Reflections

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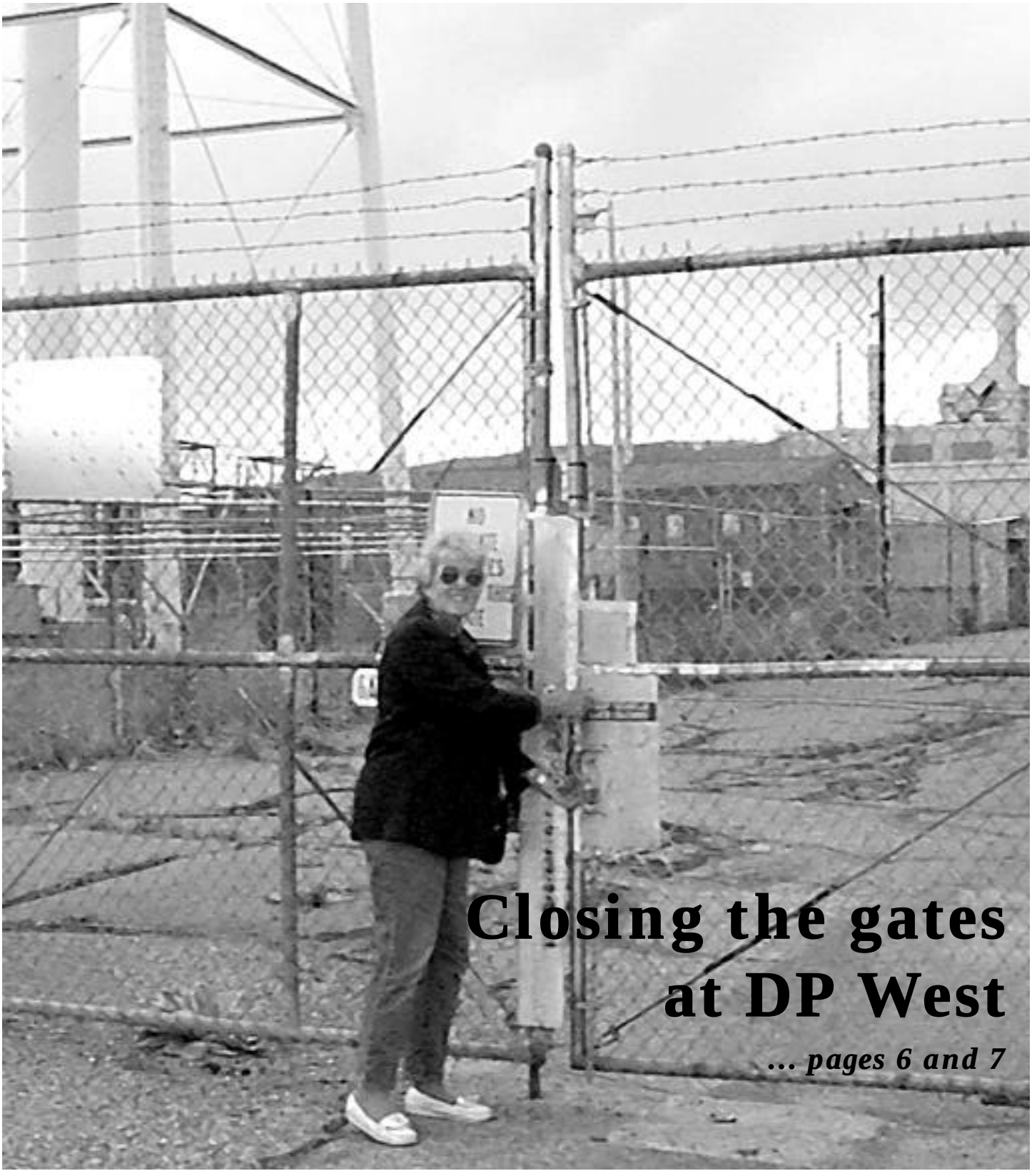

Closing the gates at DP West

... pages 6 and 7

About the cover ...

Sara Helmick, TA-21 facility manager, locks the gate at TA-21, DP West, for the last time after all the people and equipment were moved from the aging facility. Illustration by Ed Vigil. Photo courtesy of Facility Operations/ Chemistry Facilities (CST-25)

Inside this issue ...

Reflections

Reflections, the Laboratory monthly publication for employees and retirees, is published by Public Information (PA-1). The staff is located at TA-3, Building 100, and can be reached by e-mail at *newsbulletin@lanl.gov,* by telephone at 7-6103, by fax at 5-5552 or by regular Lab mail at Mail Stop C318. The individual telephone numbers are listed below.

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editor's journal

Something to be proud of

On Feb. 3, President Bill Clinton honored Los Alamos with his second visit in five years. The presence of the president of the United States at our facility thrust the Laboratory into the national limelight. And the Laboratory did not disappoint.

With five day's notice (one day more than we had for the first visit), Laboratory personnel prepared presentations, spruced up the Administration Building Auditorium and adjoining areas and worked with White House staff, the Secret Service, the Department of Energy and the national and local media to make all the arrangements that would ensure the president's visit went off without a hitch.

The hours and effort Lab and contract employees put in before the visit were phenomenal. The joint efforts to make the president's visit a success reinforced my belief that the Lab can accomplish any task set before it if we focus our sights and work together as a team.

Yet, the main thing that stands out in my mind about the presidential visit is that a concerted effort was made to be inclusive. Lab employees and the entire Los Alamos community were afforded the opportunity to witness President Clinton's stay at the Lab from beginning to end.

From the presentations at the Lab's Data Communications Center, where Laboratory Director John Browne briefed the president and Energy Secretary Federico Peña on the Lab's supercomputing initiatives, to the president's speech in the Administration Building Auditorium, live coverage was provided through LABNET and the public access cable channel. And while only a limited number of employees and their family members were fortunate enough to hear the president speak in person, it was a memorable day for the entire Lab.

Few people can say they are always proud to work where they do, and Lab employees are no exception. But I'd be willing to bet that most employees were brimming with pride last month when the president of the United States stood before an audience that included a large contingent of local and national news reporters and publicly declared that "Los Alamos in so many ways is the place that forever changed the 20th century ... the work you have done here and at the other labs to assure the safety of the [Comprehensive Test Ban] treaty through the Stockpile Stewardship program [is] helping to build a stronger America for the 21st century, a safer world for our children in the 21st century and a legacy worthy of America's glorious past. For your role in that, I thank you very, very much."

