOILETS, two white porcelain, Standard brand, \$15 ea. Purdue, 256-0802 after 1 p.m.
 GERMAN SHEPHERD puppy, male, 7 mos. old, \$300. Kramm, 281-5379.
 CLASSICAL GUITAR, \$30; Karastan blue wool rug, 9'x12', \$100/offer; Sears front bike carrier for child, \$7.50. McGovern, 294-1791.
 BABY ITEMS: crib, \$30; infant seat, \$5; car seat, \$10; high chair, \$5; changing table; swing, clothes, etc. Wrobel, 255-3062.
 FISHING FLIES custom tied, std. patterns \$6 per doz. Swanson, 884-8650.
 PARAGON model A-99B high-fire kiln w/furniture, 7 cu. ft. on castors w/removable collar, \$250. Rich, 242-5653.
 SEARS entra long, vinyl luggage rack, \$15. Hymer, 293-6029, after 5.
 DRAFTING TABLE w/oak frame, 2'x3' top, vinyl drawing surface, 30" parallel rule, \$65; Dunelt 3-sp. bicycle, lowered frame, coaster brake, 26x1-3/8 tires, \$25. Schmale, 293-0784.
 CONTOUR CHAIR, green, motor to position, 1 yr. old. Banach, 294-3911.
 MEDICINE CABINET, 2 sliding mirrored doors, 20" high, 30" wide, wall-recessed, \$15. Palmer, 883-3660.
 TWIN BEDS, \$50; '70 Ford LTD 4-dr., HT, needs work, \$200. Barton, 268-7349.
 EIGHT Chinese Pug puppies, AKC reg., 6 male, 2 female, ready by March 25. Lohkamp, 298-6494 after 5.
 JACKET VEST, brown, nylon shell & lining, down-filled, medium-regular, brand new, \$35. Price, 821-0431.

PIONEER SX424 AM-FM stereo amp-receiver, wood cabinet, \$95. Paul, 299-6387.
 LARGE radiator (for race car), \$75; car hauler, tandem axles, reg. & lic., \$795. Pierce, 298-4013.
 CHINA HUTCH, solid walnut, 36x17x63. Bourgeois, 298-2346.
 HOBBIE HORSE, 34" saddle height, \$35. Widman, 293-7279.
 PIONEER AM-FM-8TK, \$50 or best offer. Shull, 265-6286.
 ORGAN, Leslie speaker, Model 125, w/cable. Hubbard, 842-9431.
 NIKON FM 35mm camera w/case, filter, sun lens & small tripod, \$300. Adraince, 292-7471 after 7.
 DINING TABLE w/extensions, pads, 6 curved-back chairs, buffet, china hutch, Wisconsin elm, \$750. Thomas, 256-1921.
 RADIAL tire chains, reinforced, for 14" or 15" wheels, used 4 times, \$15. Mayes, 299-7782.
 KITCHEN SET: 4 swivel chairs on new rollers, formica table w/leaf, \$70; free partial roll concrete remesh. Gross, 821-3761.
 FIRESTONE Town & Country tire, size 8.25-15(H), nearly new, \$25. Raybon, 299-2135.
 ELECTRIC kitchen range, double oven, Tappan; used building material, steel sash windows, bathroom sink & toilet, light fixture. Schamann, 298-5192.
 FREE to good home, white Eskimo spitz puppy (approx. 8 mos.), has shots & has been spayed. Lutheran, 293-8364.
 AKAI 4000DS reel-to-reel tape deck, needs work; 23 tapes; \$50. Hollowwa, 255-6938.
 OMEGA D-2V 4x5 enlarger w/Omicron 135mm & Computar 80mm lenses; 4x5 & 6x4.5 negative carriers included, very little use, \$375. Tafoya, 884-4229.
 HAMMOND B-3 organ, church, night club use, \$2800. Strance, 298-0258.
 SEWING MACHINE, Sears Kenmore w/cabinet, buttonholer, 30 decorative, utility stitches, recently serviced; matching brown sofa & chair. Shortencarier, 292-3575.
 CONTEMPORARY dresser & bookcase type dbl. bed; Sunbeam elec. lawn mower. Preston, 821-2011.
 BASKETBALL backboard, roof mount; IBM Executive typewriter Model B-1, 15" platen; Gulbransen Model R electronic organ, modern design. Peabody, 296-6239.
 EDISON cylinder phonograph, \$480; oscilloscope, \$40. Cole, 298-1464.
 DINING ROOM FURNITURE: nine-piece set, approx. 55 years old, mahogany, lion's claw feet, \$700. Paul, 296-6500.
 STATTON maple dropleaf table, opens to 61"x40". Parks, 884-7475.
 SHOP MANUALS, '75-'76 Ford, \$12; H-caps Corvair, \$35; frame jack, \$9; steel ramps, \$12; jack stands, \$3.50 ea. Schuch, 299-8721.
 FOUR dining room swivel chairs, \$25 ea. Norwood, 262-0073.

