

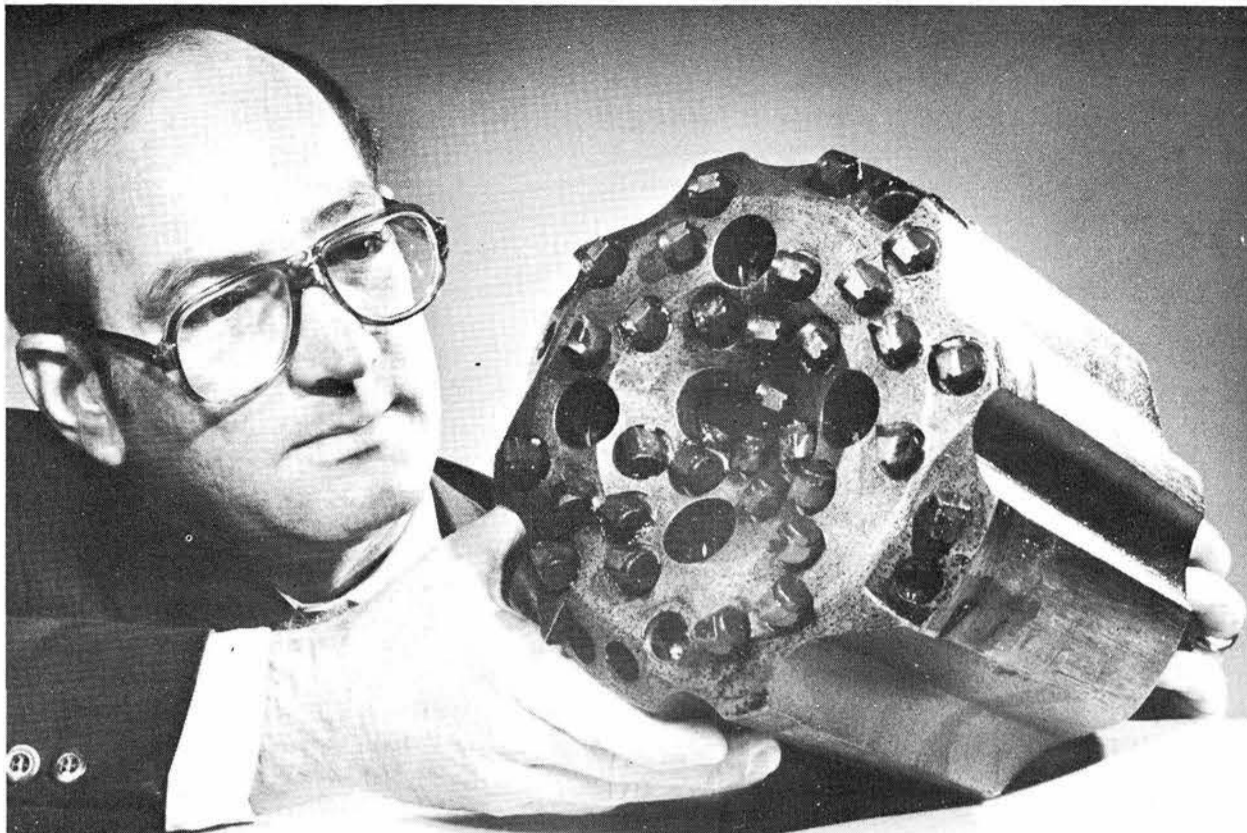
Geothermal Drill Bits Perform Well in Tests

Two experimental drag bits, fitted with man-made polycrystalline diamond cutters, are showing significant improvements in drilling rates over conventional roller cone and natural diamond bits. The bits were tested by Sandia in a geothermal well in northern New Mexico. (The drag bit drills by machining its way through the rock where other bits drill by crushing the rock.)

Developed by GE's Research and Development Center, the bits are an outgrowth of a program to optimize drill bit design for geothermal drilling applications. The GE program, begun in 1976, is sponsored by DOE. Sandia is manager of DOE's Geothermal Drilling and Completion Technology Development Program.

The two bits tested were fabricated for GE by the Christensen Company and the Smith Tool Division of Smith Inter-

[Continued on Page Two]



THE CUTTING EDGE of a new drill bit studded with man-made polycrystalline diamond cutters is displayed by Sam Varnado of Drilling Technology Division 4735. Bit was designed by the GE Research & Development Ctr., built by Smith Tool Division, and is being tested by Sandia.

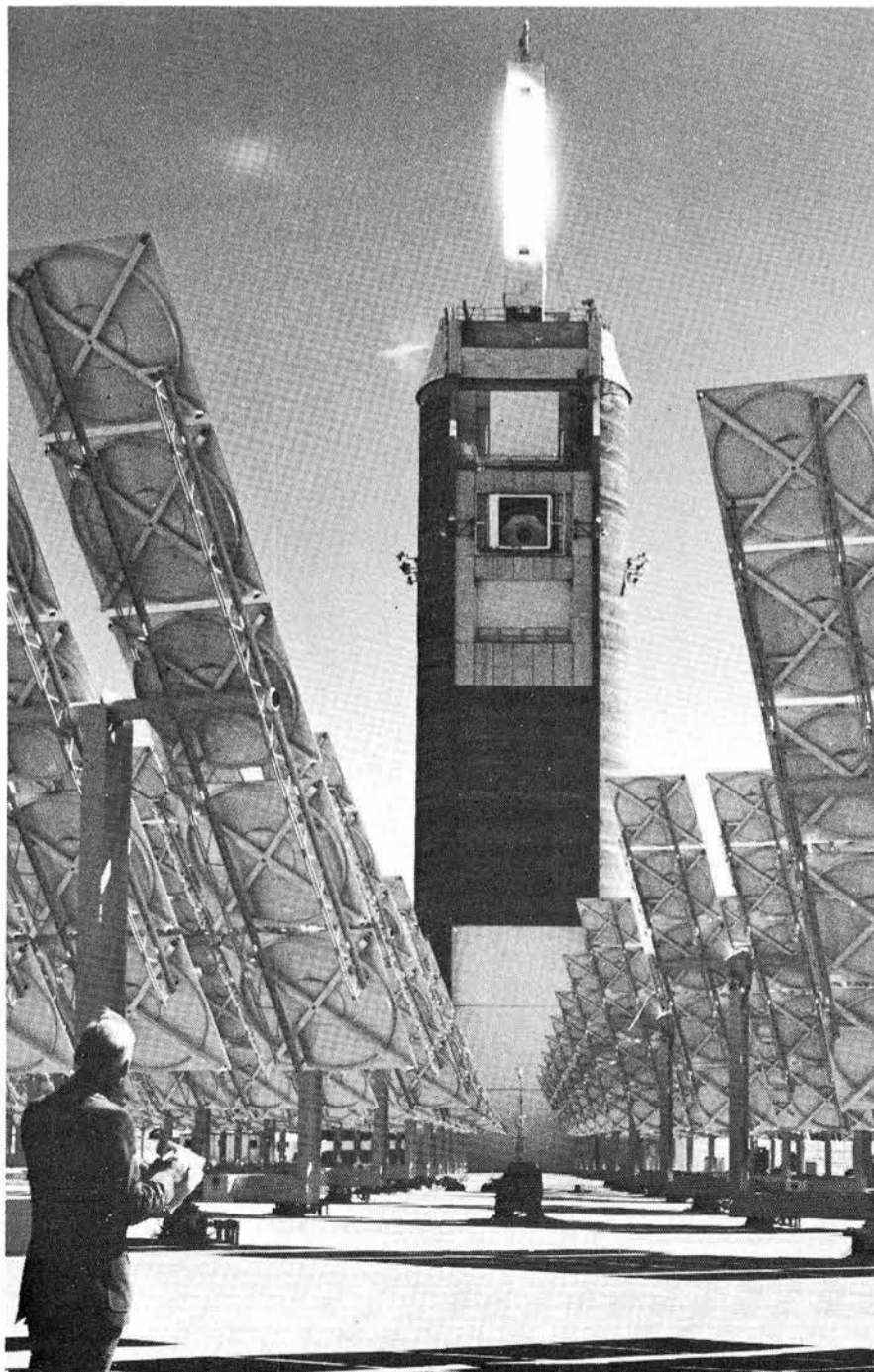
LAB NEWS

VOL. 32, NO. 5

MARCH 7, 1980

SANDIA NATIONAL LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

HOT STUFF — Atop the Power Tower, more than 200 feet high, a solar receiver panel glows under impact of 2.7 megawatts of thermal energy. Panel is prototype of those planned for use in 10-megawatt electric generating plant near Barstow, Calif.



Solar Panel Tests Completed At CRTF

Tests on a three-million-watt (thermal) solar receiver panel have been successfully completed at Sandia's Central Receiver Test Facility (the Power Tower). Bill Marshall heads the CRTF Division 4713.

The 3-x41-ft. panel, consisting of 70 parallel tubes made of high-strength steel alloy, was illuminated with 2.7 megawatts of thermal energy from the facility's 222 heliostats. Water circulated through the tubes was converted to steam at 960°F and 1500 psi by heat from sunlight focused upon 10 aim points along the length of the panel.

The receiver (boiler) panel is almost identical to those which will comprise the receiver in the nation's first pilot solar "power tower," a 10-megawatt electric generating plant under construction near Barstow, Calif. Results of the tests, conducted over a period of nine months, will be used to refine the final boiler design, including its control system and power plant operating procedures for the Barstow pilot plant.