I'd say that's something to be proud of.

President Bill Clinton greets members of the audience as he leaves the Administration Building Auditorium following his speech at the Lab on Feb. 3.

Photo by LeRoy N. Sanchez

Kids teaching kids

by Ternel N. Martinez

It is the summer of 1995, and Garry Franklin of the Bradbury Science Museum (CIO-2) is looking for ways to provide new experiences for those who visit the museum, whether they be dignitaries, families of tourists or children from area schools. Then it hits him: why not have school-age students teach science?

He begins recruiting interested children from local elementary, middle and high schools. He talks with scouting groups, asks teachers to read announcements, speaks with home-schooled and other groups that visit the museum, visits the schools himself — anything to drum up interest.

Thus, the Explainers Program was born.

The students involved range in age from 10 to 16 years old, and Franklin at one time had as many as 10 explainers. The number fluctuates mainly because of students' availability during the school year. He currently has nine explainers, all of them home-schooled. "Because they're home-schooled, their schedules usually are more flexible," Franklin said.

Under Franklin's tutelage and guidance, the students learn to do demonstrations on subjects such as static electricity, lasers and light, cryogenics, electromagnetism and spectrums. He writes the scripts and makes sure they fully understand what it is they are doing before having them perform the demonstrations in front of visitors. Each student usually performs one demonstration per week, and they're normally done on Tuesday, Wednesday and Friday mornings and afternoons.

For some of the students, the experience gained from being part of the Explainers Program goes beyond learning more about science. "Some of the other advantages include learning how to speak well in front of others and to work and get along better with older people," said 13-year-old Sarah Stellingwerf, who joined the program in the summer of 1996 and currently demonstrates static electricity, lasers and spectrums.

Watching Sarah perform was enough to get her 10-year-old sister, Aileen, interested in doing the same thing. Aileen began last year and does demonstrations on static electricity. She also currently is learning how to demonstrate electromagnetism. "I wanted to learn how to teach people and speak well," said Aileen, who one day hopes also to teach lasers and spectrums to visitors.

The sisters lately have been writing their own scripts for the demonstrations, with the help of their mother. Of course, Franklin has to review and approve the scripts first. And visitors get a chance to evaluate all students involved in the presentations. "It's important that the students receive feedback so they can learn and improve," said Franklin.

If your children are interested in becoming explainers, contact Franklin at 7-3157.

Ten-year-old Aileen Stellingwerf rubs Plexiglas with a wool cloth to prepare for a static electricity demonstration. This part of the demonstration is commonly referred to as "Dancin' Rice Krispies."

Sarah Stellingwerf, center, Aileen's 13-year-old sister, demonstrates spectrums by using high-voltage electricity to excite a spectrum tube filled with neon gas. The onlookers are viewing the spectrum through what's called a defraction grating.

As part of the laser demonstration, student Stephen Bracht shows visiting students from Atalaya Elementary School in Santa Fe the difference between laser light and white light. *Photos by Fred Rick*

Employee takes the extra step to communicate with colleagues

by Ternel N. Martinez

A cricket chirping at night. A police car's siren. The whisper of a secret between friends. A gunshot. The music of a symphony orchestra. A plea for help.

These sounds that soothe, warn, delight and frighten are taken for granted every day by those who can hear. But these and thousands of other sounds can only be imagined by those who, whether it be caused by injury, illness, disease or genetic defect, are completely deaf. The sounds that a hearing person hears are nothing more than vibrations to a deaf person, if that.

Communication between the hearing and nonhearing worlds can be spotty at times — if not awkward and embarrassing — which could lead to problems in the home or workplace, especially should an emergency arise. But there are those at the Laboratory, including some employees in Imaging Services (CIC-9), who are trying to reach out to their deaf colleagues and bridge the communication gap.

Five completely deaf employees work at the Laboratory, including 24-year Lab employee Labriano Lucero of CIC-9. Last July, Margery Denton and some of her colleagues decided that they needed to go beyond the handwritten notes they usually gave to Lucero whenever they needed to convey messages to him.

She approached Lucero, a graphics specialist, and asked him if he would be interested in teaching her colleagues sign language. "We interact with him on a daily basis, and we felt it would improve communications among all of us," she said. Lucero, deaf since birth and one of three completely deaf children in his family, was both surprised and elated.

"I was thrilled when Margery suggested I teach sign language. I'm much more comfortable using sign language than I am writing on paper," Lucero said through an interpreter. "It is very important that those who work with deaf employees make the effort to communicate with them."

He also pointed out the practical nature of teaching his colleagues what truly is his native language. "If I somehow injure myself and try to communicate that to my friends, if they don't understand what I'm trying to tell them, it could make the situation more difficult than it already may be," he said.

Lucero recalled his earlier days when even communicating with friends and family was difficult. "I had communication problems wherever I went," he added. What helped Lucero adjust and excel at home and in the workplace was going to the New Mexico School for the Deaf in Santa Fe at the urging of his parents.

He entered the school at age 5 and stayed there until receiving his high school diploma in 1972. He then went to the National Technical Institute for the Deaf in Rochester, N.Y., for two years, receiving an associate's degree in graphic arts in 1974. "I don't know what I would have done had it not been for my parents encouraging me to get an education," Lucero said. He was hired at the Lab that same year.

About six employees attended Lucero's first sign language class last August. Classes were twice a week during lunch time, with a test held every other week. One of the students, Bob Brewer, said Lucero first taught the class the alphabet for American Sign Language, the most common of several forms of sign language.

Labriano Lucero of Imaging Services (CIC-9) demonstrates how to form a word with sign language during a recent class. On the chart behind Lucero are some of the words he is teaching his colleagues.
Photo courtesy of Lucero

Soon afterward, Lucero began teaching words to the group. The group now has a working sign language vocabulary of about 600 words. "Labriano has lots of patience with us, and he has a wonderful sense of humor," said Brewer. "It's like learning a second language. But we still can't keep up with the interpreters at colloquiums," he joked.

"The classes were scheduled to end last October, but we convinced Labriano to continue teaching us," said Denton. The classes continue to this day. Lucero also has plans to expand his classes to involve more employees in the near future.

To be sure, Lucero is not the only one who teaches sign language to employees at the Lab. For example, his brother Anthony, also deaf, teaches it to colleagues in Occupational Medicine (ESH-2).