BLACK vinyl, Danish modern, fixed recliner w/ottoman, \$150. Mercer, 821-6449.
 QUEEN SIZE BEND w/box spring & metal form, no headboard, \$60. Walko, 292-3193.
 OLD ENGLISH bulldog puppy, AKC reg., 11 wks. old, fawn/white, \$550. Smatana, 299-6278.
 NIKON FM, 45mm Nikkor lens, \$235. Passman, 821-4999.
 SCHWINN bicycle, ladies, 5-sp., \$85; bedspread, king size, \$20; elec. space heater, \$15. Lynch, 298-7817.
 CARTOP CARRIER, 1'x4'x6', galvanized, adjustable, \$40. Walsh, 345-9295.

TRANSPORTATION

'73 AMC Sportabout, 258 Cl.I. six, PS, PB, AC, AT, \$1195. Longfellow, 299-7062.
 '78 HONDA Goldwing, less than 8000 miles, cover, gauntlets, windjammer shield & bags. Whiting, 293-8266.
 '74 DODGE Dart custom, 4-dr., PS, PB, AT, AC, AM radio, 85,000 miles, \$1250 or make offer. Rich, 242-5653.
 '67 MERCEDES BENZ 200D; '70 VW bug. Randle, 867-2668.
 '72 CADILLAC, 4-dr., Fleetwood Brougham, \$2150 or make offer. Roper, 299-2078.
 '73 HONDA SL-70, street legal trail bike, under 2000 miles. Hymer, 293-6029 after 5.
 '79 TOYOTA SR5 pickup, 25,000 miles, camper shell; '76 Toyota Land Cruiser, 17,000 miles. Marlman, 883-8660.
 '80 PINTO stn. wgn., low mileage, AM-FM stereo cassette, luggage rack, many extras, \$4000. Banach, 836-6477.
 VOLKSWAGEN PARTS: 1961 through 1966 bug; some 1967 type III parts; '61 bug that is damaged. Schultz, 881-7588.
 '77 KAWASAKI KZ400 motorcycle, 13,000 miles, many extras, \$1050. Miller, 299-6067 after 5.
 '79 HONDA 750K Four, 3300 miles, w/helmet, new battery, \$2200, will finance 10%. Gallegos, 255-5264.
 '79 KZ400, Shield, 9000 miles, \$1050. Scott, 294-8627.
 '78 FORD Fiesta, low mileage, below book. Rundle, 299-7900.
 '72 CHEV. Nomad S.W., AT, AC, PB, PS, one owner, low mileage, Michelin radials, \$995. Bland, 265-6286.
 '78 YAMAHA 750, shaft drive, windjammer fairing w/lowers, \$1800 or make offer. Shirey, 298-6362, 294-0449.
 '77 WILDERNESS 17 1/2' travel trailer, self-contained, many extras; '70

3/4-ton Chevrolet pickup, AT, PS, PB, AC. Freyermuth, 299-2053.
 '79 TRIUMPH Spitfire, classic roadster, headers, rollbar, new continental 733i tires, new top, car cover included. Wladika, 256-7270.
 '78 HONDA Hawk cycle, 400 cc engine, 9700 miles, \$800. Martegane, 884-4643.
 '76 GRAN PRIX, fully loaded, AT, AC, AM/FM stereo, white burgundy vinyl top & interior, \$2200. Lutheran, 293-8364.
 '78 SUZUKI GS550E, black, \$1500. Schmale, 293-0784.
 '76 HONDA CVCC, 5-sp., hatchback, 38,000 miles, \$2395. Wilmesherr, 293-3114 after 6.
 '77 22'2" CARVER cabin cruiser, 233HP 1/0; 25' Trail-R craft tandem axle trailer; low hours, fully equipped. Prekker, 256-3414, 1-744-5715.
 '78 BONNEVILLE 4-dr., AT, AC, AM/FM/CB/telescope ant., PS, PB, cruise, new radials. Buza, 298-1531.
 '70 PONTIAC LeMans, V8, AT, AC, PS, radio, 102K miles, \$695. Eckel-meyer, 296-2148.
 '75 FORD LTD. Hadley, 831-3170.
 '78 OLDSMOBILE 98 Regency 4-dr. diesel, loaded, 31,500 miles, \$6300. Young, 869-3384.
 '74 DATSUN 260Z, AM/FM, 4-sp., new tires, \$4000. Mercer, 821-6449.