The Central Receiver facility, the world's largest solar installation, is designed to test those solar energy components of a new solar technology that may produce larger quantities of electricity in the future. The facility includes the

[Continued on Page Eleven]

Afterthoughts

Conscription a la USSR--For those young Americans who feel that the act of registering for the draft is an unconscionable burden, some perspective may be gained by a look at the conscription policies of other countries. As it turns out, 55 countries now have conscription and, lest there be any confusion on the point, I mean actual induction into the armed services--not just registering. Consider the Soviet system: there is a universal draft from which all the services may draw, and all males who are physically fit are inducted at age 18. No deferments or conscientious objections are permitted. Minimum active duty is two years, and the recruits work a six-day week. No leave is granted while on active duty, and no drinking or socializing is permitted on base. After release from active duty, draftees have a 20-year reserve commitment. This means that every male between 20 and 40 in the Soviet Union has had military training of some sort. In a general mobilization, the Soviets could muster some tens of millions of reservists. (The number of reservists available for call-up in this country is estimated to be under 750,000.)

* * *

The positive outlook--The admissions dean at Stanford University has compiled some of his favorite reference that have accompanied student applications:

"John's only weakness is a lack of his own potential."
"Mary is the kind of girl who should be every boy's first date."
"Ralph ranks in the top third quarter of his class."
"Carol is in the top 90 percent of students I've ever taught."

* * *

It's either Winston Churchill or Mark Twain: "Saving is a very fine thing, especially when your parents have done it for you." *js

Continued from Page One

Geothermal Drill Bits Perform Well

national. Sandia's computer models were used to determine optimal cutter locations for the Smith/GE bit. Both bits used GE's Stratapax diamond compacts as cutters.

The Christensen/GE bit has 1/2-inch-diameter Stratapax cutters mounted directly into the hard matrix bit body; the cutters protrude 1/4 inch above the bit face. The Smith/GE bit also uses 1/2-inch cutters, but they are mounted on tool posts which protrude, exposing the entire circular cutter.

The preliminary field test--limited to 100 feet of drilling in andesite--was conducted at the Union Oil Company-operated geothermal site about 60 miles north of Albuquerque.

The Christensen/GE bit was tested first,

drilling from 5500 feet to 5550 feet below the surface; the Smith/GE bit was then inserted into the hole and drilled an additional 50 feet.

The first bit drilled at a rate of 60 feet an hour with moderate torque and a bit load of 15,000 pounds. The second bit drilled at a rate of 160 feet an hour with very low torque and a bit load of 5000 pounds, approximately four times faster than conventional roller cone bits with loads of 25,000 pounds. Both bits used a water-air mixture drilling fluid--a first for bits equipped with Stratapax cutters.

The Smith/GE bit's faster drilling rate is attributed to its greater depth of cutter penetration and to its hydraulics, which apparently did an excellent job of removing cuttings.

"We're encouraged," says Sam Varnado, supervisor of Drilling Technology Division 4735. "The new bits could mean lower well costs if further tests continue to show good results. But other questions must be answered. First we must learn more about how these bits perform in a variety of geothermal-type rocks. Next, we have to determine their life expectancy. Finally, there's a question of hole deviation--the bits may tend in some cases to drill crooked holes."

Some answers will come after field tests next spring at the site in northern New Mexico and at another site--the Geysers in northern California.

Two slightly modified bits will be tested at each site. One bit will be operated until it wears out, while the other will be operated for a period equal to half the life expectancy of a conventional roller cone bit. A study of results will then be made.

feed^{back}

Q. The Lab News outlined the base recreational facilities now available to Sandia employees. However, in checking with the Morale, Welfare and Recreation Division, we cannot reserve a racketball court. Therefore, use of this facility is impractical because of the uncertainty of availability. Can this policy be changed?

A. According to Charles Hammes, Athletic Director at the KAFB-East Gym, Sandia Labs employees may make reservations for racketball courts at the east gym between the hours of 6:00 a.m. and 8:00 a.m., Monday through Friday. Tom McConnell, extension 7185, should be called to make reservations.

With the exception of the period from 11:00 a.m. to 1:00 p.m., Monday through Friday, which is devoted to open challenge play, reservations for the use of the courts at all other times are limited to active military personnel, their dependent spouses, and retired military personnel. No change in this policy is likely.

D. S. Tarbox--3400

Q. Concerning the cafeteria menu in the Weekly Bulletin, if the calorie count were given for the items listed, one could determine in advance what to get at the cafeteria. It would help two ways: [1] would speed up the lines by reducing "shopping" and [2] would cut down on impulse buying by most of us who have to count our calories.

A. You are one of a growing number of people who are becoming calorie conscious. In fact, Sandia now has a nutrition consultant in Medical who works with many employees who are watching their calorie intake. ARA Food Services, the present contractor of the Building 861 Cafeteria, has daily "Rainbow" specials for weight-conscious customers. The calorie count for each of these menu items has been calculated. A Rainbow Menu hand-out is now being developed, and soon will be available in the cafeteria.

Your inquiry regarding the furnishing of the calorie content for all the menu items is much more complicated. However, ARA has agreed to work on this project with the aid of their nutritionist, and will see if they can make this information available.

J. R. Garcia--3500

Q. When I entered the Base around 7 p.m. last night, I had to show my employee identification badge--my Tech Area badge was not acceptable. How come?

A. The orders the KAFB Security Police give their guards at the various gates call for them to check ID cards of Sandians entering the Base between 6:30 p.m. and 6:00 a.m. What causes the confusion is that some guards will also accept Sandia Tech Area badges as authentic identification even though their orders do not allow this. If you do not wish to be delayed when entering the Base after hours, use your employee ID card for identification.

D. S. Tarbox--3400

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KAFB Arts & Crafts Center Open to Sandians

LAB NEWS visited The Arts and Crafts Center, located on Kirtland-West, and can report that this facility is impressive in its scope. It includes: a ceramics workshop, a photo lab (8 enlargers, dry mount presses, dryer, light table, washer), a leather work area (tools, mallets, dies), a pottery workshop (6 wheels, gas kiln, clay mixes, glazes, damp boxes), and a jewelry workshop. And you can also do work in sculpture, stained glass, Tole acrylics and macrame. Nearing completion are a completely equipped lapidary workshop, a picture frame shop and a color-photo lab.

The Center also has a sales store where students can buy supplies at a savings and in small quantities, e.g., leather by the square foot rather than a complete hide.

Classes are conducted monthly in pottery and ceramics (some of the classes are one meeting only); beginning and advanced photography classes meet for six weeks. Two new classes begin next week: watercolor on March 19 and leather on March 21.

Fees are 60 cents per hour for use of the facilities, plus a class fee for each enrollment (typically \$3 to \$24), plus cost of any supplies purchased.

Jan Osthus, Center director, has managed many such centers on military bases in the U.S. and overseas. "I know what I'm doing and I refuse to be associated with anything but a first-rate operation," she says.

To get to the Center, enter the base at the Truman gate (one block west of San Mateo on Gibson), turn right on Aberdeen (first stop light), then turn left (south) at the first street on the left (Eileen Ave.) The Center, Bldg. 954, is located just past the bowling alley after turning onto Eileen Ave.

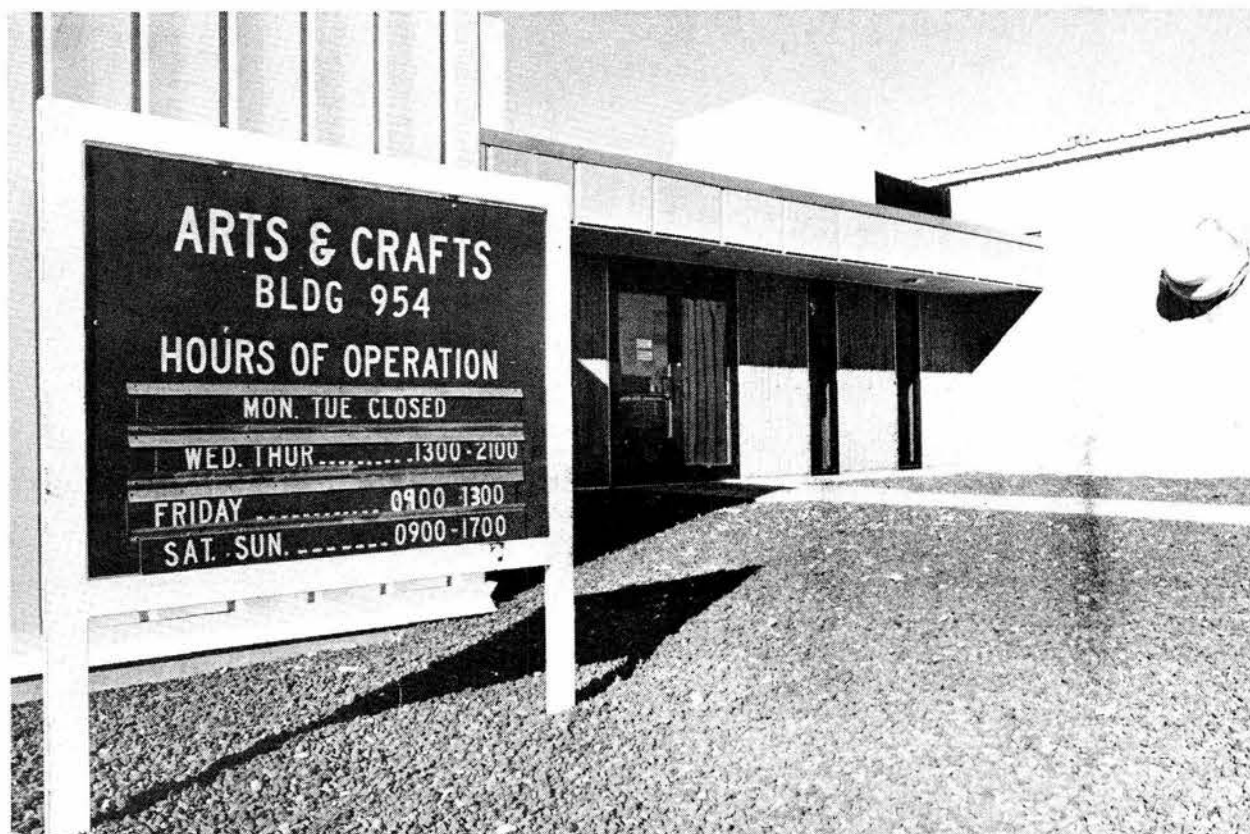
Closed on Monday and Tuesday, Center hours are 1-9 p.m. on Wednesday and Thursday, 9 a.m.-1 p.m. on Friday, and 9 a.m.-5 p.m. on Saturday and Sunday. Call 844-0222 for more information.