Lucero's wife Teresa of the Life Sciences (LS-DO) Division also is deaf. They first met at the Santa Fe School for the Deaf, and they have two children. "For the children, American Sign Language was their first language," said Lucero.

While learning sign language is a significant step toward reducing the communication gap between the hearing and nonhearing, Lucero implored hearing people to go one step further and find out more about the world of the deaf.

"I encourage hearing people to one day visit a school for the deaf and to attend some of their social functions, because it's not just a matter of learning sign language," Lucero said.

On the job since 1955

The Laboratory is commemorating National Women's History Month during March with a variety of activities. Information about these events, with dates, times and places, will be carried in the Daily Newsbulletin at http://www.lanl.gov/Internal/News/dailynews.html on the World Wide Web. Meantime, "Reflections" is featuring a woman who has seen a lot of history at the Lab — 42-year employee Alita Roach.

Alita Roach

by Steve Sandoval

The more things change the more they stay the same. Just ask Alita Roach of the Dynamic Experimentation (DX) Division Office.

Save for three months in the personnel department, Roach has spent all of her 42-year-career at the Laboratory working in organizations that deal with weapons. And she wouldn't want it any different.

"I've been practically in the same place the whole time," Roach said. "The grass is not always greener. I've never been sorry that I didn't take potentially some [job] opening."

Roach is a program administrator II in DX Division. She came to the Lab in 1955; her late husband Fred had been in the U.S. Army as a military mailman while she was a buyer for the May Co. in St. Louis.

There were about 2,500 to 3,000 employees at the Lab in 1955.

"I've always been in a weapons division … that to me is the Lab's mission," said Roach.

When Roach first came to New Mexico to visit, little did this girl from the town of Ames, Iowa, know it'd become home. "The air was so clear; the sky was so blue," Roach said.

"If and when I ever retire, I don't want to ever leave Los Alamos," Roach continued. "My friends are here … after my husband retired, we never discussed moving. It never occurred to me."

Roach adds that she's living in the same house the Roaches purchased in White Rock in 1962; they were the fifth family to move into White Rock, she said.

Roach has seen people come and go, work locations change and modern technology lead to improvements in the workplace. Roach recalled the 24-plus years she was in the Administration Building when face-to-face contact and a copy machine close by were the rule, not the exception.

In 1980, Roach moved to Technical Area 8 off West Jemez Road where the DX Division Office is located. Trips to the personnel department, the cafeteria or to conduct other Lab business were no longer just walking distance. And, Roach said, "We didn't have faxes. That was before e-mail."

The pace of today's modern workplace has picked up. "You want an instant answer … you have instant information," she says.

Still, Roach prefers the personal contact, even if by that other technological advancement, the telephone. "I still do enjoy the personal contact … it may take a little longer but you get to know people better. … They do things for you."

Roach spends a lot of time on the telephone with the British Embassy — since 1990 Roach has handled the United Kingdom weapons information exchange program, as she calls it, for the Laboratory — and with foreign scientists and engineers, coordinating a detonation symposium the Lab co-sponsors every four to five years along with the Energy and Defense departments, among others.

Her job duties also have afforded Roach the chance to travel; in 1989, she was part of a group of a dozen Lab personnel who went to Russia.

Roach said the personal contacts she makes come in handy when symposium time rolls around. "People remember me," she said, noting her 5-foot-10-inch height and not-so-common name. But electronic mail, she admits, has made her job easier in this regard. "E-mail makes it so much nicer, especially with the foreigners … it's a fine balance," she said. "There are lots of things that make life easier."

And the winners are …

by Steve Sandoval

Ten Laboratory employees have been named recipients of Mentoring Awards for 1998 by the Women's Diversity Working Group.

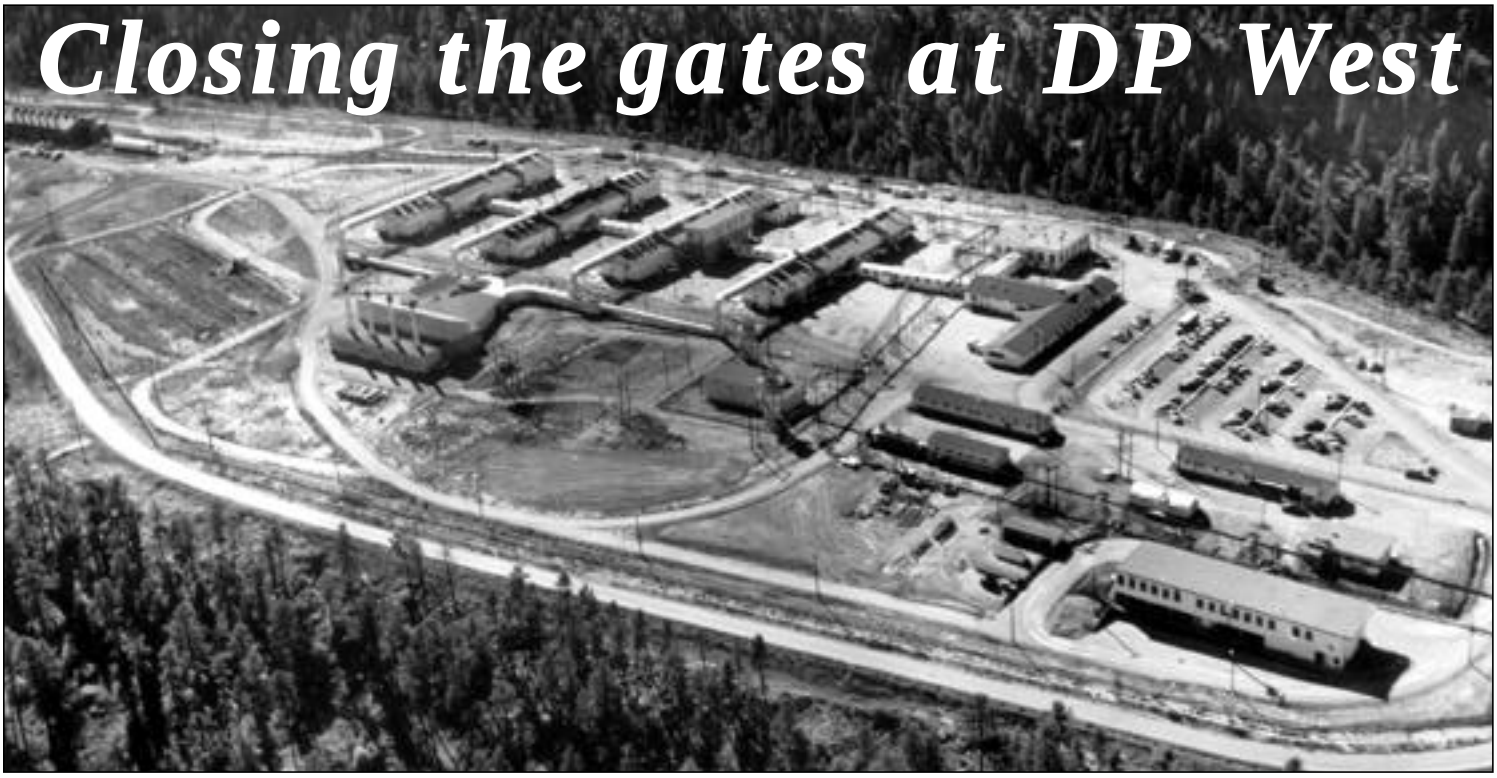
The recipients were selected from a group of 50 nominations submitted to a subcommittee of the working group. Mentoring is one of four key issues women face at the Lab, according to working group members. The other issues are career development, recruitment and dependent care.