REAL ESTATE

3-BDR. HOUSE w/studio, 1-car garage, 1 1/2 bath, 1319 sq. ft., 8 1/4% assumable loan, \$15,000 CTL, \$368 PITI. Rich, 242-5653.
 5-BDR., lg. den w/fp, 1 1/2 baths, paneling & wallpaper accents, landscaped front yard, 2 patios & lg. barbeque grill in back yard, \$70,000. Pafford, 298-8913.
 SELL OR LEASE: 178-yr.-old adobe in Placitas village. Randle, 867-2668.
 14 WOODED ACRES, meadow, 24'x24' log cabin, new (shell), water well, septic, view, 8 mi. NE Westcliffe, Colo., \$41,500. Apple, 884-0046.
 4-BDR., 2 1/2 bath, LR, DR, den w/fp, dbl. garage, 2086 sq. ft., NE hts., assumable 8 1/2% VA loan, \$81,800. Chen, 298-6477.
 MOSSMAN custom 3-bdr., 2 1/2 bath, lg. FR w/fp, carpeted wood floors, storm windows. Linnerooth, 884-8615.
 3 ACRES near Tome, cultivated, irrigated, off route 47, 6.6 miles south of Valencia Y, \$31,500 assume 9 1/2% loan, terms. Burton, 869-2541.

WANTED

DRILLPRESS, table model, 1/2" or larger chuck. Weems, 281-5837.

10-GAL. fish tank outfit. Sherman, 292-3297.
 BARBIE dollhouse furniture in good condition. Hobbs, 268-6461.
 MOVIE PROJECTOR donation for Victims of Domestic Violence Shelter, operated by Women's Community Assn. Valdez, 265-2457.
 BABYSITTER for 3-mo.-old, prefer location close to Base, starting in March. Soden, 867-3872.
 LASER SAILBOAT, pref. w/trailer. Fisher, 881-8072.
 35MM CAMERA, good working condition, under \$100. Luette, 292-5328.
 AIR CONDITIONER, evaporative, lg. size, side discharge, fan motor unnecessary, good condition. Moss, 298-2643.
 RAFTERS w/rafts interested in spring trips. I particularly want to do the Piedra River in southern Colo. Mattox, 821-3945.
 BABY SWING SEAT to fit outdoor swing set. Hayward, 294-7278.
 STUDENT DESK(s), suitable for late grade school through high school use. Bonzon, 296-3022.
 VEGA w/good interior & bad engine. Pre-ender, 299-5253.
 DO YOU NEED A RIDE to Chicago? Need responsible driver to drive car to Chicago by March 22. Sublett, 884-4426.
 ELECTRICAL manual '76 Ford E 150 van. Walsh, 265-7498.

WORK WANTED

TWO experienced students want to mow your lawns & do any other yardwork, etc. Tom Edrington, Jr., 881-2395; Paul Holt, 294-6928.
 PAINTING by UNM students Peter & Mark. Inside, outside, estimates given. Peter Shunny, 266-0266.

SHARE-A-RIDE

CARPOOLER wanted from Meadowbrook, Del Rey area. Wilmesherr, 821-2124 after 6.

LOST & FOUND

LOST—mechanical pencil, silver w/gold scrolls. Patterson, 4-5578.

Coronado Club Activities

Something For Everyone

THE MARCH Club calendar of events is packed. There's something for everyone—couples with kids, singles, retirees, movie lovers, even Irish lovers. With membership increasing each month, and new activities and new management ideas, the Coronado Club is where it's happening . . . read on.

TWO BANDS TONIGHT play early and play late. Enchantment led by drummer Paul Metoyer (3435) plays from 5 to 7, then the Country Showmen take over the bandstand until midnight. In the meantime, Happy Hour prices are in effect all evening, and the dining room features menu service with fine steaks, seafood, a chef's special, and a super salad bar. Babysitting is available from the KAFB Nursery, 4-2314.

TOMORROW NIGHT is Variety night, which means a classic Walt Disney movie—*Song of the South*. It starts at 6 p.m. Kids love this kind of stuff and go for the hot dogs, hamburgers and French dip sandwiches which are available at 5. Admission is 25 cents per person.