ECP Awards Given

In a ceremony on Feb. 22, President Sparks presented Employee Contribution Plan awards to a number of people and organizations.

The United Way Union Award was presented to each of the three unions at Sandia in recognition of their support of the United Way.

Organizations receiving the United Way award and/or the ECP award include the following: 400, 1210, 1220, 1410, 1420, 1482, 2110, 2160, 2320, 2340, 2454, 2530, 3160, 3154, 3220, 3240, 3253, 3432, 3440, 3450, 3520, 4330, 4360, 4370, and 5510. These awards are granted on the basis of percentage of employees participating in United Way as well as the percentage of employees contributing at the Fair Share or greater level.



THE ARTS AND CRAFTS CENTER, located on KAFB-West, is now open to Sandians and their dependents.



GLORIA RAIL (behind counter) completes a sale from the well-stocked supply area while Jan Osthus, Center director (at right), explains how the various tools and equipment are signed out to students.

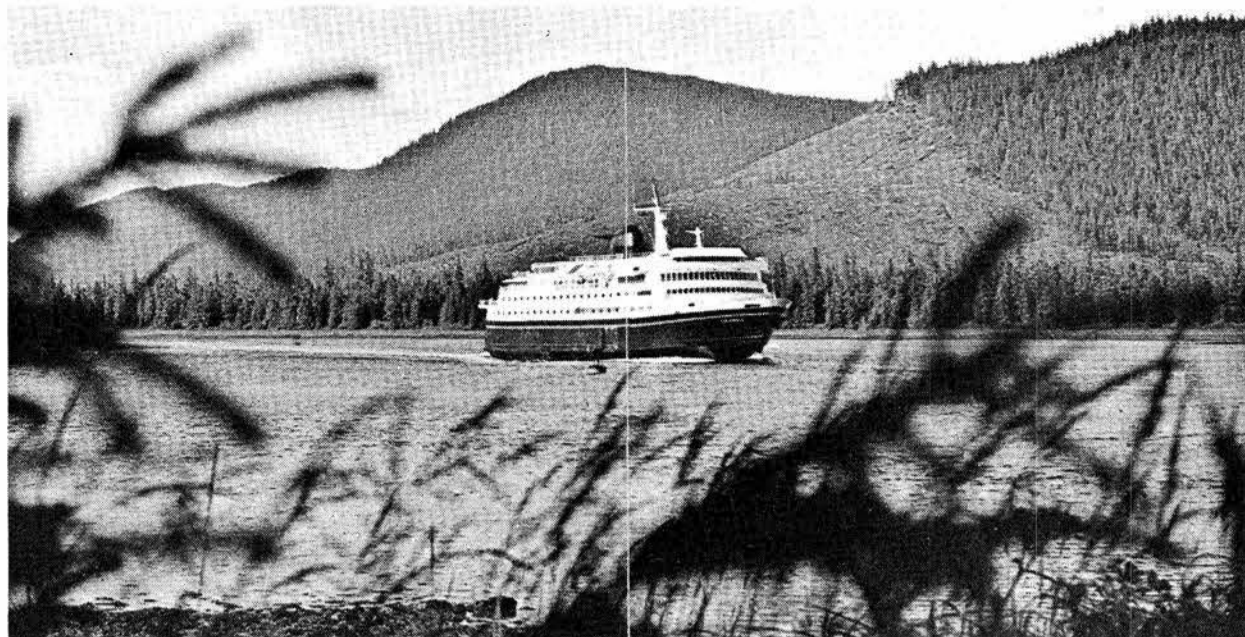
ASME Hosts Fusion Energy Symposium

Fusion energy production is the subject of the 20th annual ASME symposium to be held March 20 and 21. "We present these symposia," says Joe Abbin (2324), chairman of the New Mexico Section of ASME, "as educational aids for our members and other technical people in the community.

"During 1980, the national American Society for Mechanical Engineers celebrates its 100th anniversary, and the New Mexico Section celebrates its 30th anniversary. And, 20 years ago, we held our first symposium; it consisted of three speakers on consecutive Wednesday evenings, discussing honeycomb structure. This year, through the efforts of the symposium chairman, Glenn Kuswa (4240), our speakers are the research and industry leaders in the field of fusion energy. They will discuss the problems and the potential associated with the various fusion concepts."

The symposium, jointly sponsored by ASME and UNM's College of Engineering, will be held at the Physics Lecture Hall at UNM and will include tours of the magnetic and laser fusion facilities at LASL and Sandia's particle beam fusion facility.

Sandians are serving as committee chairmen and symposium speakers. Speakers are: Walt Bauer (8340), "Materials for Fusion"; Don Cook (4253, program chairman), "Technological Aspects of Particle Beam Fusion"; Glenn Kuswa, "Particle Beam Fusion at SLA"; and Al Narath (4000) will be the luncheon speaker on the 21st. Other committee people include Keith Miller (5522), Jim McClure (4551), Rod May (5522), Kathleen McCaughey (2325), Harold Maciolek (4325), and Mike Corrandini (5511). Contact any of these Sandians for more information.



THE M/V COLUMBIA, largest of the Alaska Marine Highway's "ferryliners," plies the Inland Passage waterway between Seattle and Skagway, Alaska. The state-run steamship company has nine vessels, runs from May to September.

Unusual Vacations

To Alaska, By Sea

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

When you examine a map of the northern Pacific coast, you see a jumble of islands, waterways, and fjords stretching in untidy array all the way from Puget Sound in Washington up to and including Alaska. Most of this deeply articulated coastline is part of Canada, but its northernmost aspect forms the Alaskan panhandle. (The Alaskans themselves refer to this strip as "the Southeast" because it is indeed south and east of the rest of their state.)

Dick Sons (1739) and two friends recently were attracted to the scenic glory of this coast and found what is perhaps the ideal conveyance from which to admire the deep forests, the mountains and glaciers and the fjords: a steamship/ferry of the Alaska Marine Highway. Loading their pickup aboard the ship at Prince Rupert in British Columbia, Dick and friends had an enjoyable two-day cruise to Skagway in Alaska. There they used the vehicle to tour locally for a few days, then embarked again for the return to Prince Rupert. From that port, they ultimately returned to Albuquerque.

The Alaska Marine Highway boat system offers many attractive possibilities to those who want to view this coastline. As can be seen on the map (right), Prince Rupert is fairly far north—a considerable drive from the U.S. border. But should you wish for less driving and more cruising, it's possible to begin your cruise at the southern terminus of the Marine Highway in Seattle. From there the cruise to Skagway in Alaska takes three and a half days.

If you're the adventuresome type, once you get to Alaska you could return to the lower 48 via the Alcan Highway. They say the trip is "memorable," and you can place your own interpretation on that description. But it's also possible to get off your ship at any of the colorful ports of call en route—Ketchikan, Sitka, Juneau, to

name a few—stay a few days, then pick up the next passing Marine Highway ship. If time is limited, you could make it a one-way cruise, taking the ship north from Seattle and flying back, probably out of Juneau.