Recipients were recognized for their mentoring efforts at the Lab, either on a formal or informal basis, said Nancy Sattelberger, who chaired the subcommittee.

The recipients are Tracy Glatzmaier of the Earth and Environmental Sciences (EES) Division Office, Wayne H. Smith of Advanced Technology (NMT-6), Rich Mah of Materials Technology: Metallurgy (MST-6), Stephanie Hale of Weapon Component Technology (NMT-5), Earl Hoffman of the Los Alamos Neutron Science Center (LANSCE), Kenneth Salazar of Materials Technology: Coatings and Polymers (MST-7), T.J. Trapp of the Nuclear Component Readiness (NMSM-NCR) Program Office, Melissa Robinson of Business Planning and Analysis (BUS-3), Carol Smith of Materials Management (BUS-4) and Gloria Cordova of Conference and Visit Management (PA-4).

The Mentoring Award recipients will be recognized at a reception from 5 to 6:30 p.m. March 16 on the second floor of the J. Robert Oppenheimer Study Center.

Closing the gates at DP West



by Ternel N. Martinez

The gates to Technical Area 21, DP West, are locked now. No one works there anymore. Once the major uranium and plutonium research facility at the Lab, the buildings there either have been demolished or are scheduled to undergo that fate over the next 10 years. In time, the entire area where plutonium and uranium research was done will be leveled, as if no facility ever existed.

At one time, the sounds of more than 150 employees filled the rooms and corridors; now, the only sounds heard are the eerie whistling of the wind and the crackling of leaves. Still surrounded by fences topped with barbed wire, the area now looks more like an abandoned prison yard than a research facility.

Built back in 1946, the buildings inside DP West were the site of many scientific breakthroughs over the decades.

Built back in 1946, the buildings inside DP West were the site of many scientific breakthroughs over the decades. It was there, for example, that chemists developed the Plutonium Uranium Extraction process, or PUREX, which separates plutonium and uranium from fission products. Researchers also gained a better understanding of americium chemistry at TA-21. Americium is a by-product in the production of plutonium.

This area is where a process was developed that separates plutonium from various waste streams. Renowned scientists such as Robert Penneman, Larned Asprey and Llewelyn Jones were behind these and many other accomplishments.

But as the old saying goes, "All good things must come to an end."

While DP West's core business of plutonium and uranium research transferred over to TA-55 in 1977, research in other areas such as waste minimization and the biosciences continued up until last year.

Time finally caught up with the buildings, and in 1991, the Department of Energy had determined that the buildings at DP West posed a potential safety hazard to employees and the public. Anyone walking into any of the major buildings could see why: deteriorating buildings, sinks stained by decades of research and CAUTION signs everywhere warning of possible alpha contamination under the wall paint and possible contamination in the ducts.

Both the Lab and DOE agreed that the facilities could not be saved and that the employees who worked there — those from Bioscience/Biotechnology (CST-4) and Waste Treatment and Minimization Science (CST-18) — needed to be relocated. The question, of course, was where.

"When we first knew that we needed to leave TA-21, we had no idea where to place the employees," said Sara Helmick of Facility Operations/Chemistry Facilities (CST-25). Helmick and CST-25 colleague Doug Hof were the major logistics architects for the massive move. "The division agreed in 1991 to move out, but we first had to find a place for them. Then we had to refurbish many of the buildings that they eventually occupied." Those buildings are located in TA-35 and TA-46 (the old mercury laser and free-electron laser buildings, respectively).

Money also was a major concern for Helmick and Hof. The move, which both CST and DOE agreed should be done in stages to minimize the impact on workers and their research, was contingent on available funds.

'... A lot of people questioned whether we were going to pull this thing off. The complexity of the move was almost overwhelming.'

The first move didn't begin until late 1993.

"There was a lot of tension and concern among ourselves and the workers. A lot of people questioned whether we were going to pull this thing off. The complexity of the move was almost overwhelming," recalled Hof.

This complexity was based on people needing to be relocated as well as about 30,000 square feet of equipment, furniture, chemicals, lab supplies, lasers, X-ray defractor instruments, refrigerators, freezers and various other items.

Of particular concern was the enormous amount of chemicals, many of them perishable and one-of-a-kind. "For these, we used Igloo coolers to move them," said Hof. "We packed them in ice and moved them that way." Because the chemicals were unique and therefore not covered by Department of Transportation regulations, Helmick and Hof had to work with DOE, the Business Operations (BUS) Division and various other agencies to make sure the chemicals were properly shipped.

And of course, other issues had to be addressed, including making sure the moves done in one area of TA-21 would not jeopardize workers in another; ensuring that decommissioning and demolition crews could conduct their jobs safely; and making sure the public would not be threatened by the move or D&D work.

Chemical Science and Technology (CST) Division Director Alex Gancarz inspects a section of Building 2 in Technical Area 21 to make sure everything that needed to be removed from the site was indeed removed.

