



AERIAL view of Sandia's Central Receiver Test Facility — the Power Tower — was taken shortly before facility was completed. Experimental boilers have since been installed and testing is underway. An unusual night-time experiment was recently completed here, using the array of

mirrors to focus radiation from celestial and atmospheric events onto detectors as a possible means of detecting the explosion of black holes in space. Story on page 7.

LAB NEWS

VOL. 31, NO. 16

AUGUST 10, 1979

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

Oil & Geothermal Wells

New Drill Bit Passes Major Test

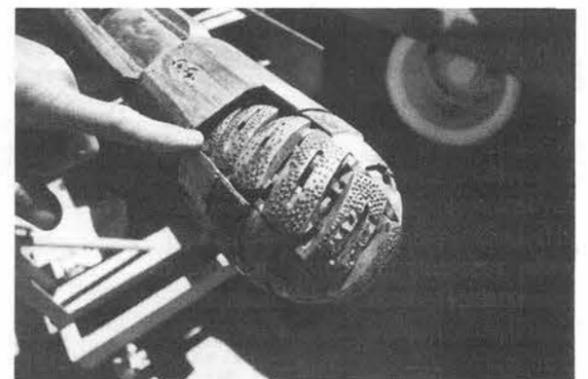
At the Nevada Test Site last month, Sandia's continuous-chain drill bit, in which the cutting surface can be replaced while the bit is still in the hole, was used to drill some 250 feet into an underlying granite formation. This was the drill bit's first major test in the field. Says Sam Varnado, supervisor of Drilling Technology Division 4741, "Results were super — all we had hoped for. Our bit drilled the 250 feet with six link sets giving us an average of 41 feet per set. That compares with an average of 28 feet that we obtained with a conventional drill bit in the same formation."

Economic implications of the new drill bit are significant for the oil and geothermal industries, especially as wells are drilled ever deeper (some go down more than five miles). When a conventional drill bit wears out

downhole, the entire pipe assemblage (drill stem) has to be withdrawn from the well, segment by segment, until the drill bit is reached. The new bit is installed, and the process is then repeated — in reverse. On deep wells significant cost is associated with this replacement procedure.

With the Sandia chain drill bit, the worn bit is replaced downhole, as many as 15 times. Many time-consuming and expensive trips to the surface are thus avoided.

A key element in the device is the special chain. The links do not resemble those of a conventional chain but, rather, have a wide convex surface in which diamonds are mounted for cutting purposes. Five adjacent links constitute one drill bit, and up to 75 links may form the continuous chain. The assembly is spring loaded before going downhole and,



BUSINESS END of chain drill bit. More pronounced cutters are seen on bottom link, centermost of the five links that constitute one drill bit.

when one bit wears out, the operator is able to trigger the replacement sequence through manipulation of mud pump pressure. ("Mud" is the fluid used to lubricate a drill bit and

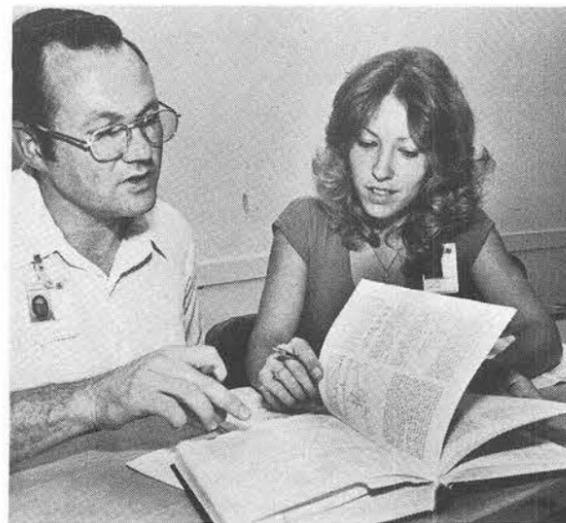
(Continued on Page Three)

Afterthoughts

Sacred horse (cont.)--Last issue I questioned the dominance of the horse in the State Fair and have since been scolded, lectured, told to retract and/or apologize and, finally, accused of falling off my bicycle on my head. Horses have been justified and exalted in terms of keeping kids off the streets, having ridden one back and forth to school, being a big business in New Mexico, and even, so help me, being an energy saver. The Secretary of the New Mexico Cutting Horse Assn. writes: "No big ranch can function without a string of good horses. The working horse who earns his keep is very much a part of the 20th century..." Well now, considering the appetite, stamina and disposition of the horse, most ranchers would be better off trading in that string for a Honda 90 trail bike which will go faster, farther and cheaper, as well as into places a horse can't (or won't) go. And it doesn't kick and bite and wander off into the night. True, you don't evoke quite the same image astride your Honda, but is "image" the basis of owning and riding a horse? Meanwhile, horse lovers, read what the man said--not to do away with the horse at the Fair, but only to give a fair shake to the many other activities in which New Mexicans of today partake. (The letter from the Cutting Horse Assn. had a dynamite closing: "How many people do you think would turn out to watch a backpacking race?")

* * *

Hooray for Teller--If you had to choose a single word to describe Edward Teller, I'd pick acerbic ("an astringency or sharpness of manner"). At 71, Teller speaks out and did so in, of all things, the August issue of Playboy. Some quotes: On nuclear power- "It has now been proposed, by Jane Fonda and other experts, that all our reactors be shut down. If they were, we would pay six billion dollars per year more for imported oil. The dollar would depreciate further. All of us would be even more dependent on the tender mercies of OPEC. If we continue to build reactors, there's a much greater chance to break the monopoly of OPEC--a monopoly that would never be tolerated in the United States, incidentally." On the duty of intellectuals- "There is one reason I particularly admire the Israelis. In the rest of the world, practically without exception, there is a gulf between intellectuals and the rest of the people, most certainly between the intellectuals and the politicians. The one country where this gulf does not exist is Israel. Israel was founded by intellectuals. When they got to Israel, they found that they could not survive without turning into peasants, but they stayed intellectuals as well. ...When they found that they'd be destroyed by the Arabs unless they turned into soldiers, they turned into soldiers--but stayed intellectuals. That is why they are so vital, why they continue to exist." *js



BASIC ENGINEERING & SCIENCE — That's the name of the course Suzanne Simpson (3726) is getting some help on from Dan Fenstermacher (2531). Usually called SP108S, the course is pursued at the student's pace, serves as an introduction to other courses leading to tech institute equivalency.

Opportunity Knocks

Qualifying for the challenging work of an Engineering & Science Assistant (ESA) at Sandia is not easy. One way is to be a graduate of a recognized technical institute.

Another way, aimed at men and women already on the roll at Sandia, is to gain a technical institute equivalency through completion of course work offered by the Labs' Education & Training organization. This is an ambitious program which takes five years to complete (taking two courses per semester), but its successful completion does bring recognition by the Labs of equivalency to technical institute graduation.

If you are interested, yet aren't really sure you're all that technical, then one way to find out is to enroll in the Education Department's Basic Engineering and Science Concepts, SP108S, a course in algebra, geometry, trig and physics designed so that you study at your own pace in a four-times-a-week session. Tutors are available to assist when needed.

Since SP108S is a self-paced course, you may enroll at any time — like right now. There are more details relating to this program and, if you're interested or have questions, give Wilma Salisbury a call on 4-6876.

Public Speaking A Private Misery?

"You may not be able to completely eliminate the feeling of butterflies in your stomach when you speak before a group, but you can at least learn to make them fly in formation," is how Frank Biggs (4231) puts it in a note to LAB NEWS that tells about the activities of his Toastmasters Club.

Now the group is meeting each Wednesday at noon in Bldg. 815, brown bagging it while listening to members do their thing. Frank lists a number of specific benefits deriving from Toastmaster membership; controlling nervousness when speaking before a group; more effective presentations and improved ability to think-on-feet; improved organization of thoughts; practice in leading discussions and conducting meetings; and learning to listen more effectively.

If you're interested or just curious about Toastmasters, Frank urges you to drop by a meeting (any Wednesday except Sept. 26 and Oct. 3). They won't put you on the spot — you can come by and simply listen. Questions: call Frank on 4-7367 or 265-4661.

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ALBUQUERQUE, NEW MEXICO
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Editorial offices in Albuquerque, N.M.

Area 505 264-1053

FTS 475-1053

ZIP 87185

In Livermore Area 415 422-2447

FTS 532-2447

john shunny is editor

&

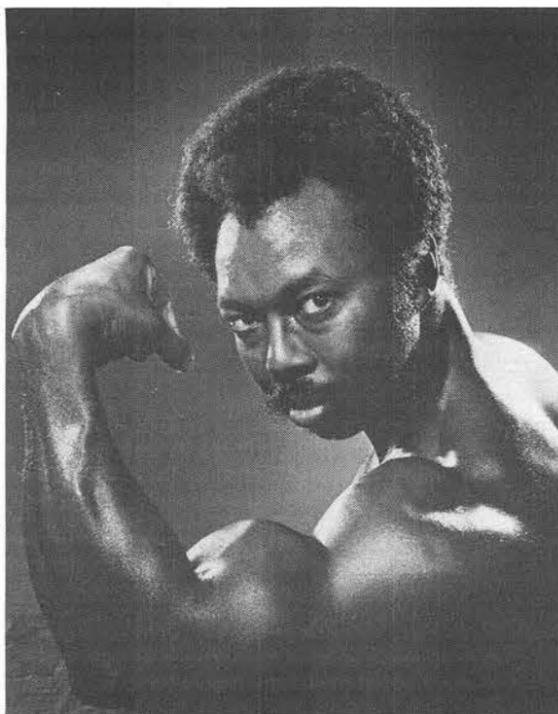
don graham ass't. editor

chuck cockelreas & norma taylor write

bill laskar does picture work

aided by gerse martinez

bruce hawkinson & lorena schneider report livermore.