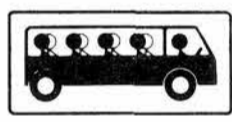
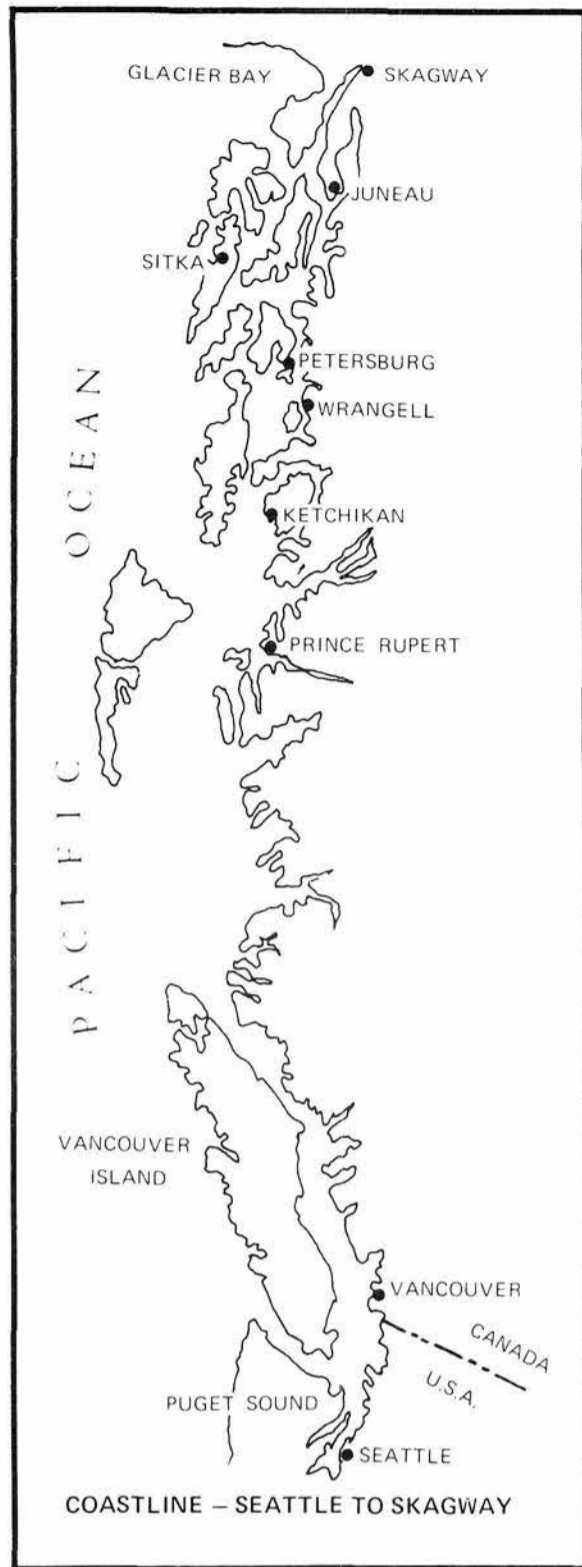
Dick reports that life aboard ship is simple—it's not your five-galas-per-day cruise ship. You can rent a two- or four-berth cabin, a dormitory berth or, if economy is your aim, you can flake out on a deck chair or simply find a spot to unroll your sleeping bag and pad. You can buy your meals in the ship's restaurant.

Unfortunately, if you are taking along a pickup camper or RV, you won't be permitted access to the vehicle while the ship is underway, thus won't be able to spend the night in it.

With so many ports of call and a bundle of options relating to accommodations, the fee schedule is complicated. Note the simplified fee schedule (below) that will give you a handle on what costs are like. These are one-way tariffs, dated 1979. Cabins are rented as units—the price listed is the total you pay over and above each passenger fare. Given the cost of ferrying a vehicle, one would want to take a hard look at the trade-offs before taking one along. And bicycles go for free.

There are a thousand-and-one itineraries you can devise on the Alaska Marine Highway, but here's one we like: from Seattle to Skagway, embarking vehicle at Seattle and dropping it at Prince Rupert. Return by boat from Skagway to Prince Rupert, pick up vehicle, drive through scenic British Columbia (Jasper, Banff) before returning to Albuquerque. For two adults, staying in a two-berth cabin, the boat part of such a trip would take five days, cost about \$660.

Reservations are essential. You can get a bundle of information on schedules, fees and all the rest from: Alaska Marine Highway, Dept. of Trans. Marine Highway Systems, Pouch R. Juneau, Alaska, 99811.



Commuter Notes

Sandians 62 or older who ride Sun-Tran buses are reminded that they can save a little money by obtaining a Senior Citizens ID Card. To get one, go to the Sun-Tran office at 601 Yale SE with proof of age (a driver's license will suffice). The card costs a dollar and entitles you to ride for 10 cents between 9 a.m. and 3 p.m. weekdays and any time on weekends. The rate before 9 a.m. and after 3 p.m. on weekdays is 20 cents. The 20-cent rate applies as well to the Sandia Specials.

A commercial van service is now operating between Rio Rancho and Tech Area I. It originates at the Rio Rancho Shopping Center, stops at the Corrales Shopping Center, then proceeds south on N. Coors Blvd. to I-40. The operator will pick up passengers anywhere along North Coors. Fare is \$2.50/day. If you're interested, call the operator, Ellsworth Page, at 897-2396.

Sympathy

To Paula Stronach (1582) on the death of her mother, Feb. 1.

	ALASKA MARINE HIGHWAY TARIFFS					Veh. to 19 ft.	Motor-cycle
	Per Adult	Ages 6-11	4-berth Cabins	2-berth Cabins	Dorm.		
Seattle to Skagway	\$109	\$54	\$122	\$77	\$39	\$374	\$105
Prince Rupert to Skagway	\$ 65	\$35	\$ 69	\$45	\$23	\$187	\$ 51

Go For Health Film Examines Lifestyles

—by Susan Brammer [Medical]



Next in Medical's series of Go For Health programs is a film, *Live or Die*, to be shown on Tuesday, March 11, in Bldg. 815 (outside the Tech Area). The program runs from 12 to 12:30.

The importance of a healthy lifestyle comes across loud and clear as the film traces the lives of a man and woman who both die at age 47. Pathologists, using simulated autopsies, explain why these people died prematurely. Their lives are recreated in detail, revealing their work and eating habits, exercise routines (or lack of), their relationships with family and friends, and the role of stress and competition in their lives.

The film's concept is that death, although seemingly arbitrary, can in large part be controlled by our own personal choices, since the quality of our health depends on our making good, life-sustaining choices. In brief, we can live in ways that make our bodies healthy or we can live in ways that make our bodies sick.

This film is stark and moving in its depiction of the lives and deaths of a man and a woman, both successful in their work, who pursued life patterns that led to an early death. The film has much to teach us about how to live . . . or how to die.



A recent issue of *Everybody's Money*, the credit union magazine, carried the following energy-saving tip from a Madison, Wis., reader: "In designing a home to save energy," he wrote, "site selection is very important. For instance, you can save a bundle on your heating bills if you select a site in Hawaii, instead of one in Minnesota."

Supervisory Appointments

BILL ROSE to supervisor of Vehicle Maintenance Section 3421-2, effective March 1.

Since joining the Labs almost three years ago, Bill has been a motor pool technician, repairing government vehicles. Bill, a heavy equipment repairman, moved to Albuquerque from Indiana 14 years ago. Off the job, his interests include boating, water skiing and off-road racing; his 16-year-old son drives their dune buggy in competitions at the Albuquerque Raceway and Speedway Park. Bill and his wife Sybil have three children and live in NE Albuquerque.

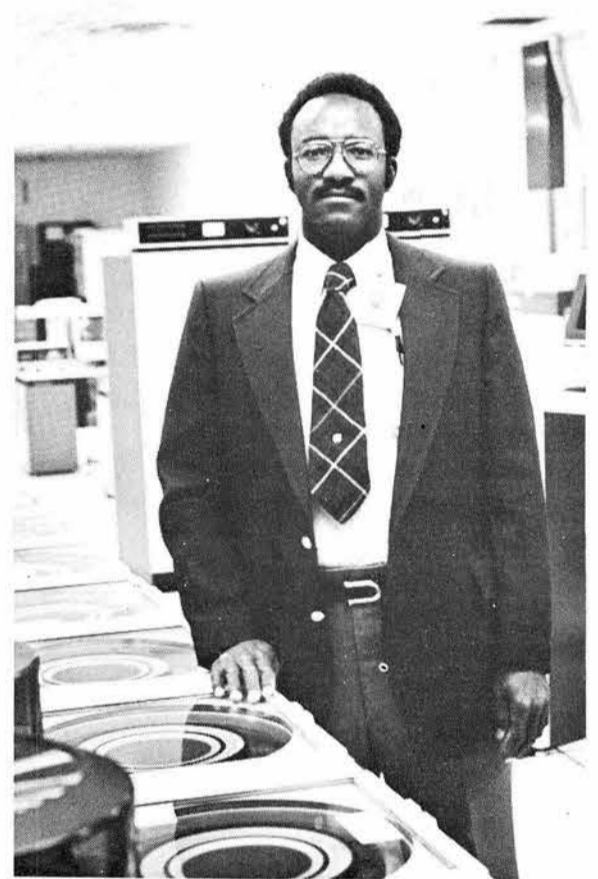
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CRAIG JONES to manager of Computing Services Department 2610, effective March 1. Joining the Labs in June 1961, Craig worked with a quality control group until 1971 when he was promoted to supervisor of a mathematical services division. More recently, Craig has supervised Data Processing Systems Software Division 2647. As Labs coordinator for programs relating to computer protection, Craig will now carry out the administrative and technical aspects of new DOE orders affecting all users of SLA computers. These orders provide for the security of any computer system processing classified or sensitive data and for limiting the use of all systems to official Sandia business.

Craig earned BS and MS degrees in mathematics from Kansas State University. He is a member of IEEE. While woodworking is his primary hobby, he enjoys browsing in flea markets where he buys and sells tools. Craig and his wife Marcella have two children and live in the NE heights.



BILL ROSE (3421-2)



CRAIG JONES (2610)



OFF WE GO—Congressman Manuel Lujan is accompanied by Dave Bickel (1535) and Bill Gardner (1500) as he begins aerial tour of Area III and Coyote Canyon facilities. The Congressman earlier had addressed an audience at a Labs colloquium and was briefed on Labs programs.

**ENERGY.
We can't afford
to waste it.**

Congratulations

To Wayne (3641) and Mrs. Burton, a son, Craig Montgomery, born Feb. 16.

To Bob Lassiter (1758) and Yvonne Rivera, married in Pena Blanca, Feb. 22.

Organization 8200: Its Work Touches All

Headed by Arlyn Blackwell, 8200 is the SLL operations directorate with overall responsibility for budgeting, plant engineering, purchasing, personnel and other administrative services.

To better describe the work 8200's people perform, let's look at a new engineer who is interviewed and hired at Sandia Livermore.

His first contact when he arrives is with the staff in the Personnel Division 8212. They arrange for his travel here, help set up his hiring interviews, and conduct initial briefings on his first week at work.