Waste management coordinators Loren Abercrombie, right, of Hazardous and Solid Waste (ESH-19) and contractor employee Karen Chandler inspect a Technical Area 21 waste storage area filled with chemicals. These chemicals eventually were recycled within the Lab through the Chemical Exchange Assistance Program and External Recycling, or CHEAPER, or sent to TA-54 for disposal. *Photos courtesy of Facility Operations/Chemistry Facilities (CST-25)*

The move required extensive cooperation among several entities, including DOE, Johnson Controls Northern New Mexico; Los Alamos County; the Chemical Science and Technology (CST), Facilities, Security and Safeguards (FSS), Environment, Safety and Health (ESH) and BUS divisions; the Hazardous Materials Team; and Emergency Management and Response (FSS-EM&R).

The first building to be vacated was Building 4, followed by Building 3. Eight buildings eventually would be vacated at TA-21, not including the various additions. At first, the moves consisted primarily of relocating employees from one building to another. "We definitely had to shuffle around a lot at first," Helmick said. Over time, that changed to moving people completely out of the area. The moving process also would occur at all times of the day. The July 23, 1997, move, for instance, took place at 2 a.m. because of requirements to close roads to transport chemicals and equipment through the Los Alamos townsite.

On Sept. 30, 1997, it was finally over. Everyone and everything were in their new locations ...

The last major moving operation began Aug. 19, when facility management ordered the last 40 employees to stand down from all chemistry work and start packing. On Sept. 30, 1997, it was finally over. Everyone and everything were in their new locations, ahead of the Dec. 31, 1997, deadline, and at a cost of approximately $10 million over the entire four-year period.

"I don't believe there has been a move of this magnitude in recent Lab history," said Helmick, adding that the last year of the move was the hardest.

Added Hof, "Like I said, a lot of people didn't think we were going to pull it off. But we did."

Thomas becomes CST-11 group leader

Kimberly Thomas

Kimberly Thomas recently became the new group leader for Nuclear and Radiochemistry (CST-11). The former chief of staff for the Physics (P-DO) Division during the last three-and-a-half years assumed her new position last December.

With the new position, the nuclear and radiochemist returns to her technical roots, as it was CST-11 that first hired her back in 1978 and where she spent her first 17 years at the Lab. The group produces medical isotopes at the Los Alamos Neutron Science Center (LANSCE); it also performs nuclear weapons data archiving and develops methods for treating various types of nuclear waste. About 60 employees are in the group.

Thomas received her bachelor's degree in chemistry from Middlebury College in Vermont. She received her doctorate in nuclear chemistry from the University of California, Berkeley, under world-renowned chemist and Nobel Prize winner Glenn Seaborg. She came to the Lab as a technical staff member shortly after graduating from UC Berkeley.

Hale named new NMT-5 group leader

Stevie Hale

Stevie Hale is the new group leader for Weapons Component Technology (NMT-5). She replaces Joe Martz, who now heads the Enhanced Surveillance Project.

Hale was deputy group leader for NMT-5 the past two years. Before that, she was team leader for the Pit Surveillance Project. Much of the work the five-year Lab employee performs is similar to her work when she was in the Plutonium Metallurgy Group at Rocky Flats.

NMT-5 is key to the Lab's role in taking care of the nation's nuclear stockpile, Hale said. This includes making sure the stockpile is safe and reliable, performing science-based stockpile stewardship in areas such as plutonium metallurgy, and replenishing pits, she explained. "I'm looking forward to helping the Lab firmly establish viable and effective science-based stockpile stewardship."

The group works closely with the Materials Science and Technology (MST), Engineering Sciences and Applications (ESA) and Applied Theoretical and Computational Physics (X) divisions and other divisions and program offices in defining stockpile needs and requirements.

The Texas native received her bachelor's degree in chemistry from the University of Texas of the Permian Basin in Odessa. She received her master's degree and doctorate in inorganic chemistry from the University of Texas at Dallas.

Two re-appointed to state commissions

Ed Vigil

Ed Vigil of Public Information (PA-1) has been re-appointed to the New Mexico Health Policy Commission. Vigil's new term runs through July 2000; he first was appointed in May 1996.

Vigil is vice chair of the eight-member commission, which performs studies and helps develop health-care policies based on what the needs of New Mexicans are statewide. The commission meets bi-monthly and reports to both the governor and state legislature.

The 16-year Lab employee provides computer support for PA-1 and is the graphics illustrator for the daily online Newsbulletin and "Reflections." He holds a bachelor's degree in fine arts from New Mexico State University.

Deanne Phillips

Also, **Deanne Phillips** of Occupational Medicine (ESH-2) has been re-appointed to the Human Rights Commission in the State Department of Labor. Her new term runs through Jan. 1, 2002.

This marks the third time that Phillips has been appointed to the all-volunteer commission; she first was appointed in 1993 by then-Gov. Bruce King. The Human Rights Commission conducts hearings on allegations of discrimination after the labor department's Human Rights Division that performs the actual investigations finds probable cause.

Phillips, leader of the Sickness Absence Rehabilitation Management Team in ESH-2, also is a hearing officer in the Human Rights Commission, meaning she can hold a hearing by herself if necessary. She then makes a recommendation for possible action to a panel of three commissioners, who render a final decision.

Phillips has been at the Laboratory since 1990.

Video wins national award

John Bass

A video documentary on Nobel Prize-winning scientist Glenn Seaborg has won a national award from the Public Relations Society of America.

"Glenn Seaborg: Plutonium Retrospective and Perspective" was produced by **John Bass** of Public Information (PA-1) with assistance from **Jim Danneskiold**, also of PA-1. The 33-minute video documentary received a Crystal Award of Excellence as part of PRSA's 1997 Communicator Awards competition.

The award is given for outstanding work in the communications field. Entries are judged by a panel of professionals in the industry. Last year, PRSA received 2,912 entries from 47 states and five other countries in the Communicator Awards video competition.

The Seaborg video documentary was recognized in the history category.

In Memoriam

John Kodis

Laboratory retiree John Kodis died Jan. 31 in White Rock. He was 81 years old. Kodis, a retired United States Air Force colonel, joined the Lab in 1969 in the former Field Test (J) Division. He retired from the Lab in 1986, but later returned as a casual, limited-term staff member. While in the Air Force, Kodis was director of the Defense Atomic Support Agency in Washington, D.C., and chief in the development division at the Air Force Weapons Lab at Kirtland Air Force Base in Albuquerque. From 1957 to 1963, he supervised the preparation and participation of Department of Defense projects dealing with fullscale and underground nuclear tests at the Nevada Test Site. Kodis earned bachelor's and master's degrees in physics from Marietta College and the University of Illinois respectively.