DALLAS ALLEN (1244) shows off a few credentials, the basis of his taking a sixth place in the Mr. New Mexico contest held last week in the Convention Center. Dallas claims most anyone can develop a muscular physique. Then he describes his regimen — two one-hour workouts a day, six days a week and a careful watch over diet. Next stop for Dallas is the Mr. Western States contest.



SANDIANS on the drilling site were (front) John Middleton (2325) and Jack St. Clair (4735), (back) Fred Duimstra (2337), Lloyd Faucett (4741), and Kathy Porter (4735).

Continued from Page One

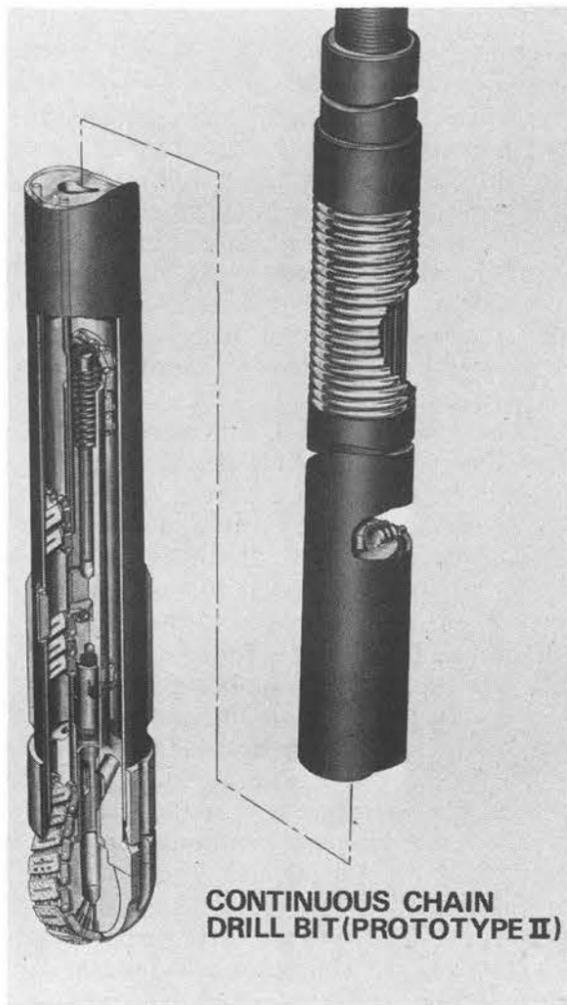
New Drill Bit Passes Test

flush out hole debris.) Replacement takes about six minutes.

At the Nevada Test Site, the SLA test crew consisted of Jack St. Clair, Lloyd Faucett, Kathy Porter (all 4741), John Middleton (2325) and Fred Duimstra (2337). NTS Staff Division 1131 under B.G. Edwards provided extensive support during the two-week operation.

Development of the continuous-chain drill bit has been underway since 1977, with the focus of the work being in Drilling Technology Division. Major contributions to this successful development program were made by people from Special Products Division 2325 under Bob Fox and Controllers & Switches Division 2337 under John Ford. Sam Varnado and his people also worked closely on the cutting surface design with Christensen Diamond Products Co. of Salt Lake City.

For the future, a follow-up field test is planned for September at NTS. An industrial partner is being sought to share the expense of building and testing a larger diameter chain drill in the size range of 6-1/8 to 8-1/2 inch (vs. the present 4-3/4 inch). And Sam Varnado hopes that the word will get out. "We have a drill bit here that could make a big difference in future well drilling operations. But now we have to let industry know that Sandia has this new bit and what it can do."



THE CHAIN of the chain drill bit is, in fact, the drill bit; diamond cutters are mounted on the outside surfaces of the individual links. Five such links constitute one drill bit, and the continuous chain may possess up to 15 such bits.

DRILLING OPERATION at Nevada Test Site ran two weeks, used conventional drilling rig and pipe. Chain drill bit performed significantly better than a conventional drill bit drilling through granite.



feed back

Q. While TV news coverage of some colloquia is inevitable, I don't see why their convenience should outweigh consideration of the audience. In particular, TV cameras are always set up in front of the left bank of seats, thereby blocking the view of the speaker, the screen, or both for many people.

A. Television coverage in the Bldg. 815 auditorium is difficult because of the limited space down front. The problem is complicated by the fact that most colloquia are video-taped by our own Motion Picture Division, taking up part of the available shooting space. If only one station is covering a given program, the camera crew can usually move over to one side and avoid obstructing the view of the people in the audience, but if more than one station appears, we have real problems.

In reviewing the situation, based upon your comments and our own concerns, we have concluded that the best solution is to ban TV coverage of such colloquia, except for unusual situations, such as "TV coverage requested by guest speaker." We will advise TV camera crews that they may interview the speaker before or after, but not during the program.

Thank you for your constructive suggestions.

K.A. Smith — 3100

Q. Our Sandia phone book has maps of the areas, but I find it most difficult to locate the mobile office (MO) and temporary (T) buildings. Could a list of these buildings be included with the maps which would indicate the location of the MO and T buildings, such as "east of 880"? The list could be updated with the regular directory changes.

A. We agree that a list showing location of all MO's (Mobile Offices) and T (Temporary) buildings would be a useful addition to the telephone directory, and this list will be added as soon as practicable. Thank you for your suggestion.

K.A. Smith — 3100

Q. I've observed two practices north of the Wyoming gate that are sure to get somebody hurt eventually: 1. Bicyclists in the mornings dart across two lanes of moving traffic to get from the west side of Wyoming to the east side; 2. Motorists in the evening use the center "turning" lane as an extra traffic lane, often going 40 or 50 mph.

A. The Albuquerque Police Department, which has jurisdiction over traffic matters north of the KAFB Wyoming Gate, has been apprised of the situations you describe. Unfortunately, APD is presently unable to have a mobile unit outside the gate every day.

Recognizing that some Sandia bicyclists might be involved in an unsafe practice en route to work, a member of our Safety organization, working with the Sandia Bicycle Association, is recommending that cyclists approaching from the west side of Wyoming remain on that side to enter the Base. If the cyclist will then take the bike path immediately to the right (west) just inside the gate and proceed south to Sandia Drive (the street adjacent to the C-Club), it is then possible to cross Wyoming with benefit of a traffic signal.

D.S. Tarbox — 3400



LOU HOPKINS, retired Sandia director, is building this solar-heated home on a high hill overlooking Corrales.

Retirement Project

Lou Hopkins Builds Solar Home

(Ed. Note — This is another in a series about solar projects of Sandians. If you have an operating system, please call LAB NEWS, 4-1053.)

More than five years of planning went into the new solar home of Lou Hopkins, former director of electromechanical development, now retired. The house, partially underground, perches on a high hill overlooking Corrales.

"I did a lot of thinking about a retirement project," Lou says. "Building the house keeps me involved. My wife and I designed it — and I had a lot of valuable help from friends at Sandia, technical help of the kind you need to design a solar system. I plan to instrument it, record data and do analyses. Maybe do a technical paper later."

From the driveway approaching the house from the north, there isn't much to see — earth slopes gently up a rise and toward what looks like a low concrete wall with a chimney. The drive curves into a garage door facade and a tunnel-like entrance.

It's a different story from the south side looking up the steep hill at an impressive expanse of solar collector area.

The 557 sq. ft. collector system, covered with translucent plastic, is made from copper plates and tubing mounted between the roof/wall beams. The collector plate is a commercial item, painted flat black, with an ingenious internal circulation system. Lou fabricated more than 1000 copper tube fittings to connect the 38 collector plates.

Water is the heat exchange medium, and it is stored in three 1000-gal. fiberglass tanks inside the house. The solar-heated water is pumped through a "fan/coil" unit resembling an automobile radiator. This unit warms the air in the heat storage area, then blows it through ducts under the concrete floor to the rooms of the house. Air entering the system is pulled from outside and drawn through a 60-ft.-long underground duct. Earth temperature remains around 60°F. so that this is a cooling system in summer.

The entire house is virtually sealed with only three doors and vents at the very top of the steeply pitched roof.

All windows are double glazed; those facing south incorporate a "bead wall." A blower and vacuum system fills the space between the glass panels with plastic beads and pulls the beads out when light is needed.

Provision has been made for a solar green house on the south side.

During winter nights, the circulating water is drained into the storage tanks. Lou estimates there is enough heat storage to run the system through three consecutive overcast days. A back-up electric heater is installed in one of the water storage tanks. Lou has a conventional electric hot water heater, but water entering the heater is pre-heated by circulating it through a coil in one of the large storage tanks.

Other features of the system, passive rather than active, include the considerable heat absorbing mass of concrete, adobe and brick in the house. The north and east walls are constructed from "foam-forms" — polystyrene forms are used to hold poured concrete and remain in place; the resulting insulation is rated at R-22. The south and west walls are 14-in.-thick adobe. So are the internal walls and the main internal partition. And then there is the underground factor.