As he moves into his new lab or office, he finds it already furnished and stocked with supplies, a service performed by the people in Materials Management Division 8262. The room itself, complete with light, heat, air conditioning and other services, is provided and maintained by employees in Plant Engineering Department 8250.

In his first weeks at work, this new staff member begins to create engineering drawings, with the help of skilled designers in the Design Definition Division of 8270. The procedures he follows and the computer programs that provide rapid access to drawings are developed and maintained by programmers in Management Information Division 8215.

As commercial suppliers are required to help build developmental hardware, people from Purchasing Division 8264 request the bids and place the contracts.

When his job is complete and a report describing the work is due, the engineer can call on the staff of Publications Division 8265 for assistance. Access to other reports and reference material, plus classification guidance, are provided by the staff of Library and Security Classification Division 8266.

Throughout his job, the new staffer enjoys many other supporting services. The people of Hazards Control Division 8275 help to assure that his work is performed safely, and the staff of Security Division 8261 works to assure that the information needed to do the job is provided within the framework of national security requirements.

That most tangible of benefits, the paycheck, is provided through the staff of Accounting Division 8213. Other benefits—insurance, retirement, a sickness absence plan—are provided with the aid of Sandians in the Benefits Division 8214, who also stand ready to help with classes at nearby colleges if the new employee feels the need for further education.

And so, when our engineer gets a "well done" at the end of his first assignment, many of 8200's people have a stake in the praise.

Because SLL is small in relation to SLA, yet spans most of the same functions, 8200 staff and management people alike have jobs wide in scope.

Department 8210, headed by Paul Brewer, handles the personnel and recruiting functions, affirmative action program, annual budgeting for SLL, accounting, training, word processing, public relations and medical needs of the

1000-plus employees at Livermore. The Training group's educational programs include a closed circuit educational television network where Sandians can choose from 40 courses offered by five learning institutions.

Marv Glaze summarizes his Department 8260 administrative services as those that help Sandia employees (1) feel more secure, (2) buy something, (3) receive, ship, store or junk something, (4) publish, print or draw pictures of something, and (5) use the library, classify something or mail something. His department is responsible for security, including administration of the contractor guard force, document accountability, materials management, purchasing, publications, and library classification. Last year, 8260 placed contracts for \$32 million in commercial purchases, including a growing volume of energy contracts.

Department 8250, directed by Lee Davies, is the plant engineering group that develops plans for construction and modification of plant projects, carries out preventive maintenance and repairs, and provides utilities. The department also coordinates all of our space needs. An additional 8250 function is coordinating the contract work for plant maintenance and landscaping work. A growing concern for Lee and his staff when designing and equipping new labs and offices is energy conservation—a national mandate.

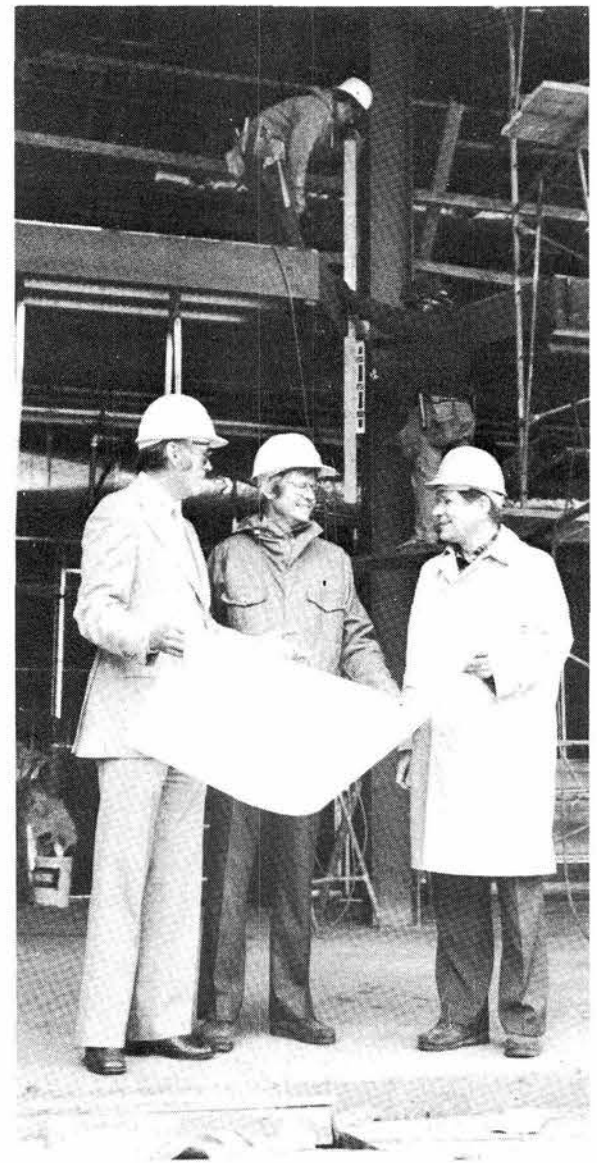
All of the drafting work at the laboratories is performed by the staff of Bill Little's Engineering Definition Department 8270. His department also provides specifications, product records, drawing control and reproduction along with hazards control, which includes industrial safety, fire inspections and explosives handling.

In addition to the direct support organizations, a relatively recent innovation at SLL is the Planning Staff (8201) which assists Arlyn Blackwell and Tom Cook (VP-8000) in fielding problems that don't fit into any particular line organization. Staffers Bob Johnsen, John Marion and, until his recent promotion, Rob Rinne, give an institution-wide perspective on issues instead of serving only one directorate.

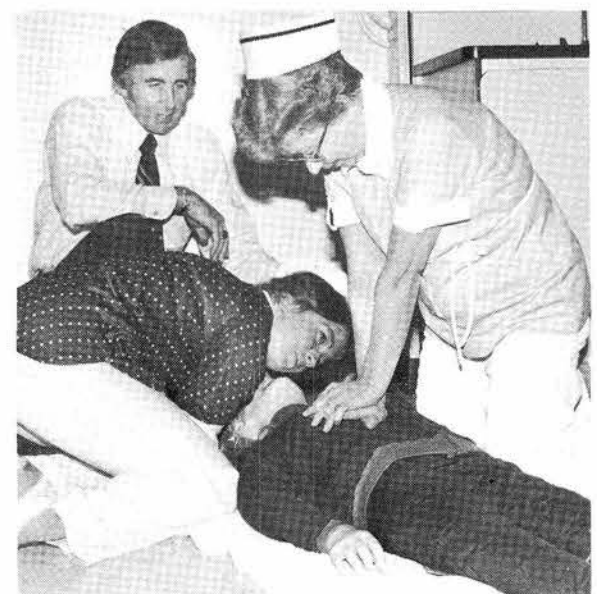
A high priority for Arlyn and that staff is to assist Tom Cook and others with our numerous visitors. Agendas have to be prepared, briefing materials assembled, and areas set up for the many uncleared guests who need access to facilities and the staff.

The physical plant is changing dramatically at present and will continue to do so in this new decade. A \$10.3 million project will be completed this summer—the new Combustion Research Facility—under the guiding hand of project engineer John Marion (8201).

Also in the development stage is an expansion that will double the size of the existing computer complex. Another project, planned in the FY82 budget, is a 70,000-square-foot laboratory building; this three-story structure will be the tallest



MONITORING THE PROGRESS of construction on the new SLL Combustion Research Facility are (left to right) Arlyn Blackwell (8200), John Marion (8201), and Lee Davies (8250).



CONDUCTING CPR CLASSES is a function of 8214, the medical staff at SLL. Demonstrating the technique on a dummy are (left to right) Mary Johnston and Dorothy Hagen with Marlin Pound observing.

at SLL.

Talking about 8200 practices, Arlyn explains that because SLL is a branch laboratory, its groups operate closely with groups in Albuquerque performing the same services. Occasionally a variation in interpretation and application of procedures is required because of different local conditions, but goals and methods are basically the same.

Arlyn sums up the 8200 mission this way: "Our aim is to provide first-class service, using minimum manpower and other resources. To do that, we have to work hard and we have to work innovatively."

LIVERMORE NEWS

VOL. 32, NO. 5

LIVERMORE LABORATORIES

MARCH 7, 1980

Take Note

Exactly four weeks later, to the day and hour, Livermore experienced another in the series of earthquakes that began with the 5.5 event on the Richter scale Thursday, Jan. 24, 1980.

On Thursday, Feb. 21, at 10:57 a.m., four minutes earlier than the one a month earlier, most of the employees at Sandia Laboratories Livermore were at the same locations as a month before, and once again went under desks or tables as a small quake did its thing. Fortunately, this one was less severe, only 3.5 to 3.7 on the scale, and no damage resulted.

As if that reminder wasn't enough, SLL felt three more that day and the next. At 11:50 a.m. a 2.7 was recorded; on Friday, Feb. 22, a tremor of 3.4 magnitude was felt at 2:26 p.m., and a 3.5 at 4:09 p.m. All of them were centered near Livermore along the Greenville-Mt. Diablo fault system.

* * *

Sandians Shelia Daigle (8413), Vera Dunder (8122) and Carolyn Kramer (8313) will make workshop presentations at an upcoming career conference, "Expanding Your Horizons," scheduled for Saturday, March 22, at Chabot College Valley campus. Sponsored by the LLL Women's Association to provide young women with information on careers in math- and science-related fields, the conference should be of special interest to Sandians with daughters in the seventh to twelfth grades. The \$4 cost covers lunch and materials. Contact Public Information Office, Bldg. 911, Rm. 129, for a brochure and registration form.