Jesus M. Martinez

Jesus M. Martinez, 72, died Jan. 18 in San Pedro. A Laboratory retiree, Martinez worked for Los Alamos 36 years. He retired as deputy group leader in the former Materials Management (MAT) Division. Martinez joined the Laboratory in 1947 as a truck driver for the Zia Co. During his Lab tenure, Martinez held a number of positions, including clerk supervisor and shipping clerk leader.

Leo A. Ortega

Laboratory retiree and lifelong Northern New Mexico resident Leo A. Ortega, died Nov. 9, 1997. A World War II veteran who reached the rank of master sergeant in the Army Air Corps (now the U.S. Air Force), Ortega worked at the Lab from 1951 to 1984. He was an accountant at the Lab. Ortega received a master's degree in business from New Mexico Highlands University in Las Vegas, N.M.

Robert Y. Porton

Retiree Robert Y. Porton of Los Alamos died Dec. 3, 1997, and was remembered in a memorial tribute service at Fuller Lodge the following week. Porton was born in Washington, D.C., on April 13, 1912, and grew up in Florida. He arrived in Los Alamos in 1944 as an Army sergeant and founded radio station KRS, now KRSN. Porton left the military in 1946 and continued to operate the station until 1956, when he joined the Laboratory. He headed the community relations and public relations functions and was instrumental in setting up the science museum. Porton retired from the Laboratory in 1982, then served for many years as the hearing officer for people appealing parking tickets they received at the Lab.

Richard Slansky

Richard Slansky, director for the Theoretical (T) Division, died Jan. 16 while on travel in Santa Clara, Calif., following a sudden illness. Slansky came to the Laboratory in 1974, when he joined the newly formed elementary particle physics theory group. He worked on the theory of the unification of the forces of nature, including neutrino masses and the underlying mathematics of these theories. In 1989, he was named leader for T Division. A fellow of the American Physical Society and the American Association for the Advancement of Science, he received a bachelor's degree from Harvard University and a doctorate in physics from the University of California, Berkeley. Slansky also was an adjunct professor of physics at UC Irvine.

February employee service anniversaries

40 years

Theodore Crawford, ESA-MT

30 years

William Boedeker, LANSCE-2
John Hopson Jr., X-NH
Reed Jensen, EM-DO
Kenneth Johnson, ESH-13
Jose Ortiz, FSS-6
Alex Salazar, DX-7
Paul Tallerico, LANSCE-5

25 years

David Barnes, ESH-4
C.N. Espinoza, MST-10
Rueben Gutierrez, NMT-DO
Russell McFadden, TSA-5
Richard Rivera, CIC-18
Gary Strniste, LS-DO

20 years

Jacob Bartos III, MST-7
Kelly Blount Jr., ESA-FM-ESH
Frank Cverna, P-23
James Early, CST-6
Sue Goff, CIT-PO
Kenneth Kroncke, NIS-5
Chris Lindberg, CIC-9
Kenneth Martinez, NMT-6
Frances Mascarenas, HR-5
Pamela Massey, NMT-6
Linda McCullough, CST-8
Alice Naranjo, ESH-OIO
William Parsons, P-DO
Linda Robinson, BUS-DO
Richard Romero, CST-25
Chester Smith Jr., NMT-7
H. Vernon Smith, LANSCE-2
David Torres, DX-4
Lloyd Vigil, BUS-4
Michael Weber, CST-1
Robert Williford, NIS-4

15 years

Lee Anderson, ESA-WE
John Charles III, ESA-WMM
David Clark, P-22
Jerry Freer, EM-RLW
Eugene Garcia, ESH-1
Darlene Gutierrez, NMT-4
Janet Hirons, HR-5
Norman Johnson, T-3
Kelley Keresey, TSA-4
David Korzekwa, MST-6
Verne Loose, TSA-4
Petrita Montano, BUS-8
Danny Martinez, ESA-EPE
Ronald Nemec, MST-6
R. Quicksilver, DX-8
Ruth Robichaud, NIS-3
Marion Scott, MST-7
Carol Sutcliffe, ESA-TSE
Terry Thompson, P-25
Jacqueline Valdez, HR-1
Jenny Vigil, BUS-4
Jose Yepa, EES-4

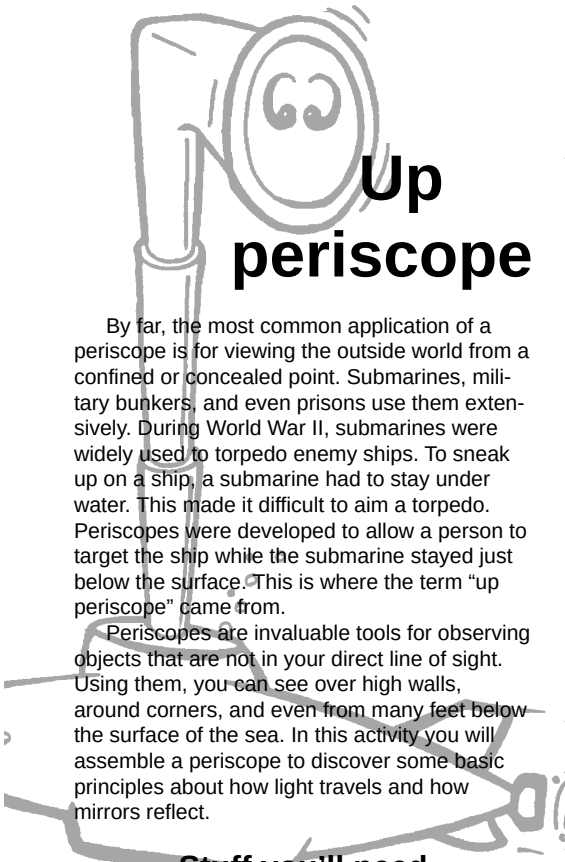
10 years

Robert Cantwell, CIC-15
Renida Carter, ESA-EA
John Doub, LANSCE-5
Perry Farley, EES-13
Vivian Gonzales, BUS-1
Richard Hammer, LANSCE-3
Barbara Hargis, ESH-5
Shirley Lindsay, STB-DSTBP
Jesse Mendez, NMT-6
S.M. Mondragon, DDT-DO
Kristi Pigue, NMT-7
Vivian Romero, TSA-1
Marydell Tholburn, CIC-8
Douglas Volkman, FSS-6
Harriett West, BUS-6
Rena Whiteson, NIS-7