"On paper, the engineering looks good," Lou says. "Next winter will be the test."

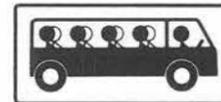
The house has two bedrooms, contains some 1800 sq. ft. of living area. The view from the living room is a panorama of the valley — the Sangre de Cristos to the north, the Sandias to the east and the Manzanos to the south. At night, the lights of Corrales and Albuquerque spread out on the valley floor.

After Lou checks out the solar system he has another retirement project in mind — building a windmill, possibly a vertical axis type, to drive the pump for his well and perhaps to generate useable energy. In the garage area, Lou has a well-stocked workshop.

"I'll stay busy," he says.

Vending Machine Prices Increase

Services For The Blind is the successful bidder for vending machine service at the Labs. Price increases in the machines reflect the circumstance that prices had not been increased since July 1977. The Food Committee reviewed and approved the recommended increase in prices and items to be vended. Profits and losses on the vending operation go to the Service for the Blind; the agency has subcontracted this service to Servomation, the largest vending service in the city.



Bus Notes

Jeff Gammon (3741) of the Employee Transportation Committee reports several new developments for bus commuters. Three new bus routes start operation Aug. 20. The first leaves from Academy and McKinney, travels down Wyoming and terminates at the Atomic Museum. Arrival times at the Museum for the buses of interest are 7:20 and 7:50; departure times are 4:40 and 5:10. Next, a Juan Tabo/Central bus will leave from Juan Tabo and Eubank (the streets join north of Montgomery) at 7:10, get to Central and Wyoming at 7:30 where Sandians may transfer to one of the Wyoming buses. On the return trip, employees may take either the Sandia Wyoming special or the new Wyoming city bus to Wyoming and Central where the Juan Tabo/Central bus will be waiting.

For west side Sandians, there's a Coors/Central bus you can catch at the SIPI parking lot at an eye-opening 6:10 a.m. Labs people could then transfer either at Louisiana or Wyoming. On Aug. 17 the city is cancelling its Comanche bus, but will reroute the Chelwood Sandia special so that it starts from Carlisle and Comanche at 7 a.m., goes east on Comanche to Chelwood and arrives at Sandia at 7:45.

Jeff says detailed schedules should be available next week. Here's fare information: 35¢/single ride; a monthly commuter pass is \$11; a 22-ride punch pass is \$6 (that's 27¢ per ride); and tokens go 20 for \$6, or 30¢ each. Passes and tokens may be purchased at the Credit Union.

Incidentally, if you have a UNM student at home, consider the student semester pass. It's \$28 for four months of ride-anytime/anywhere (vs \$36 for a parking permit).



Heave, Toss & Dump Week Coming Up

It's been said that wire coat hangers reproduce in dark closets, and now there's evidence to show that the same phenomenon occurs with paper in file cabinets, space savers, and desk drawers. So Charlie Hines of Records Management 3154 wants you, next week, to come to work in a mood to purge, for Aug. 13 to 17 is Clean Out Week.

Only records required for day-to-day operation are to be retained in office files. While classified documents should be destroyed under approved procedures, most other paper can be recycled, and detailed instructions concerning packaging and pickup are being distributed to each office.

Each directorate has a clean-out coordinator to whom careful accounting should be made of the cubic footage of paper destroyed or recycled. The overall objective is a 20% reduction in the file load.

Besides the paper clean-out, the campaign is also after surplus filing and storage equipment as well as office machines. Instructions covering clean-out procedures will be distributed early next week.



BIG SKY, BIG EARTH — Trail bikers cross one of the many dry lake beds in the Mojave Desert of California and Nevada. One-week cycling tour by group

of Sandians included Death Valley, Tonopah, east sides of Nellis Range and NTS. Tour started at Las Vegas, Nev.

Unusual Vacations

Trail Biking: 850 Miles In the Mojave

(Ed. Note: Have you taken an unusual vacation? Tell us about it — call 4-1053.)

Perhaps it's not your idea of fun: 850 miles over a network of dirt, sand and rock trails through the Southwest's most resolute desert — the Mojave — capping off the excursion with a complete traverse of Death Valley. All in seven days upon a trail motorcycle, a special kind of cycle offering all the capabilities of a horse (including a sometimes fractious disposition) without the horse's penchant for hay.

This is the trip (see map) completed in early May of this year by Sandians Gary Ferguson (2325), Bill Sullivan (4715), Bill Boyer (4251), Mark Worstell (4715), and Jack McCloskey (a friend). It started and ended in Las Vegas, Nev., the group having taken bikes there from Albuquerque by van.

What was the trip like? Says Sullivan, a veteran rider, "Physically, it was rough. The first day was like the first day of a week's skiing — you wonder if you can make it through the week. But then you adjust and gain a sort of equilibrium. This was a great trip . . ."

A trip like this takes considerable planning. The objective was to make the complete circuit over dirt roads, avoiding private land, and thus to enjoy vast stretches of solitude and remoteness. But a motorcycle does burn gas, and in the planning stage it wasn't always clear that that speck on the map actually had inhabitants let alone gas. (As it turned out, two cyclists did run out of gas because of gas lines and closed stations — in the outskirts of Las Vegas as the trip was concluding.)

They were methodical in their planning,

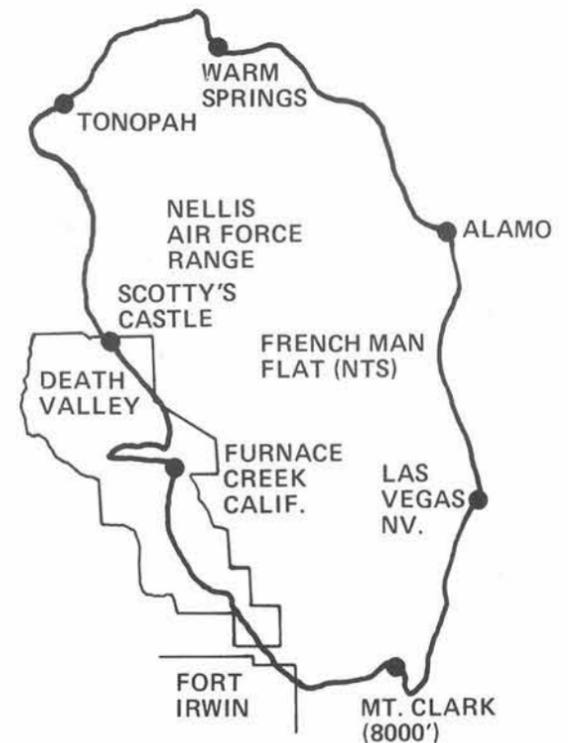
meeting months before the tour to study the detailed USGS topographic maps of the areas of interest. Such maps literally show every last pretense of a road or trail, even structures, but their accuracy, while generally good, is often off just enough to make tentative any preplanned route. Further, the map may bear an issue date of, say, 1952, and thus not reflect newer roads and trails. You come to a fork in the road not on the map and it's decision time.

Gary Ferguson explains how they handled these situations: "On the open desert it's like navigation on the open ocean. We had our compasses, we always knew the direction of our objective, so we'd stay reasonably close to the correct compass heading. We had a few problems — once we did a hard 20 miles up a canyon only to find it blocked with a huge boulder. No way we could get around it, so we had to backtrack."

There was also a slight hangup with a division of Army tanks. Seems that the preplanned route took them across a corner of Fort Irwin Military Reservation, just south of Death Valley, which their maps said was abandoned. It wasn't. And the tanks were doing their thing with a splendid uproar, so the bikers quickly backed off.

In early May the journey through Death Valley was spectacular, with the wildflowers lending added color. Temperatures approached 100°. Their overnight stay in Death Valley's Furnace Creek was a highlight — the motel had a swimming pool.

Over the seven days, the group alternated camping out and staying at a motel. Cargo space on a trail bike is limited, but each toted food and water, extra gasoline, clothing, sleeping bag and other camping gear plus an assortment of cycle parts. Fortunately, the



MAP shows 850-mile route, starting and finishing at Las Vegas. Entire trip was done on unpaved roads and trails. Circles indicate overnight stops.

latter wasn't needed, though baggage racks on four of the bikes gave way under the daily pounding.

Northern terminus of their circuit was an area familiar to many Sandians — Tonopah. From there they went south and east to return to Las Vegas, skirting the eastern edges of Nellis Air Force Range and the Nevada Test Site.

We asked about plans for future cycle trips.

Ferguson looked at Sullivan. "You know, Canada's Northwest Territory has a lot of possibilities . . ."



BILL BOYER (4251) and bike pause on stretch of road between Fort Irwin and Death Valley.



JUST before taking off from Las Vegas, the five assemble for picture: (from left) Mark Worstell (4715), Gary Ferguson (2325), Bill Boyer (4251), Bill Sullivan (4715) and Jack McCloskey.

TEN YEARS AGO as one of his first tasks, Zell Terry transplanted this palm tree, a tiny one then, to the north side of Bldg. 911. Both planter and planter have flourished since.



The Grass Is Always Greener on Zell's Side of the Fence

Livermore heat is not kind to lawns. We asked head gardener Zell Terry (8257-4) how it is that Sandia's lawns survive so well. "Careful planning and hard work," said Zell. "We plant a mixture of rye and bluegrass; the rye shades and protects the bluegrass, then dies out. And we use several soil conditioners — they break up the soil so it can absorb moisture — and fertilizers that provide the nutrients grass needs to grow."