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Jack Dini and Rudy Johnson (both 8312) received the "best paper award" in the Hybrid Microcircuit Interconnections Session of the 1979 International Society for Hybrid Microelectronics Symposium held recently in Los Angeles. Title of their paper was "Influence of Codeposited Impurities on the Thermocompression Bonding of Electroplated Gold."

Bob Noble (8424) presented "Fine-Wire Bonding to a Difficult-to-Bond-to Thick-Film Network" in the same session and Terry Nordstrom (5815) and Charles Hills (5822) presented "Microstructural Studies of Thick-Film Resistors Using Transmission Electron Microscopy" in the Thick-Film Processing Session.

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The recent Blood Bank Drive at Sandia Livermore was again a big success. One hundred thirty-five employees donated blood, with 87 units going to the Sandia Blood Bank and 48 to the Kaiser Health Care Plan. The drive is coordinated by Training and Benefits Division 8214. Next drive is scheduled for May 15.

Retiring



Earl Deno (8257)



"ALL THIS FAMILY REUNION STUFF is really kinda boring." Or so it appears to Sheba, the youngest member of Marv Glaze's (8260) horse clan. Beyond Sheba are Honeybee, Marv, Brandy, Silky, Dixie, and Marv's wife Ruth. All the younger horses are Honeybee's offspring. She is a New Mexico-bred mare who transferred to Livermore with Gordon Ross (8256) in 1968; Marv bought her from Gordon in 1970.

Events Calendar

March 7-15 (weekends)—"Don't Drink the Water," Tiffany Playhouse, 8 p.m., 3211 Central Ave. NE, 256-7164.

March 8—"Giselle," The Houston Ballet, Popejoy, 8:15 p.m.

March 8—"Sound Scape," multi-media event with electronic music, laser light show and modern dance, Kimo Theater, 8 p.m., 766-7816 or 268-3178.

March 9—"Coppelia," The Houston Ballet, Popejoy, 8:15 p.m.

March 12—Pruning Shrubs Workshop, Albuquerque Garden Center, 10201 Lomas NE, 7:30 p.m., 296-6020.

March 13—Music Vesper Series: Glinka Chorus from Leningrad, 1st Methodist Church, 4th & Lead SW, 7:30 p.m.

March 13-14—"Fantasticks," musical presented by the Fine Arts Dept. of ENMU, Kimo Theater, 8 p.m.

March 14-15—Spectacular VI, UNM Collegiate Singers, Popejoy, 8:15 p.m.

March 14-29—"The Voice of the Turtle," Albuquerque Little Theater, 324 San Pasquale SW, Tues.-Fri, 8 p.m.; Sat., 6 & 9 p.m.; Sun., 2 & 8 p.m., 242-4750.

March 16—Blue Grass Extravaganza — performances and musical contests, "Hot Rise" will perform, Kimo Theater, 2-9 p.m.

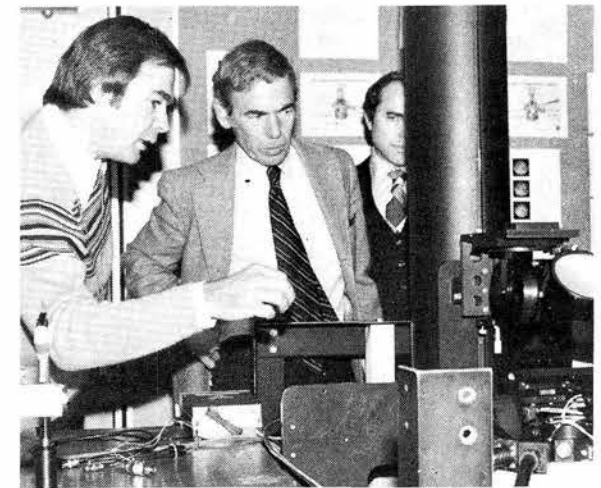
March 16—Experiment in Jewish Learning lecture series: "Dimensions of Aging and the Aged in America: A Jewish Perspective," Prof. Edith Sherman, 1st Unitarian Church, 3701 Carlisle NE, 8 p.m.

March 17—Chamber Orchestra of Albuquerque, Keller Hall, UNM, 8:15 p.m.

March 19—Laguna Pueblo, annual St. Joseph Feast Day, Harvest Dance, 247-0371.

March 19—"The Andes," travel-adventure film, Popejoy, 7:30 p.m.

March 21-23—Proteus Mime Theater, Kimo Theater, 8 p.m.



ENERGY RESEARCH HEAD VISITS—Edward Friedman, Director Designate of the Office of Energy Research, DOE, recently visited Sandia Livermore where he was briefed on combustion research and fusion energy programs. Here, Sheridan Johnston (8352), left, shows him an experiment in which laser Raman scattering is used to make measurements inside internal combustion engines.

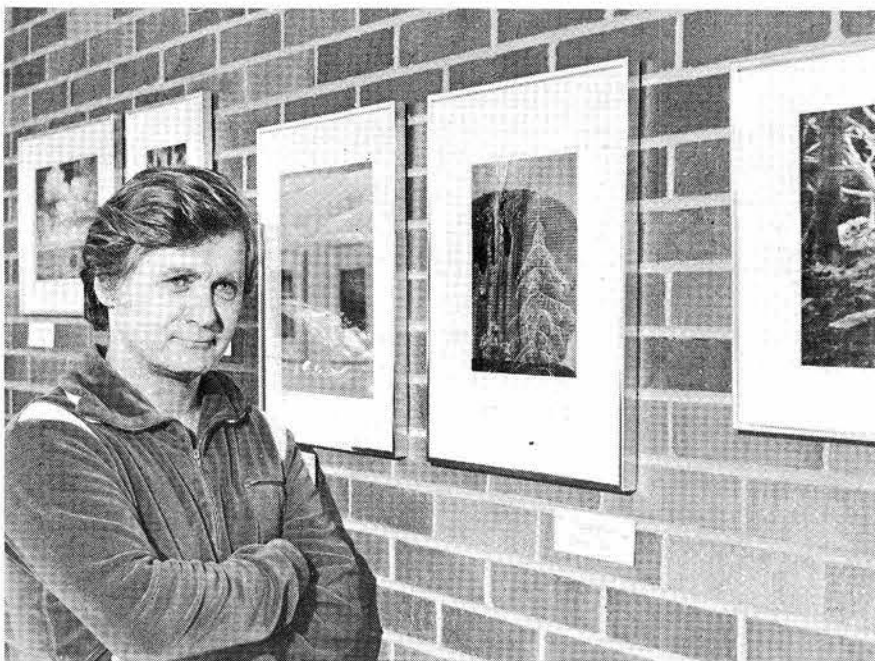
Sympathy

To Dan Held (8215) on the deaths of his mother-in-law, Feb. 18, and his father-in-law, Feb. 23, in Livermore.

BERWEIDA LEARSON (3151), tech writer, recently guided a new kind of Sandia report through production. *Particle Beam Fusion Program* is a hard-cover volume containing 80 pages plus four packets of microfiche—a total of 207 documents and their complete text. Gerry Yonas, director of Pulsed Energy Program 4200, edited the volume. Ed Hirt's Microfilming Section 2432-1 produced more than 16,000 microfiche for the print run of the book. Using microfiche enables the complete text of the scientific papers to be included in a book that's still a handy size. It also saved money. The microfiche in each book represent 20,286 pages of text. Five different colors were used for the title strip on the microfiche to distinguish document groupings.



PHOTOGRAPHS BY WAYNE GRAVNING (3153) will be on exhibit, as part of a two-man show, through March 23 at the St. John's Cathedral Gallery, 318 Silver Ave. SW. His co-exhibitor is Ben Selving. Majority of the photos were taken in New Mexico, Utah, California and Kauai, and the subject matter ranges widely from traditional landscapes to experimental color photo paintings. Gallery hours are 9 a.m. to 4 p.m. Monday through Friday, and 8 a.m. to 1 p.m. on Sundays.



NEW BIKE PATH on the Base starts just inside the Gibson Gate and runs diagonally across the school yard into the military housing area. Installed by Sandia's Plant Engineering, the asphalt-paved path runs a little over a quarter mile, is vast improvement over sticker-strewn dirt path previously used. Wayne Burton (3641) was the project engineer.



Take Note

LAB NEWS continues to be interested in do-it-yourself energy conservation projects that Sandians have completed around their homes. We've run several articles on solar installations, on ways to reduce home heating costs and on other cost and energy effective devices. One contrivance has thus far eluded us: the woodburning stove. If you've had some experience with a stove, especially of the type that is inserted in an existing fireplace, and can give us some data on its efficiency and economies, we'd appreciate hearing from you—4-1053. Meanwhile, even if you haven't a stove, we'd still like to hear about your energy conservation home project.

* * *

Katachi: Form & Spirit in Japanese Art is the title of an exhibition at the Museum of Albuquerque which opened this week to run through June 8. The exhibition is a survey of Japanese art produced over the last 1700 years, with contemporary art shown alongside traditional objects. It includes a variety of media: ceramic and porcelain, wood and bronze, woodblock prints as well as books containing original woodblock prints, hanging and hand scrolls. *Katachi* is one facet of the festival "Japan in Albuquerque," which is being sponsored by the City of Albuquerque in honor of its celebration with its sister city, Sasebo, Japan.

* * *

The Friends of the Library annual book sale will be held March 19 to 22 at the downtown main library. On the 19th, it runs from 6 to 8:30 p.m., while on the other days the hours are 9:30 to 5 p.m. The sale includes books purged from the stacks (for condition, not content) and donated books. The Friends need volunteers to help during the sale. If you're willing, call Flo Parker, 268-5104, or Katy Lang, 255-3549.