5 years

Kirt Anderson, FSS-1
Chung Chieng Lai, EES-8
Eugene Darling, FSS-20
Jack Ellvinger, ESH-19
Lynn Foster, NMT-4
Daniel James, BUS-3
Phillip Jewett, LS-3
Robert Keys III, ESH-17
Robert Margevicius, MST-6
Lisandro Ramos, CIC-2
C.A. Salazar-Langley, ESH-13
Avadh Saxena, T-11
Timothy Sloan, EM-SWO
Alan Yaeger, NMT-8

"Science at Home" is a publication developed by Science Education (STB-SE) to interest children, particularly those in grades four through eight, in science through hands-on activities. We are reprinting experiments from the book, along with other scientific activities, for employees to share with their families, or just to enjoy themselves.



Up periscope

By far, the most common application of a periscope is for viewing the outside world from a confined or concealed point. Submarines, military bunkers, and even prisons use them extensively. During World War II, submarines were widely used to torpedo enemy ships. To sneak up on a ship, a submarine had to stay under water. This made it difficult to aim a torpedo. Periscopes were developed to allow a person to target the ship while the submarine stayed just below the surface. This is where the term "up periscope" came from.

Periscopes are invaluable tools for observing objects that are not in your direct line of sight. Using them, you can see over high walls, around corners, and even from many feet below the surface of the sea. In this activity you will assemble a periscope to discover some basic principles about how light travels and how mirrors reflect.

Stuff you'll need

An empty box that contained aluminum foil, plastic wrap, or waxed paper; masking tape; utility or paring knife; two small mirrors about 2 inches (5cm) by 3 inches (7.6cm) — (available at variety stores or from the inside of an old compact); ruler; flashlight; a dark room with a doorway

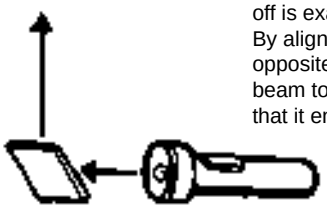
Here's the plan

1) In a dark room, hold the flashlight and shine it at a wall directly in front of you. Where does the spot of light hit the wall?

2) Hold the flashlight in front of you and shine it out through an open doorway. Where does the beam travel? Where does the spot of light hit? Can you make the beam turn the corner of the doorway without moving from the position you are in? What prevents the beam from turning the corner?

3) Lay one of the mirrors flat on the floor, shiny side up. Shine the flashlight into the mirror from directly above. Where does the spot of light wind up? Now shine the light into the mirror at an angle. What changes in the beam do you see?

4) Lay the flashlight down on the floor, aiming it towards the open doorway. Be sure there isn't anything between the flashlight beam and the doorway. Stand directly in front of the beam outside of the doorway. Hold a mirror directly in front of the beam. Allow the light to shine into the mirror. Adjust the angle of the mirror so that the beam reflects off the mirror, around the corner of the doorway.



When a light beam hits a mirror, it will bounce off at the exact angle at which it strikes. Periscopes use this principle to show a clear image of an object otherwise blocked from view. To see this for yourself, build a periscope.

5) Rip off or cover the sharp edge of the foil box with masking tape.

6) Cut a window on the side of one end of the box about 1.5 inches long (4 cm) and almost as wide as the box. Cut another window on the opposite side of the box, at the opposite end of the first window (diagram 1).

7) Set the box, with the lid side up, on a table. Put one of the mirrors on its edge into the box, so that it faces the first window and is wedged into the corner nearest the window. The size of the box will determine the angle you use. Place the other mirror in a similar position at the other end of the box (diagram 2).

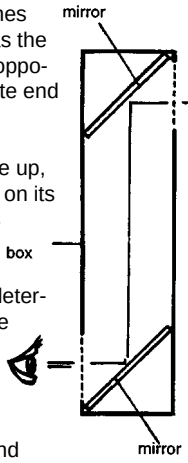


diagram 2

8) Tape the mirrors in place and close the box, taping the lid shut if necessary. Look through one window to see if your periscope is working (you should be able to see objects directly ahead of you, but slightly off to the side).

9) Look through the periscope. What can you see? How can you use it to see around a corner or over a high wall? Try looking to see what's on top of your refrigerator or under the couch. What happens when you try to walk toward something you see in your periscope? Shine the light into one end of the periscope and observe where it goes. Talk about where light enters the periscope and what happens to the light once it enters.

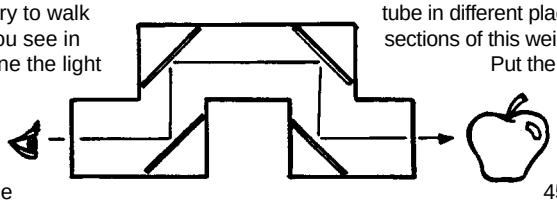


diagram 3

Wrap-up

Light travels in straight lines. When light strikes a mirror, the angle at which it bounces off is exactly equal to the angle at which it hits. By aligning two mirrors facing each other at opposite and equal angles, you can get a light beam to exit a periscope in the same direction that it entered.

What's going on here?

When light strikes any object, some of it bounces off by a process called reflection. There are two main types of reflection, regular and diffuse. Regular reflection occurs when light rays strike a smooth, shiny surface. The light rays strike the surface, bounce off together at an angle opposite but equal to the angle they struck at, and produce an image. In scientific terms, we say that the angle of incidence (strike) is equal to the angle of reflection (bounce). Diffuse reflection happens when light hits a rough surface. The light rays scatter in different directions, lighting up the object itself, but no reflected image can be seen.

Where does this happen in real life?

Even though they are not full periscopes, corner security mirrors use the same principle and result in the viewer being able to see around a corner. You may have noticed that as you enter an elevator, there is often a small mirror in the back corner that lets a person see who is inside behind the door. Many stores use this same set-up so that shop clerks can keep an eye on the front of the store from behind a counter. Corner mirrors are even being used in parking structures, allowing drivers to see if a car is coming around the sharp turn of a ramp before they move into the traffic flow. Diffuser panels are used in many florescent light systems to scatter light around the room.