"And how do you know how much of each one when?" we continued.

"Forty-five years of experience," he replied.

"How about the hard work?"

"Keeping the weeds out. Fertilizing every month. Watering every day — though that's easier now that most of our lawns are on automatic timers."

"Is it true that watering during the heat of the day can scald a lawn?" we asked. (We're pretty naive about such things — after all, it rains in the daytime.)

"Sure is. And watering in the evening can promote fungi. We set the timers for early morning, starting about four."

About that 45 years of experience: Zell was born and raised on soil even less hospitable than Livermore's — "60 miles

northeast of Amarillo" — and graduated from Texas Tech in 1939 with a degree in horticulture. "Went off to Arkansas and farmed for three or four years, then headed for California. Spent 10 years in San Diego as a landscaper, then became a masonry contractor, then a nursing home administrator. And I always had something growing."

"I got back to horticulture for good after we moved up to Livermore. I've been with Sandia over 11 years now — one of the finest places I've ever worked. And I'm not saying that to justify a fat raise — I'm retiring in December or January."

"Going to concentrate on your own lawn, Zell?" we asked.

"No more than usual — and that's not much. I know how to grow a better lawn than I grow. I am pretty proud of my fruit trees though."

"I'm going to do some fishing and pan for some gold, maybe even get out the dredge I built a couple of years ago, and I'll do some traveling. Loretta and I have been to Canada two or three times, and now we're talking Alaska. Texas and Arkansas too — we still have relatives there."

"We'll keep busy. I'll miss Sandia though."

LIVERMORE'S YOT'S — These summer of 79 Youth Opportunity Trainees gathered from jobs all over the lab for this group shot. Left to right, front: Martin Alonso, Mike Holman; second row: Marilyn DeRosa, Jennifer Hines, Trina Alviso, Steve Hamera, Lope Varleta; back: Genine Winslow, Bill Dalrymple, Andrew Turnbull. Not shown, Dwayne Dixon.



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AUGUST 10, 1979



EVEN IF THE BUILDING WASN'T COMPLETE, Phil Hutchinson of AERE Harwell found his stay with Sandia's combustion researchers valuable.

British Visitor Enjoys Combustion, California, & Cheap Gas

Today marks the end of Philip Hutchinson's visit to Livermore. He's the manager of the Internal Combustion Engine Project and head of the Thermodynamics and Fluid Mechanics Group at AERE (Atomic Energy Research Establishment) Harwell in the United Kingdom.

Although his office is at UC Davis's "Teller Tech" across the street, Phil has spent much of his time with Dan Hartley (8350) and others in Sandia's combustion program. "I'm here under the auspices of the International Energy Agency — I'm currently chairman of their combustion committee," says Phil. "I work at Harwell on a task similar to the one here: the development of instrumentation for studying the combustion process in an engine and in a steady flame."

"Trading ideas — Sandia's Bill Ashurst (8354) is now at Harwell — encourages constructive competition. That's healthy for both programs. I'm interested professionally in some other areas too, such as Bill Hoover's (LLL) work on statistical mechanics and Jim Wang's (8353) computer code for predicting how the size of particles affects their light-scattering ability."

Harwell, like Sandia, is a government-supported R&D lab funded primarily by the UK's DOE. About half its programs are now non-nuclear. Phil has been with the lab since 1962. His combustion work is funded by the Department of Industry, which supports research likely to improve the performance of British industry. "The DOI doesn't demand that we do only applied research, but they want it to be applicable research," says Phil.

So much for business. Phil brought along, "thanks to Freddie Laker and his cutrate trans-Atlantic flights," his wife Joyce and children Helen, 12, and Paul, 7. They lived in Bill Ashurst's home in Danville. "Great place to live — especially with the community swimming pool membership that came with it. We like California, especially the climate. We English really appreciate sunshine."

This is the Hutchinson's second stay in

the States. In 1969 and 70, Phil spent 15 months at the University of Houston. He, Joyce, and then toddler Helen also managed a 6000-mile tour of the US that included the Southwest, California, the Northwest, and Florida, where they witnessed the launch of Apollo II.

US citizens like British visitors, the Hutchinsons have found. And the day-to-day process of living is, they feel, easier for a Britisher here than for an American there. "People in shops are helpful, it's easy to get around (and petrol is only a dollar a gallon here compared to about \$2.40 in England), the variety of fast-food-in-a-basket shops is staggering (we've discovered Dublin and the kids have discovered 'Happy Meals'); the major concern for the visitor is the high costs of medical care. We bought a two-month insurance policy to cover us here."

"The American visiting Great Britain would have to adjust to grocery stores that close by six and aren't open Sundays. And to fewer rent-it-here-leave-it-there cars (though Harwell is on the 100-mph railway line between London and Bristol). And to pubs that typically operate from noon to 3 and again from 7 to 11."

"And to being a year or so behind in Star Wars toys — my son's weakness — and in science fiction, mine."

Authors

Jim Shelby (8342), "Effect of Temperature in the Pressure Dependence of Helium Solubility in Viterous Silica," JOURNAL OF APPLIED PHYSICS, Vol. 49, No. 9; "Viscosity and Thermal Expansion of Lithium Aluminosilicate Glasses," JOURNAL OF APPLIED PHYSICS, Vol. 49, No. 12; "Helium Migration in Alkali Germanate Glasses," JOURNAL OF APPLIED PHYSICS, Vol. 50, No. 1.

Carl Melius (8341), "Electronic Properties of Metal Clusters and Implications for Chemisorption," SOLID STATE COMMUNICATIONS, Vol. 28, No. 7.

Carl Melius and Bill Wilson (both 8341) and Charles Bisson (8331), "A Quantum Chemical and Lattice Defect Hybrid Approach to the Calculation of Defects in Metals," PHYSICAL REVIEW B, Vol. 18, No. 4.

New Twist

Solar Facility Used in Black Hole Study

The world's largest solar energy installation — the Central Receiver Test Facility (CRTF) at Sandia — was recently employed in night-time experiments to determine if it can be used to detect the explosion of black holes in space.

Instead of using the CRTF's 88,800 square feet of computer-controlled mirrors to concentrate sunlight onto receivers on the 220-foot-high tower, astrophysicists David Fegan and Sean Danaher of University College, Dublin, spent 14 nights using the mirrors to focus radiation from celestial and atmospheric events onto detectors — photomultiplier tubes — mounted on the tower.

The experiments were conducted during moonless and cloudless night-time hours to determine whether the facility could be used to search for exploding primordial black holes (PBH) in space.

The subject of exploding black holes (collapsing stars whose gravitational pull is so strong that not even light can escape) is of intense interest to astrophysicists and other scientists, Fegan notes.

"Prof. Stephen Hawkins, Cambridge University, has hypothesized that PBHs of a certain mass — 10^{15} grams, which is equal to the mass of Mount Everest packed into a volume the size of an atomic nucleus — could be exploding at this point in cosmological time," Fegan says. "These PBH's would have been formed at the time of the big bang about 10 billion years ago."

"PBHs of smaller mass would have exploded in the past, millions of years ago, and PBHs of greater mass will explode sometime in the future."

"The concept is of profound cosmological importance since it involves an interplay of elementary particle physics, quantum mechanics, gravitation, and thermodynamics. The search for PBHs thus has widespread significance."

The terminal stages of a PBH would involve a rise in temperature, followed by a catastrophic explosion which liberates bursts of high-energy gamma rays.

The total energy liberated in the emission process and the corresponding radiation time scales depend on the nuclear model adopted to describe the process. The composite model predicts the liberation of 10^{27} joules. During the final one-ten-millionth of a second of the explosion, about 10% of the total energy goes into gamma rays, with the spectrum peaked at 250 MeV. The elementary particle model predicts the liberation of 10^{30} photons during the final 0.1 seconds of the explosion at energies around 5×10^{12} eV. Within this energy band, the night-sky Cerenkov technique is particularly sensitive as a means of detection of such explosions.

Such an explosion in space would produce a burst of gamma rays, which would in turn trigger a shower of secondary cosmic rays when the gamma rays hit the top of the atmosphere. These secondary particles speed through the atmosphere at the velocity of light. Cerenkov radiation emitted from the charged shower components can be detected against the background light of the night sky by using sophisticated electronic photomultiplier tubes with wide bandwidth electronics.

Aided by the CRTF's expanse of focused mirrors, Fegan and Danaher tested a number of different optical detectors during the fortnight of experiments. If preliminary results are encouraging, they plan a PBH search using the CRTF as one of two or three stations gathering data simultaneously.

Collaborating with Fegan and Danaher on the project are Prof. Neil Porter, also of University College, Trevor Weeks, of the Smithsonian Institute, based at Mount Hopkins Observatory near Tucson, Ariz., and Terry Cole of the Ford Co.

Sandia participants in the project included test engineers Larry Mathews (4713) and George Mulholland on a sabbatical leave from the Department of Engineering, NMSU. The facility operators were Don Porter, Bill McAttee, Roger Aden and Debee Risvold, all Division 4713.



VAN I — It took a lot of doing, but the first van pool at the Labs is now underway, operating in the North 14 and Sandia Park areas. Joe McDowell (sixth from left, 2323) got it going, operating under the aegis of the State Employees Commuter Assn. Joe says they have 15 regular and 2 alternate members, could use a few more alternates. He's on 4-7942 if you're interested.