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The Amigos de Las Americas are a group of young people who each summer head on down to Central and South America, largely at their own expense, to administer some elementary medical care to natives in poor areas. They're raising funds this year by sponsoring an art auction on Saturday, March 15, at the Sheraton Old Town Inn, featuring works by Neiman, Boulanger, Sica, Shephard, Picasso, Dali and others. You can preview the works from 7:30 to 8:15 p.m., the auction starts at 8:15 p.m., admission is free, there's a cash bar, and for five bucks you can stay for breakfast after the auction.

* * *

Jim Coleman (3612) was graduated from the Labs' electrical apprenticeship program on Feb. 29, having successfully completed five years of on-the-job and academic training. Jim is a Valley High graduate and has attended T-VI. He entered Sandia's apprenticeship program in September 1975.



SHOWING SIGNS OF CHAMPIONSHIP PERFORMANCE, quarterhorse Futurity hopeful Ima Legend (far left) is led through a brisk workout by trainer Cecil Sanderson (4321). Owner Bill Jernigan (2341), jockey Linda Cox and her husband Fred, look on approvingly.

Looking to the Futurities

Ima Legend in Her Own Time, They Hope

We don't know from experience, of course, but it doesn't seem all that unusual that some people spend their vacations at the race track. But not many of them, we posit (we'd bet, but gambling isn't allowed in the *Lab News*) are there to cheer on their own horses. This is a story about two Sandians who do—and about a dream they share not of the future, but of the futurities.

When Bill Jernigan (2341) moved here from Atlanta four years ago, one of the things he brought with him was a burning desire to own and ride horses. He talked to Ivory Alexander (2345) about his plan and Ivory introduced him to Cecil Sanderson (4321).

"You'll like Cecil," Ivory told Bill. "He's as hung up on horses as you are." And Ivory was right. Cecil's been big on horses since he was three years old. That was the year his parents gave him a toy Longhorn steer for Christmas and his younger brother a toy horse. "I threw the toy steer out the window and confiscated my brother's horse," Cecil says with a laugh. "And I didn't give it back, either."

When he was 12, Cecil got his first horse and when he was 13, his father bought three more, one a stud colt, the first horse Cecil trained, using the knowledge he'd picked up out of books. At 14 he saw his first race; it was an eye opener.

"I knew right away I had to get into racing," Cecil says—and he did, "Bush track racing, my horse against theirs."

He raced in Albuquerque in informal matches for two years, too, then entered a futurity. His quarterhorse mare was injured and went lame and for several years he's trained other people's horses. His

involvement as a trainer became much more personal when he met Bill Jernigan. "We rode together a lot, talked horses and racing and finally decided to do something about it."

Together, they visited quarterhorse breeder Ben Lee in Los Lunas. "You can imagine how excited I was," Bill told us, "when the horse I bought was named 'Ima Legend.'"

That was last May. Since then, Bill and Cecil (who's teaching Bill to train horses) have put a lot of energy and effort into getting Ima Legend ready to race. "The big money in quarterhorse racing," Bill explains, "is in the Futurities at Ruidoso—the Kansas, the Rainbow and the All-American."

Those races are run in June, July and August, for two-year-olds. Right now, however, what occupies Bill and Cecil is the Poor Boy Futurity trials on April 5 at Midway Downs in Stroud, Okla. "Quarterhorse racing is dominated by horses from Texas and Oklahoma," Bill told us, "and Midway Downs is where they fine tune some of the horses that turn up at Ruidoso. We thought we might as well check Legend out against some real competition. If she does well at Midway, we'll take a shot at the Kansas trials in June."

Ima Legend is stabled at the Fair Grounds and Bill and Cecil are there before and after work and on weekends cleaning stalls and feeding, grooming and training, keeping the horse in shape. As the Poor Boy Futurity draws nearer, training is picking up. Legend gets a daily workout, including a full mile at a gallop to build up her wind.

"We'd like to win at Midway Downs," Bill told us, "but we'll settle for a good showing. The same goes for Ruidoso. All 10 horses in the Futurity share in the purse. So do the next 10 qualifiers that run in the consolation futurity."

In September, Ima Legend gets a crack at the New Mexico Futurity at the State Fair. After that there are Derby races when she's a three-year-old and the Stakes Races when she's four.

"It all depends on how she does," Bill and Cecil say. But you can tell from their tone of voice they think she'll do very well indeed. As a matter of fact, if the hopes and enthusiasms of the owner and trainer have any influence on a race horse's performance, chances are very good that Ima Legend really will be one in her own time. • cec



NEW FACE at LAB NEWS—Louis Erne is our new photographer, coming here after more than 20 years with the Photo Lab. Besides work on the paper, he will take photos for the Public Information Division 3161. Welcome aboard, Louis . . .

MILEPOSTS

LAB NEWS

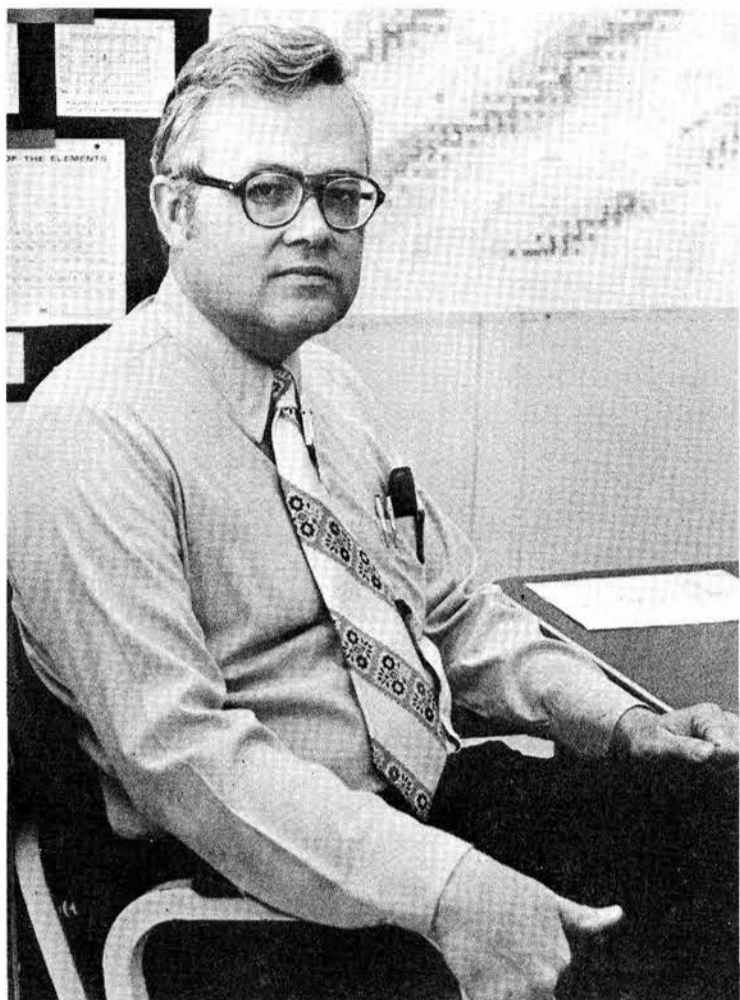
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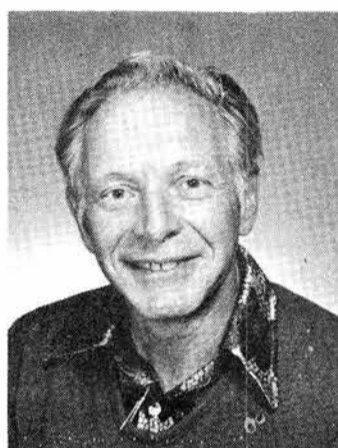
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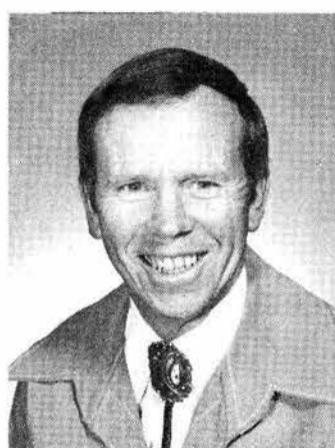
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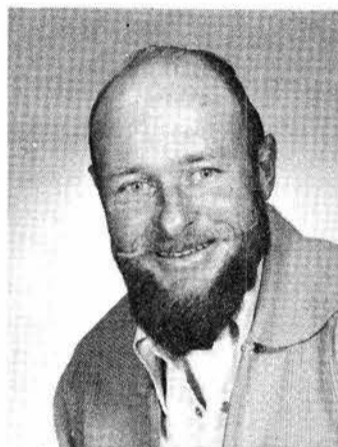
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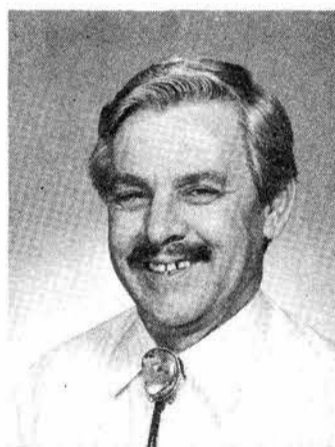
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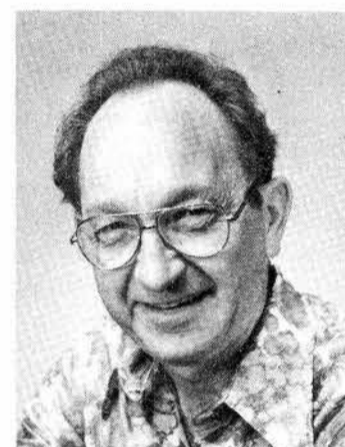
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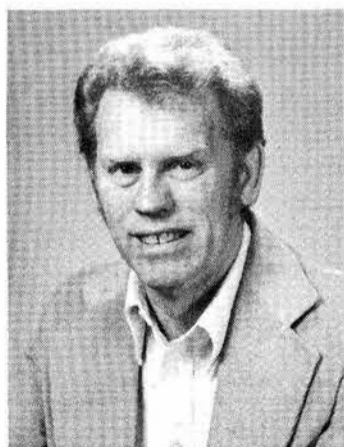
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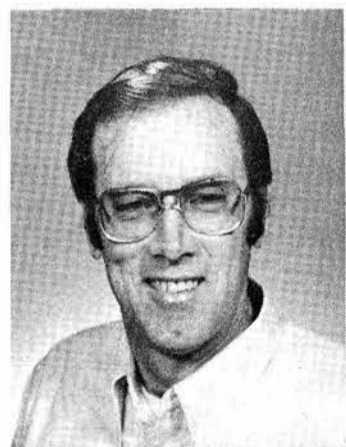
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Moe Houk - 8161 15