Now try this

You can make different kinds of periscopes for special purposes like seeing behind you instead of in front. All you need to do is work out the mirror angles. Here's one that lets you go up, over, and back down again. Cut off both ends of five empty 1 quart milk cartons. Assemble the milk containers so that you have a tube that is hollow, and open at each end (diagram 3). You will have to cut each tube in different places and tape the sections of this weird periscope together. Put the four mirrors in place and tape them so they won't come loose. The mirrors should make a 45 degree angle with the sides of the containers (diagram 3). Have someone wave a hand in front of one end of the periscope. Can you see the hand? This will work best in a well-lit room.

This month in history

March

1775 — Patrick Henry says "Give me liberty or give me death!" in a speech calling for the arming of the Virginia militia

1781 — Sir William Herschel discovers the planet Uranus

1806 — Lewis and Clark reach the Pacific coast

1864 — About 2,400 Navajos began the "Long Walk" to Bosque Redondo near Fort Sumner in east central New Mexico

1896 — Antoine-Henri Becquerel discovers radioactivity

1916 — Gen. Francisco "Pancho" Villa invades the United States near Columbus, N.M.

1947 — Willard Libby and others develop the first age determination by radiocarbon dating

1951 — David Greenglass, Army sergeant at the Lab during WWII, testifies in Rosenberg spy case

1967 — Former Deputy Director Robert Thorn, T-2 group leader at the time, receives the E. O. Lawrence Award

1979 — Accident at Three Mile Island nuclear power plant in Pennsylvania releases a small amount of radiation into the air

1989 — James Watkins is sworn in as secretary of energy

1989 — Scientists at the University of Utah announce discovery of cold fusion

1997 — Trial of a lawsuit filed in response to the 1995 reduction in force at the Lab begins in Albuquerque

Brainteasers

Here's another chance to test your knowledge of Laboratory history and trivia.

1. Who was the first senator from Los Alamos County in the NM Legislature?

2. What year was this photo taken? **(above)**

3. What was the BEAR Project?

4. How many Nobel laureates (present or future) worked at the Laboratory during the Manhattan Project?

5. What was the Cowpuncher Committee?

6. What year was the first Cray supercomputer delivered to the Lab?

7. What was Project Sherwood?

8. How many people visit the Bradbury Science Museum each year?

9. What was the historical significance of the Ice House at Ashley Pond?

10. What was this building? **(at right)**

11. How long has the ALEXIS satellite been in orbit?

12. How many directors has the Lab had?

13. Which group at the Lab has the longest name?

14. Where was the RMAD Building?

15. What is Pegasus II?

16. When was the first ski season at Pajarito Mountain?

17. How many years was Project Rover active at the Lab?

18. What is this structure once located on Lab property along Pajarito Road called, and where is it now? **(at right)**

19. What were SHAGAN and KEARSAGE?

20. When was construction of the CMR Building completed?

(Answers next month)

Syndicated material
Removed at the request of the sydicate

spotlight

Employee has a passion for orchids

Lois Dauelsberg of Quality, Strategy and Resource Planning (FSS-1) shows a vanda hybrid at a November 1997 Albuquerque show. *Photos courtesy of Dauelsberg*

by Ternel N. Martinez

Let's say a friend comes over to your house, knocks on your door and asks, "Hey, did you know you have Phragmipedium besseae and Angraecum Veitchii on your property?" Do you

a) call the HAZMAT Team?
b) call the police?
c) get out your bug spray?
d) make sure they get plenty of food, water and light?
e) tell your friend never to use such foul language again?

If you chose the letter d, you're right. While just looking at the above-mentioned words might make you think that they mean something bad, hearing those same words brings images of beauty to orchid grower Lois Dauelsberg, a staff member specializing in information systems in Quality, Strategy and Resource Planning (FSS-1). Incidentally, Phragmipedium besseae is the name of an orchid species, while Angraecum Veitchii is an orchid hybrid.

Found throughout most of the nonpolar world and especially abundant in tropical regions, there are anywhere from 400 to 800 genera of orchids and at least 15,000 species, perhaps as many as 35,000. And that number does not include orchid hybrids.

While the 28-year-plus Lab employee always had family members who grew a few orchids at their homes, it was during a 1971 business trip to Hawaii that Dauelsberg decided to try to grow her own.

"I saw some orchids there that were very different from what I had seen before," she recalled. "And I just wanted to grow some of those." Still, Dauelsberg wouldn't actually begin to grow her own orchids until three years later, when a colleague gave her four to grow. She bought four more just three months later, and thus began a passion for the exotic plants that would eventually lead her to places she never thought she'd visit and a career on the side.

In 1975, Lois' husband built a "wardian case" for her to place her orchids. Her first growing area for the flowers, it was situated above the washer and dryer in the garage of their home, under fluorescent lights. This case, though, was just a prelude to the 150 square-foot lean-to greenhouse that the Dauelsbergs attached to their home in 1976.

She has moved two times over the years, and each new dwelling has had a 300 square-foot greenhouse built onto it. Dauelsberg currently has about 800 orchids in her greenhouse; at one time, she had as many as 1,000. But this story goes beyond merely growing the colorful plants.

After a while, Dauelsberg no longer was satisfied with just presenting orchids — she now wanted to judge them at shows and events. So she began a six-year training program under the auspices of the 30,000-member American Orchid Society.

Judges must perform research and give presentations to other judges, be experienced growers, have a growing collection of orchids and maintain an extensive orchid library.

"A judge looks to see if the orchid has improved from its parents," said Dauelsberg. "We also check the orchid's form for roundness and fullness, its colors, growth pattern, texture, size and number of flowers."

Her duties as a judge have taken her to several cities nationwide, as well as to Canada and Ecuador. Dauelsberg goes to the regional shows 10-to-12 times a year. And she currently is center chair for the Rocky Mountain Judging Center in Denver, where her duties include education and judging.

But again, being a grower, center chair and judge wasn't enough to satisfy Dauelsberg's passion. No, this time she wanted to bring the society closer to home. "I helped start the Escalante Orchid Society for the Santa Fe/Los Alamos area. It's an AOS-affiliated society that meets once a month, alternating between the two cities," she said. The Escalante Orchid Society is planning an exhibit, to be held in May in downtown Los Alamos.

Additional information about the American Orchid Society and orchids in general are available online at http://www.pathfinder.com/vg/Gardens/AOS/Welcome/ on the Web.

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