VISTA NEW MEXICO — Agricultural production in an arid state amounts to an annual value of \$204 million, according to an economic report in *New Mexico Progress*. Of this, hay is the primary crop with some 300,000 acres devoted to the activity. Annual value is \$67 million. Most of it is produced in small fields

such as this one owned by Joe Silva (2145). The farm, located along the Rio Grande in Tomé, is part of the original Tomé Dominguez land grant and has been in Joe's family for more than 200 years. He uses the alfalfa as winter feed for his stock.

Take Note

A new north valley branch of the YMCA is now open and registration is underway for the following classes: karate, belly dancing, ballet, jazz, disco dancing and conversational Spanish. Also offered is the YMCA adult fitness program. Classes for children include gymnasium, preschool tumbling and a morning preschool program. The North Valley YMCA is located at 701 Grecian NW (2 blocks west of 4th St. between Montano and Osuna). For additional information call 344-3337.

* * *

Memorial — Sandians who know of runner Anne Gilliland and her recent accidental death (by lightning at El Vado) may wish to make a donation to the Anne Gilliland Memorial Fund which has been set up as a scholarship for a female athlete to attend UNM. Contributions should be made out to the Fund and sent to the UNM Development Office, 200 NM Union Bldg., Albuquerque, 87131.



Pardon us while we look as dubious as the claims adjusters at Metropolitan Life must have when they read through some of the accident reports filed by their policy holders. "As I reached the intersection," wrote one, "a hedge sprang up obscuring my vision." Another reported that "the pedestrian had no idea which direction to go, so I ran over him." One motorist tried to drag in his long years of experience with startling results: "I had been driving my car for 40 years," he said, "when I fell asleep at the wheel and had the accident." This explanation seems almost suicidal: "I pulled away from the side of the road, glanced at my mother-in-law and headed for the embankment." The capper came from a very angry motorist who reported that "the indirect cause of this accident was a little guy in a small car with a big mouth."

Events Calendar

- Aug. 10* — San Lorenzo Feast Day: Acoma, Laguna & Picuris Pueblos, 247-0371.
- Aug. 10-12* — Intertribal Ceremonial, Red Rock State Park, Gallup.
- Aug. 10-11, 17-18, 24-25* — "The Boys in the Band," Tiffany Playhouse, Sheraton Old Town Mercado Mall, 8 p.m.
- Aug. 11* — Zapata Day Festival: mariachis, food, theater, poetry readings, 1-8 p.m., South Broadway Cultural Center.
- Aug. 11* — Automobile Races, Speedway Park, S. Eubank, 8 p.m.
- Aug. 12* — Annual Feast Day, Santa Clara Pueblo, 753-7326.
- Aug. 12, 19, 26* — Chamber music concerts, Cimarosa Chamber Players, 2 p.m., Old Town Plaza.
- Aug. 14-19* — Our Lady of Belen Festival: masses, burning of devil, parade, carnival dances, arts & crafts show, barbeque.
- Aug. 16-19* — Bosque Farms Fair, parade, rodeo, etc., Arena Grounds, 869-6845.
- Aug. 16-19, 23-26* — "Inherit the Wind," Adobe Theater, Old San Ysidro Church, Corrales, 8:15 p.m.
- Aug. 18-19* — "Sunflower," a play featuring Mayor David Rusk as the mayor of a town tormented by a sunflower. Matinees both days, 2:15 p.m., 9:30 p.m. Saturday. Presented by Mastermind. Tickets \$2 at door, 7:30 p.m., Kimo Theater.
- Aug. 18-19* — Santa Fe Indian Market.
- Aug. 24* — Old Time Fiddler's Jam Session, Elks Lodge Hall, Rio Rancho, 6:30 p.m.

Retiring



JIM JONES (1412)

- Aug. 24-25* — "The Legend of Paula Angel" by Tumbleweed Dance Theater; exploring in modern dance the true story of the only woman ever hung in N.M. Tickets \$2.50 at the door, 7:30 p.m., Kimo Theater.
- Aug. 24-26, 31-Sept. 2* — Albuquerque Civic Light Opera, "Sugar," 8:15 p.m., Sun. 2:15 p.m., Popejoy.

Runner's World Now More Like Runner's Empire

Late in the 1960's, I happened across an issue of *Runner's World*. The magazine had been in publication since 1966 and, when it first came to my attention, RW was a slim, chatty, informal thing with lots of references to Bobs, Jims, and Georges, presumably because all of RW's readers knew all the Bobs, Jims, and Georges. I had some knowledge of the publishing world, principally the fact that magazines survive only by dint of and by grace of advertising, so with great prescience I anticipated the early demise of RW. After all, aside from shoes, what would you want to advertise in a runner's magazine?

So I subscribed to *Runner's World*, as much for reasons of compassion as for its content. I thought I'd bolster this nice little newsletter, at least until it faded away.

As you may have surmised by now, this is a how-could-I-have-been-so-wrong article. What I plan to deal with here is the July issue of *Runner's World*, a 144-page, four-color extravaganza, circulation 410,000, that's put together by a staff of 56 people. It's a most professional venture and, lest you infer a wrong intention on my part, I'm not about to knock this glossy, flossy RW but rather to suggest that if you run you probably should subscribe. In most activities that have a literature, the practitioner looks to the one publication that's considered definitive. For runners, it's *Runner's World*.

Consider this partial listing of contents in the July issue:

- *Beginning running: doing it the group way*
- *Can you change your stride length to run efficiently?*
- *New report: Running and mental health*
- *The master's running movement in America; complete masters' age-group records (on which more below)*
- *How the serious runner can avoid the common cold*
- *The USA's new queen of the roads.*

And much more. For example, among the random items, this caught my eye because I like to run in the place described on occasional trips to Washington:

"Arlington, Va. Citing reasons of

decorum, the US Army announced runners will no longer be permitted in the Arlington National Cemetery. 'Joggers are just running through there all the time, and it doesn't look very good,' said Col. Steve Dukkony . . . Army officials were especially piqued by runners who cut through military formations during funerals."

Hmmm. Some runners can be pretty dopey.

Another item, covering two pages, poses the headlined question: "Who Has The Healthiest Company in America?" What this refers to is the Corporate Cup Relays. Sponsored by Brooks Shoes and *Runner's World*, it's an invitation to company athletes to compete as representatives of their companies in a variety of running events, some easy, some tough. For example, the "President's Relay — Three person teams (male or female) from the corporate hierarchy (chairman of the board, president, VP, etc.) run one-mile, half-mile, and quarter-mile legs." Funny, I just can't visualize a running chairman of the board.

As for advertising, the magazine's lifeblood, there's an abundance. The products are ostensibly related to running, though the connection is sometimes tenuous. A sample: — "Jogbra. No man-made sporting bra can touch it."

— "Stick it in your ear!" (a cassette recorder that you listen to while running)

— "Build fitness safely. Let Exersentry

monitor your heart." (a strap-on heart monitor that gives a continual display of your heart rate)

— "Joggers Water Belt" (a 7 oz. reservoir worn like a belt with a tube that enables you to partake while underway)

— "Your Pace . . . or Mine?" (T-shirt with male and female running figures)

— "Shriek Alert — Your Best Defense Against Annoying Dogs" (an aerosol powered noise maker. "Dogs INSTANTLY lose their aggressiveness . . .")

Someday I'd like to see a Jogbra'd runner trotting along, listening to that Beethoven cassette, glancing occasionally at the display panel which shows her heart rate while taking a sip from the water belt, casually fending off a pack of Dobermans with her ear-splitting noise maker, yet all the while beguilingly decked out in her Your Pace . . . Or Mine? T-shirt.

* * *

Something to shoot at — In this same issue of *Runner's World*, an extensive list of Masters records has been compiled, covering every conceivable distance. For each event, the ranking man and women is given by specific age; for example, in the one mile, the ranking 57-year old is one George McRath with a 5:04. An extract of these records is given below; if you're competitively minded, this will give you some perspective of what you're up against. • js

PARTIAL LIST OF MASTERS RECORDS

Age	100 Yards		One Mile		5000 Meters		10,000 Meters		Marathon	
	M	W	M	W	M	W	M	W	M	W
40	9.6	13.6	4:21	5:24	13:45	19:17	28:33	35:50	2:14	2:47
50	10.5	15.0	4:32	6:31	15:31	22:20	32:30	46:17	2:27	3:04
60	11.1	15.5	5:18	8:08	17:42	23:22	36:16	53:33	2:47	3:26
70	13.6	—	5:42	—	20:05	—	41:21	—	3:06	4:45

Runner's Index

Runner's Index

Thanks to Sandia Medical, runners at the Labs will now have access to *Runner's Index*, a guide to periodical information for runners. The Index, catalogs, semiannually, all the information related to running in 35 periodicals. It starts with the year 1978, and the first two volumes have thus far been received. Here's a sample entry under "Benefits of Running":

JOG TO IMPROVE YOUR PRODUCTIVITY CHARLES KUNTZLEMAN TODAY'S JOGGER V2 N2 MAR 78 PP 13-21 9-31 45, 56
 *AEROBIC CAPACITY *ATTITUDES OF RUNNERS *BENEFITS OF RUNNING BLOOD CIRCULATION OF CARDIOVASCULAR FUNCTION *CREATIVE ENERGY DEPRESSION *PSYCHOLOGICAL STRESS RUNNING AND PSYCHOLOGY *RUNNING AS PSYCHOTHERAPY <

Runner's Index is available for reference in the LAB NEWS office, which also maintains a file of *Runner's World* magazines.