HAPPY HOURS during the week include Mondays with 25-cent drinks for women, Tuesdays with special prices for everyone and a free spread of munchies and goodies at 5:30, and Wednesdays with three drinks (well drinks and draft beer) for a dollar.

SOMETHING NEW for Thursdays—with the permanent addition of the new big screen TV, the Club plans to present a major quality movie every Thursday at 6 p.m. by renting a TV cassette. On March 11, it's *Serpico* with Al Pacino; March 18, *Papillon*, Steve McQueen; March 25, *The Wild Bunch*, William Holden. Admission is free.

SINGLES MINGLE II is back by popular demand. Mark Friday, March 12, on your calendar now and plan on coming early and staying late. Laney McDonald and the Swinging Crew play from 5 to 7:30, then a special Spring Fashion Show by Kistler-Collister (models from Plaza 3) is scheduled. Later, a country Western group called 12-Gauge takes over until midnight. The dining room features its regular outstanding menu service plus a couple of singles specials. Singles pick up a name tag at the door and are seated in a special section of the ballroom. Single members may bring one guest of either sex, additional non-member guests pay \$1 cover charge. Happy Hour prices are in effect all evening—the best deal in town.

ST. PATRICK gets his due at the Club on his Day, March 17. Free draft beer is served to all members while Jeanne Rich and Friends play Irish ballads and sing the old songs from 5 to 8 p.m. You can't beat a deal like this for an early Wednesday evening. Think Irish.



FASHION SHOW by Kistler-Collister is part of the Coronado Club's Singles Mingle II party scheduled Friday, March 12. Models are Keith Dennis, Kevin Leach and Vicky Gentry (daughter of Ken Gentry, 2454). The show will be presented during the break between two bands playing early and late.

IN HONOR OF RETIREES, the Club recently amended its by-laws to make special associate memberships available to all SNL and DOE retirees, their immediate families and their surviving spouses. For a monthly \$2.50 fee (\$30 annually), associate members will have full Club privileges except voting, office holding, and redemption of monthly \$2.50 discount coupons. Pay \$5 per month dues for full membership with no restrictions.

To kick off an introductory campaign for retiree activities, all Sandia and DOE retirees are invited to a special dinner dance on Saturday, March 27, starting at 6 p.m. A super buffet of roast beef will be spread, and the Mellotones, one of the most danceable groups in the city, hold the bandstand from 8 until midnight. Admission is \$5.95—make reservations by noon Wednesday, March 24.

ANOTHER BIG ONE for everybody is set Saturday, March 20, featuring music by the Spinning Wheel, powerhouse show band. The buffet spread includes rib eye steak, salad bar, vegetables and assorted deserts. No reservations required. Members pay \$7.75.

FREEBIES—Club members may purchase discount tickets for admission to the Wyoming Mall and Louisiana I, II and III movie theatres for \$2.15 each at the Club office. Also, discount cards are available for Disneyland, Disney World, Sea World and Universal Studio tours.

CORONADO SKI CLUB wraps up the season with a party and election of new

officers on Tuesday, March 16, starting at 7. Door prizes and special prices on refreshments are part of the blast.

TRAVEL—A pre-trip meeting of the charter bus group to Laughlin-Las Vegas, March 14-17, is set at the Club on Tuesday, March 9, at 7 p.m.

Frank Biggs (4231), travel director, also announces a new trip to Las Vegas via charter bus on May 30-June 2. Cost is \$135.

Other scheduled trips include:

Mazatlán either April 18-22 for \$345 or April 18-25 for \$420.

Chaco Canyon charter bus trip April 24, \$20.

Washington, D.C., and vicinity, April 3-10, \$300 plus airfare.

Cozumel, depart before May 15 for \$459, after for \$409.

See Frank in the lobby tonight between 5 and 7 for literature and details.



If you are driving from Rio de Janeiro to São Paulo along the Via Dutra and you suddenly see a tank passing the cars and trucks on the highway, don't conclude that Brazil has gone to war. What you see is another test drive of the Cascavel, the Brazilian armored car that gained a certain notoriety when it was used in the war between Iran and Iraq. You are near the new city of São José dos Campos, an industrial and military complex 54 miles from São Paulo. It is the most advanced and productive technological center in South America. Here, on the edge of the Paraíba Valley, are the headquarters of the Air Force Ministry's Aerospace Technical Center and its key branches, as well as four other research organizations. The technology they develop and apply has steadily attracted other industries to the area, so that today 405 factories in São José produce products ranging from sandals and adhesive tape to tanks, jet fighters, and ground-to-air missiles. The city's population has climbed from 10,000 in 1940 to 290,000 today.

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