Doyle Baker - 8463 20



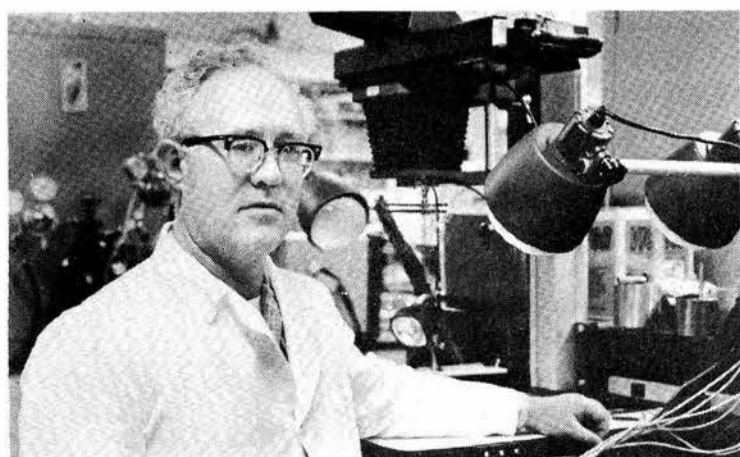
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Gabe Gutierrez - 8273 20



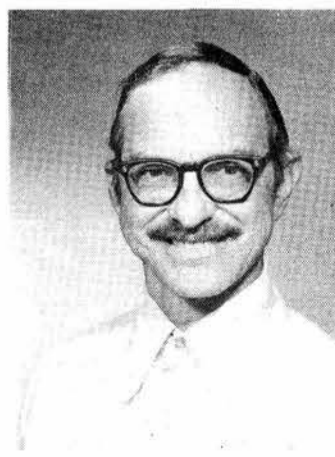
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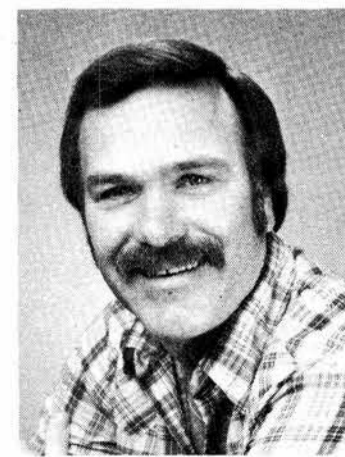
David McCarthy - 2522 20



Bill Swansiger - 8347 10



Charles Daniel - 5131 20



Ted Hebebrand - 8262 15

Fun & Games

Running—On Sunday the 16th, a 5-miler called "Jog-N-Run" is being sponsored by the Albuquerque Child Care Center at 10 a.m. at Kit Carson Park. LAB NEWS has entry forms.

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Biking—Bike touring in New Mexico is coming on strong as more and more cyclists take advantage of our good weather and not-so-bad road network to take leisurely rides through the countryside. Where to go? That's one of the purposes of a new group—the New Mexico Touring Society—which holds its first membership meeting on March 20 at 7:30 p.m. at Albuquerque Federal Savings & Loan on Central near the Highland Theater. Ron Malpass (1761) will preside and explain NMTS's objective: "a society dedicated to safe family bicycle touring."

Speaking of touring, the 8th annual Tour of the Rio Grande Valley has been set for April 20, starting at 6:30 a.m. Last year, 425 riders participated in this 100-miler (though you can go for 50 if you prefer). LAB NEWS has entry forms and information.

* * *

Golfing—The men's branch of the Sandia Golf Association is offering an extensive program of play with evening and weekend leagues, match play competition, and 12 tournaments to be played on nine different courses. It starts in a few weeks, and you can be a part of it for only four bucks—call Paul Robertson, 4-4111, for membership information.

* * *

Skiing—If you've never cross-country skied four or five miles, then lollered around in a natural hot springs pool with maybe a cooling roll or two in the snow (followed by a precipitous return to the pool) and then,

sadly, returned to the real world, well, friend, you've missed one of life's deeper experiences. Now's your chance: the Ski Touring Club goes tomorrow, Saturday the 8th, to the San Antonio Creek hot springs in the Jemez. Meet at Goodwill at 7 a.m. for car pooling.

* * *

Stress Reduction & Deep Relaxation—Devi Frauenglas is repeating this course, and it starts March 12. The course combines the techniques of yoga and those developed in the West to remove the tensions of daily living and achieve deep relaxation. The class will meet Mondays and Wednesdays for four weeks from 4:45 to 5:45 p.m. at the C-Club. Fee is \$25 and you can reserve a place by calling Skip on 4-8486.

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Archery—Sandia Archers meet at 7:30 p.m. on March 11 at the Breakaway Club on Base. Dean Pershall (1244) urges all interested in archery to come to the meeting. He's on 4-7528.

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Racquetball—Players interested in a tournament starting around March 17 should call Skip at the C-Club, 4-8486. Planned is a singles tournament (double elimination) with games to be played during the week from 6 to 7 a.m. at the east gym. Entry fees will be charged to pay court costs and for awards.

* * *

Basketball—For the first time ever, KAFB basketball championship matches have been set up pitting Sandia Labs people against those in the Air Force. On Tuesday, March 11, at 5:30, the Labs Recreation League Champions meet the KAFB Rec. League Champions. At 6:30, same date, the Labs "A" League Champions play Kirtland's Intramural League Champions. On Thursday, March 13, at 5:30, the Labs Rec. League All Stars meet KAFB's Rec. League All Stars. At 6:30 on the 13th, the Labs "A" League All Stars play Kirtland's Intramural League All Stars. And, at 7:30, Labs Women All Stars play KAFB Women All Stars. Spectators are warmly invited.

* * *

Softball—Team and player sign-ups are now being taken for the summer's slow pitch softball league. Needed are the player's name, org., E-number and work phone . . . plus \$15 per person. Games will be played at Manzano Field and are set to begin the first week in May. Tom Massis (2516) is league president and contact—4-1540. Turn player info in to Tom.

* * *

Swimming—One of the attractive features of competitive swimming for young people is that it is an activity that can be carried over into adult life. You can swim all your life. With sports such as football, basketball and the like, playing them in later life gets a little difficult. We've received a brochure from the C-Club's

Coronado Club Activities

Spinning Wheel Tonight

TONIGHT at Happy Hour a group of performers called Spinning Wheel brings its Las Vegas-type show to the Coronado Club ballroom. There will be great music, gags and high jinks all over the place. The buffet line features lobster or T-bone steaks. And the good news is that Spinning Wheel returns next Friday to the Club for another fantastic Happy Hour. Gary Waters entertains in the lounge tonight; Fred Gomez sings next Friday in the lounge. The buffet next week is a choice of either prime rib or baked trout. Because the Spinning Wheel is a special show, the Club will charge members a \$1 admission fee. The fee will be waived for diners with buffet reservations. Call the Club office, 265-6791, by mid-week to reserve buffet tickets for next week.

SANADO WOMEN hold their annual art show at the Club on Monday, March 10, from 4 to 8 p.m. and again the next day from 10 a.m. until noon when the group meets for lunch. Program will be a painting demonstration by Kitty Sadock and Betty Reuscher. Call Donna Urish, 292-1456, *right now* to find out about reservations.

SKI CLUB meets Tuesday, March 18, at 7 p.m. to see movies and elect new officers.

WHERE ELSE except the Coronado Club on Wednesdays from 4:30 until 6:30 can you buy standard mixed drinks and draft beer for two bits?

CALLIGRAPHY classes start next Tuesday, March 11, for beginners and advanced students. Call the Club office for enrollment information.

TRAVEL DIRECTOR Frank Biggs has a number of tour packages coming up soon; the time to sign up is now—Las Vegas, March 24-26, \$142; Disneyland, April 1-4, \$253 (\$179 kids); Puerto Vallarta, May 4-11, \$355; and Cancun, May 3-10, \$519.

See Frank in the lobby tonight between 6 and 7 for the full scoop and talk travel ideas with him. He welcomes suggestions.

Coronado Aquatic Club in which is explained the Club's program of taking youngsters—as young as five or six—and turning them into trained athletes. The Club is consistently a top contender in the NM State Championships and has produced a number of swimmers able to compete nationally. Reed Barnitz is the full-time coach and is now in his 13th year with the Club. New young swimmers are accepted into the program at any time. They progress from novice to top levels at their own pace, depending on skill and dedication. If you're interested, you can get more information from Reed on 821-6932.