WORK-STUDY program participants gathered for their annual picture in front of Bldg. 800. They are, from top and left to right, Gregory Gonzales*, Kevin Marback, Steve Gutierrez, Jessie Brooks*, T.J. Allard, Vernon Natewa*, Joseph Flores, Renzo Del Frate*, Maureen Lindsay, Guadalupe Armendariz*, Janet Floyd, Melecita Sanchez, Tonya Alvarez, Teresa Torres, Anthony Montoya, William Houston, Mindy Edelman, and Ingrid Hayden. Those noted with an asterisk are new to the program this year. Under the program, the young people attend college during the academic year and work at the Labs during the summer.

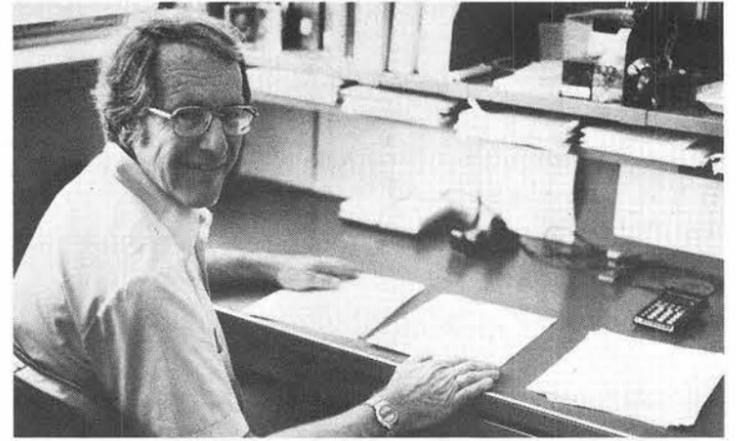
MILEPOSTS

LAB NEWS

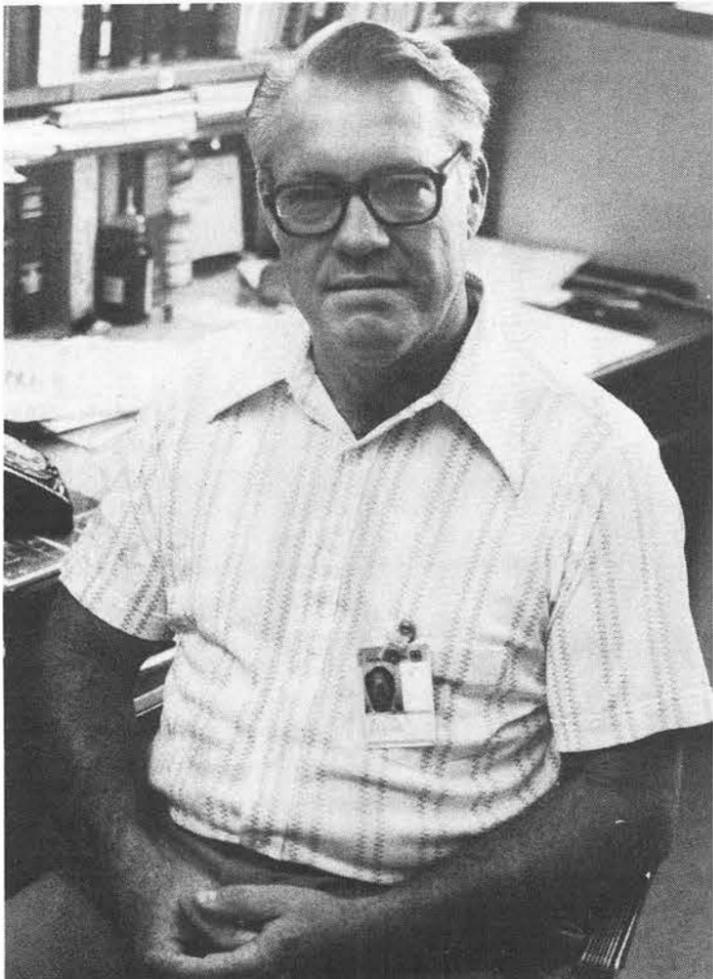
AUGUST 1979



Jay Jost-8423 20



Robert Gray - 2351 25



Mel Rushing - 2433 25



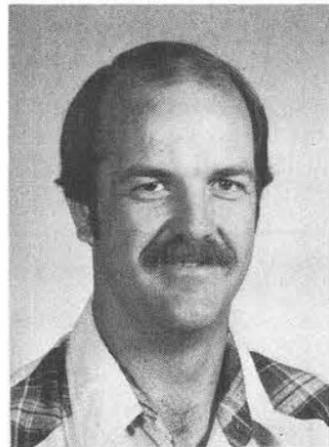
Lee Haggmark-8341 10



Less Minnear-1765 30



Mike McLaughlin-4551 25



Mark McAllaster-5822 10



Gene Hammons-5132 15



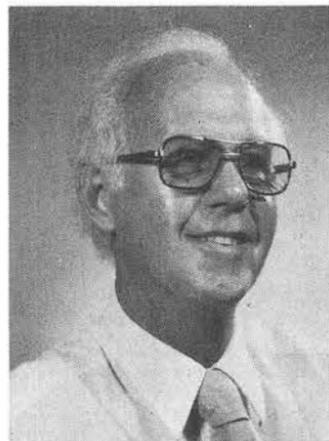
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Galen Puls-4321 10



Bill Talley-1247 15



Warren Schaefer-2350 25



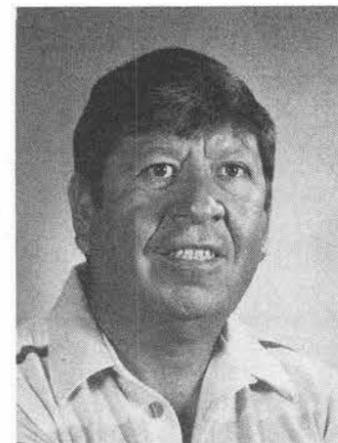
Doris Willard - 3253 25



Juan Jose Tafuya - 3742 30



Frances Morris-3010 15



Eddie Garcia-1542 20



James Adams-2144 10

JOHN HORNBECK, president of Sandia from 1966 to 1972, retires this month from Bell Labs. Since his return there, he has been VP of Electronics Technology and, later, of Computer Technology. Mr. Hornbeck began his career with Bell in 1946, became first president of Bellcomm in 1962. The Hornbecks plan to settle on St. Simons Island off the Georgia coast, spending summers on the lower Michigan peninsula.



Congratulations

To Mr. and Mrs. Edward Vallejos (3432), twin daughters, July 30.

To Russell (3171) and Karen (formerly 1521) Smith, a son, Rodger Frederick, July 27.

To Mr. and Mrs. Jim Tierney (Rosalie, formerly 4420), a son, William James, July 23.

Sympathy

To Alfred Herrera (1471) on the death of his brother in Albuquerque, July 21.

JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (814/6).

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. Include name and organization.
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

'69 OPEN ROAD camper, 10' cabover, self-contained, w/jacks, \$1500. Ley, 281-5174.

NEW, Goodyear tire & wheel, special trailer service, 6-ply rating. 7.75x15ST tubeless, 4 lugs, \$80. Carpenter, 299-4312.

3-PIECE brown tweed sectional sofa; 2 swivel rockers; cherry wood marble top cocktail table. Ozmina, 299-3665.

GARAGE SALE: 2 families, Sunday, Aug. 12, 3909 Pitt St. NE. Hurley, 296-2890.

RANCH OAK loveseat, blonde finish, 46" w, 30" h, 31" d, \$120. Gerlach, 299-9084 after 6.

TRAVEL TRAILER, 16 1/2' Aristocrat Land Commander, \$1495. Erickson, 296-0486.

WHITE French provincial bedroom set, girl's room, single canopy bed, hutch dbl. dresser, single dresser w/mirror, \$400. Jennings, 255-5950.

MICROCOMPUTOR, Aim-65, 4K Ram, 8K Rom monitor, extensive I/O, forming computer club for group purchase & software exchange. Campbell, 881-8669.

WHITE cast iron lavatory w/faucets, \$5; GE trash compactor, \$100; Olivetti port. typewriter, \$15; rotary mower, \$30. Guttman, 243-6393.

BALDWIN OrgaSonic, walnut organ w/bench, \$650; Head skis, poles, boots; 10-spd. bike, 1 yr. old. Jennings, 299-3082.

2 TWIN BEDS, mattress, box spring, frame, brass headboards, \$100. Yost, 293-5289 after 6.

PIANO, Wurlitzer upright, French provincial style, bench w/storage, fruitwood finish, \$1150. Hawn, 299-7835.

TWO mounted tires for lt. wt. Datsun truck, 5:50-14 6-ply rating, wsw, 6-hole rim, recapped mud/snow, mounted & ready for vehicle, \$10 ea. Ottinger, 242-7935.

BABY THINGS: chest w/changing table, bathtub, others. Abel, 296-6089.

WILSON X-31 sand wedge, \$14; 2 13" wheels, 4-holes, \$7.50 ea. Stang, 256-7793 after 5.

PUPPIES: Red Doberman, males & females, available now, \$50 ea., no AKC papers. Martinez, 821-8692.

HUMMEL 1st anniversary plate. Fitzgerald, 265-3055.

SLEEPING BAGS, child backpack size, 5' long, REI brand, 2 for \$25 or \$13 ea. Holmes, 292-0898.

DINING ROOM SET, mfg. by Stanley, table w/extension, 6 chairs, hutch, antique white, Italian provincial. Fox, 299-9031.

BLACK PUPPIES, 3/4 poodle, males, free to good home, ready Aug. 15. Munson, 299-1400.

BED: twin size, headboard, mattress, box spring, frame, \$75. Nagel, 298-2779.

CHILD'S bicycle carrier, \$8; trailer towing mirrors, \$12; Airstream trailer 3-flag rack, \$10. McGuckin, 299-1342.

CROWN IC150A preamp, 10 mos. old, 3-yr. warranty, \$400. Rogulich, 292-3815.

ELEC. (Signature) sewing machine in cabinet, \$95; 2 long evening dresses, pink, size 5-7, \$25 ea. Noel, 299-0611.

HO TRAINS, new & used, will sell singly; Zenith color TV, \$69. Mayer, 294-3368.

'79 BEN HOGAN GOLF CLUBS, 1 & 3 woods, 3-pw irons regular shaft, d-1 swing weight, retail value \$500, clubs never used for play, \$350. Anderson, 299-5269.

MITCHELL Fishing Hut, icebox, heater, sink, elec. pump, Sears 50-flush potti, radio. Himes, 869-8559.

STEREO CONSOLE: AM/FM w/built-in 8-trac & record player, \$250. Aragon, 292-5892.

COUCH & matching chair, gold, \$75. Reyelt, 299-0932 after 4.

DINETTE SET, 4 chairs & formica-top table, \$30; few scatter rugs, assorted sizes. Joseph, 268-5414.

PLAYHOUSE, wood on 6' stilts, 5'x6' w/roof & sides. Warren, 256-1334.

SEARS gas stove, white, 4 burners, oven needs cleaning, \$50, you haul. Boyer, 298-3893.

SNOW TIRES, Goodyear Suburbanite, 5.60x15, 1 winter on VW bug, 2 for \$40. Bush, 281-3773.

SANDIA LABS CAP sold out; new shipment due week of 8/20; LAB NEWS office, Bldg. 814, \$4.25 S. Hwy. 14 Village Project.

DIAMOND RING, .36 ct., white gold setting, recently appraised at \$1145, sell for \$600. Mech, 266-0339 or 266-9910 after 5.

WEDDING DRESS, empire, size 5, \$100 including veil. Pickel, 298-6046.

MALAMUTE cross puppy, 9 mos. old, female, loveable, had all shots, obedience trained, \$20. Daut, 255-2529.

CORNET, Reynolds, \$125; easy chair, green, rocker type, \$50; VW left rear fender, \$10. Stirbis, 299-5363.

REDWOOD lawn furniture: chaise lounge, arm chair, end table, \$100. Emin, 294-0054.

HUBCAPS for Corvair Monza, set of 4, \$40. Schuch, 298-9924.

FIVE motorcycle helmets including Bellstar II; BMW muffler for R 75/S; 2 pieces 3x3 square steel tube, 6 1/2 long. Cave, 293-8290.

WASHING MACHINE, \$80; 12 gauge shotgun shells, No. 6 game load, \$60 per case. Falacy, 293-2517.

SRA reading Lab IIc, sixth grade level but includes material for grades 3-9, \$50 firm. Erickson, 299-6824.

BROWNING Safari grade bolt action .243, \$445; custom left-handed Savage bolt action .338 Win. mag., \$195. Allen, 869-6680.

SEARS Kenmore washer & dryer, matched white set, \$125. Johnson, 298-5286.

REYNOLDS Medalist clarinet, \$100;

Astrex stereo record player, \$60; chrome fender mount side mirrors for trailer towing, \$8. Randall, 299-3935.

SWING SET, Gym-Dandy, best offer; bedspreads, full quilted, royal blue & rustic brown, \$10 ea. Miyoshi, 821-9118.

WEDDING DRESS, custom size 7; wedding rings, 14 ct y-gold w/1/4 ct. diamond, prices negotiable. Hatmaker, 821-7429.

HOMELITE gas powered lawn trimmer, used 1 wk., \$100. Nelson, 881-0148.

LESLIE 125 organ speaker, \$175; Pioneer HPM 100, \$150; Pioneer SA 7100 stereo amp, \$125; JBL2470, \$120; JBLK130, \$100. Whitham, 266-9051.

CLARINET, \$60; Falcon skis, step-in bindings, \$30. Montoya, 883-9115.

STEREO, Toshiba portable, AM/FM, record player, \$60. Kolb, 294-5860.

PORT-A-CRIB w/new pad, 3 fitted sheets, \$27.50; high chair, \$7.50. Cook, 268-6406.

NMMI Uniforms, (shirts, ties, pants) \$100. Kenna, 298-6059.

REFRIGERATOR, WHITE, 16 CU. FT., Frost-Free, GE, \$200; pressure canner, 22 qt. Mirromatic, \$35; canning jars, 4 doz. qt. size, \$8. Allen, 293-3043.

MOVING SALE: luggage, fp equip.; books, pictures, patio furniture; oak desk; chair, through Aug. 18, 4241 Broadmoor NE. Potter, 268-5451.

8' OVERHEAD CAMPER, w/shocks & jacks, sleeps 6, heater, ice box, dbl. sink, stove w/oven, \$1100. Rodriguez, 296-3277.

RABBIT HUTCH, wire, 3-unit, varmint protected bottom, \$40. Guthrie, 298-8388.

FURNITURE, used: Mediterranean style sofa & chair, lg. coffee table w/internal storage, lamp table, single bed. Novotny, 296-7167.

ALFALFA HAY, 116 bales, \$2.25/bale. Hartwingsen, 865-7836.

STEREO, Juliette AM/FM 8-track, BSR turntable, \$85; PU headache rack, \$95. Luikens, 881-1382.

TRANSPORTATION

'74 CHEVROLET pickup, 350 V8, AT, AC, PS, LWB, heavy duty suspension, \$2000. Ley, 281-5174.

'79 DODGE Sportsman Van, 4-wd, PS, PB, AC, 8-pass. removable seats, 36-gal. fuel tank, many extras, 9000 mi., 50,000 mi. warranty, \$10,200. OBryan, 266-1866 after 6.

'75 VW BUS, 7-pass., AC, radio, iarpet, trailer hitch, sun screens, 50,000 miles. Pryor, 344-2931.

27' TRAVCO motorhome, 6 kw gen., self contained, 2 lifetime batteries, new tires, \$6700. Skender, 898-5647.

'79 CHEVY VAN, 8-cyl., carpeted, couch, table, 6000 miles, \$1500 equity and take over payments. bal. \$6864. Valdez, 821-1503.

'72 MGB convert. Stixrud, 298-0478.

'73 OLDS Cutlass Supreme, AT, AC, reg. gas, \$2300. Martinez, 821-8692.

'77 RM370 Suzuki, new top end, fork seals, boots, PE gas tank, professionally maintained. Silva, 255-3723.

1/5 SHARE in 1971 Citabria airplane, \$1800. Payne, 299-5966.

'75 YAMAHA 350, wind breaker, \$700 or best offer. Himes, 869-6559.

'76 PACE ARROW motorhome, 24 1/2', low mileage, many extras. Brock, 865-4055.

'73 PINTO, 2000 cc, AC, Klafke, 869-6877.

'74 KAWASAKI 125 motocrosser, recent entire rebuild, \$350. Hesch, 256-0161.

'67 FORD Galaxie, 4-dr., AT, PS, AC, white, one owner, radial tires, \$795. Young, 256-1361.

'72 FORD Gran Torino Sport, 351 V8, AT, PS, PB, AM/FM stereo, \$1000. Rufsvold, 881-4358.

SAILBOAT, Hobie 10, single hull, 100 lb., \$300. Cover, 881-3860.

SAILBOAT, Victory 21, fixed keel, daysailer, fully equipped, \$2550. Roherty, 296-2618.

SLOOP, Aquarius 23', roller furling Genoa, custom trailer, galley, toilet compartment, 6HP Evinrude, many extras, sleeps 5, \$5500. Allen, 296-6453.

'73 VW TYPE 4, battery, brakes, shocks & more new; Moody, 292-2975.

'69 RAMBLER American, 2-dr., 6-cyl., AT, 21 mpg, \$400. Marquez, 344-6654.

'76 DODGE VAN, 6-cyl., 46,000 miles, padded & carpeted, below book. Willems, 298-7261.

'71 CHEVY VAN, 6-cyl., new radials, 64,000 miles, \$1600. Whitham, 266-9051.

'73 COUGAR, PB, PS, AC, AT, AM/FM cassette, new radials, new paint, \$2150 or offer. Hansen, 898-3173 or 831-6807.

'71 NOVA 6, AM/FM cassette, \$650. Montoya, 883-9115.

'69 VOLKSWAGON, squareback stn. wagon, AT, rebuilt engine, new paint. Chavez, 831-9591.

'70 PLYMOUTH Fury III, AT, PS, AC, 99K miles, 383 V8, best offer. Allen, 293-3043.

'76 CHEVROLET Caprice, fully loaded, \$3000. Gonzales, 247-9406.

'73 DODGE Charger SE, 400 CID, AT, AC, trailer tow pkg., snow tires included, \$1600. Newcom, 293-5180.

'68 FORD Torino GT, PS, AC, AT, 302 V8, SBR tires, one owner, service record, service manual, \$900. Novotny, 296-7167.

'72 INTERNATIONAL 3/4 ton LW, 4-spd., 350 V8, 71K miles, AM/FM 8-track, \$1975. Luikens, 881-1382.

WANTED

GOLF CLUBS for beginning golfer. Jarrell, 293-9671.

CARPPOOL: live in Academy Acres area off Academy & McKinney. Burstein, 821-6688 after 6.

MOTHER who has children in Our Lady of Assumption school who could care for a first grader before & after school for working parents. Cernosek, 299-2252.

PASSENGERS to share expenses of 4-to 5-hr. weekend/holiday flights to Austin/Houston area in Cessna-182; dates negotiable. Schkade, 265-5473.

MAN'S BIKE (or most of one) about 25 lbs., about 24" frame. Smith, 242-9576.

8 1/2' MITCHELL cabover camper, 1970-76 w/front dinette & a potti room; will also consider Aspen, Red Dale & Aristocrat. Ludwick, 296-6447.

UTILITY SHED, portable, approx. 8'x10', either wood or metal. Danlovic, 293-6663.

INTAKE MANIFOLD and 4 barrel carburetor from a Dodge or Chrysler 318 cu. in. engine. McConnell, 255-2488.

VIOLIN, 1/2 size, prefer German Roth in excellent to new condition. Miyoshi, 821-9118.

DESK suitable for UNM student. Gammon, 268-1032.

MOTHER with children in Montgomery Elementary School to care for kindergarten child before and after school. Westfall, 881-1184 after 5.

REAL ESTATE

4-BDR., 2-STORY, 3-car garage, Presley home, has everything, on corner lot, \$85,500. Baca, 298-8586 day, 294-3545 eve.

TINY HOUSE w/room to grow in back, near Base, 203 Chama NE, \$24,000. Grace, 255-8883.

1 ACRE, 3-bdr., 2 bath, 1400 sq. ft., 2-car garage, heated 1200 sq. ft. shop bldg., 13 bearing fruit trees, alfalfa, irr. wells, SW Valley, \$55,995. Peterson, 877-6398.

1/3 ACRE corner lot on Ridgecrest, Siesta Hills. Fitzgerald, 265-3055.

FIVE ACRES approx. 4 miles east of Los Lunas. Farnsworth, 865-6160.

4-BDR., 1900 sq. ft., den w/Rockwall fp, fenced yards w/sprinkler, 1 block to Eldorado High, view city lights, \$68,875. Smith, 299-1981.

FIVE wooded acres in Manzanos. Condit, 281-3788.

3-BDR., 1 1/4 bath, fp, wired for stereo throughout, 1320 sq. ft., 2 3/4 years, old, near Tanoan Country Club, \$54,500. George, 294-4603.

4-BDR., 1 1/4 baths, den w/kiva fp, near Lomas & Tramway, \$64,900. Baca, 293-8710.

1 1/2 ACRE building site in Jemez Mts., \$15,000. Heidrich, 345-7652.

CONDOMINIUMS, energy eff., 1-bdr., \$25K, 2-bdr., \$30.5K, 12913 Lomas NE. Key, 294-6035 or 292-5770.

'72 BILTMORE mobile home, 14x52, 2-bdr., 1 bath, carpeting, \$5500. Ley, 281-5174.

TWO acre residential lots, east side of Sandias bordering Nat'l. Forest, subdivision controlled to remain natural, underground utilities. Kennedy, 298-0704.

WORK WANTED

ODD JOBS, college student w/3/4 ton truck: painting, hauling, sodding, etc. Stixrud; 298-0478.

FOR RENT

APT/CONDOS, 1-bdr., \$205/mo., 2-bdr., \$240/mo., 12913 Lomas NE, car pool to Sandia. Key, 294-6035 or 292-5770.

NEW CANDLELIGHT 3-bdr., near Coors & I-40 NW, AC, gas heat, carpet, 2-car garage, 3-12 mo. lease. Adams, 256-7265.

RENT/LEASE: NEW 2-bdr. unfurnished apts., fp, carpets, drapes, all major kitchen appliances, \$250/\$275/mo. plus gas & elec., \$150 DD. Taylor, 292-0496.

NEW 2-bdr. apts. in 4-plex, carpet, drapes, fp, stove, refrig., dish-washer, disposal, near KAFB-E, \$265 plus DD. Krumm, 299-2279.

LOST AND FOUND

LOST — Seven keys on ring w/letter "J", red address book; sunglasses w/blue plastic frames.

FOUND — Sm. turquoise & silver pendant, cover to motorcycle saddle-bag, "ACE" gold key, H.P. 25 calculator. LOST AND FOUND, Bldg. 832, 264-1657.

Coronado Club Activities

Shrimp Peel Set Aug. 18

HAPPY HOURS — Tonight prime rib tops the buffet menu, Jeanne Rich and Friends hold the bandstand. Next Friday, Aug. 17, Club manager Pat Corcoran and staff are whipping up an oriental specialty — teriyaki pepper steak, egg rolls and other goodies. The Four Keys will be wired into the bandstand. Happy Hours start right after work on Fridays, run until midnight or so with special prices (cheap) in effect all evening. Call the Club office, 265-6791, by midweek to reserve buffet tickets. And don't forget that your \$2.50 discount ticket, part of the Club calendar mailing, saves you money.

THE BIG ONE this month is a shrimp peel scheduled Saturday, Aug. 18. For this one, they'll load you down with a lot of shrimp, clam chowder, corn-on-the-cob, zucchini with green chili and other stuff while the Mellotones play for dancing. This group features Freddie who plays trumpet like Harry James and sings Hawaiian like Don Ho. Tickets cost \$7.75 for members, \$10 for guests. Pick them up *tomorrow*.

FOOTBALL FANS, start making plans. The Club will again sponsor a city bus from the Club parking lot to the stadium for all six of the Lobo home games. A season ticket costs \$10 for members. Pick them up at the Club office.

TRAVEL — There are a few seats left on the Mazatlan package, travel director Ed Neidel reports. He can fix you up with several types of trips to Hawaii or Europe or send you off on a Caribbean cruise in January. Also available is a Disneyland package during Teacher's Convention here in October. Or take an excursion on the Cumbres and Toltec scenic railroad on Aug. 25 or Oct. 5. Get the scoop from Ed in the lobby tonight between 6 and 7.



LORI (3644) and MARK WALTERS go off the deep end for the Coronado Ski Club's 2nd annual Ski Fair and membership party, Aug. 21 starting after work. Family picnics and swimming run from 4:30 to 6, and the Fair opens at 6:30 with exhibits, free refreshments, and information on trips, ticket and lesson discounts, dry-land ski school, exercise class, Sandia Peak walkdown, ski care and more. The super door prize will be given away at 8:00.

Fun & Games

Tennis — The C-Club Tennis Group and Sandia Tennis Assn. are jointly sponsoring a tournament, Sept. 1-3, at the C-Club Tennis Courts. Women's and men's singles/doubles, plus-40 women's and men's singles/doubles, and mixed doubles. Eligible are CTC and STA members and families as well as DOE and Sandia employees and their families. The entry fee is \$1 per event, payable at the tournament. Entry forms will be mailed to CTC and STA members, and other participants may pick theirs up at the C-Club. Deadline is Aug. 29; mail entries to Lewis Sisneros, org. 3723 or to the C-Club. Tournament draw will be posted at the C-Club pool office on Aug. 31. Chairman is Joe Tillerson, 4-5575. * * *

Horseshoes — The Club's Horseshoes Pitchers Assn. holds its annual tournament Saturday, Aug. 25, at the Club courts. Singles play begins at 9 a.m. and doubles follows. Active and retired Sandians as well as DOEans are eligible to play. For entry forms and further information, contact Leo Bressan, 4-7933. * * *

Bowling — The Sandia Bowling Assn. is now taking membership applications for the 79-80 bowling season. SBA members are eligible for Bowler of the Month awards and reduced rates at fun tournaments at Hoilday and Fiesta lanes. To sign up or to get more information, call Steve Yazzie, 4-2956, or Kay

Duvall, 4-1836. Tournament information will be published in the LAB NEWS and posted on the company bulletin boards. * * *

Upcoming events — If you're an active type, the next few months offer ample outlets for energy. On Sunday, Aug. 26, the La Luz Trail Run is scheduled and, by the time this appears, LAB NEWS should have entry blanks. All registration must be done in advance. In case you've forgotten, the LLTR has been "improved" for this running: it's two miles longer, making it 9 1/2 miles with a 4000 foot elevation gain. On Oct. 21, the Albuquerque Marathon will be run and, on Oct. 27, a new event — the 1st annual KAFB 10,000 Metre Run — will be held here on the Base. It's sponsored by Schlitz. Finally, on Nov. 4, the 3rd annual Triathlon — the Jay Benson Memorial — will take place on the Base. In the Triathlon, contestants bike 10 miles, then run five and conclude with a quarter-mile swim, all back-to-back with no interlude between events. * * *

Running & health — Medical is sponsoring the appearance of the redoubtable Otto Appenzeller, MD, on Aug. 20, in theater Bldg. 815, as Otto talks about "Studies of Runners in the Himalyas." Otto has himself recently returned from an extended run in Nepal and, as a running physician, talks knowingly of running physiology. His talk will start at 12 noon.

