

WHAT HAPPENS when a tornado picks up an auto and whirls it along at 300 mph? Will it remain airborne over some appreciable distance? Conceivably, such a missile could constitute a threat to the walls of a nuclear reactor structure. In tests being run for the Electrical Power Research Institute in Area III, it was learned that the 300 mph flying auto would probably sail several hundred feet before touching down. Rocket sled provided desired velocity, and auto became airborne after sled was suddenly braked. At right, Bob Lucas (2323) and test engineer Kathleen McCaughey (1535) examine remains.

LAB NEWS

VOL. 31, NO. 21

OCTOBER 19, 1979

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

Base OK's Sandians' Use of Recreation Facilities

In a major change of existing policy, Base Commander Col. Jack Sheppard has announced that many categories of civilians employed on the Base may now use the extensive recreational facilities previously restricted to military people, and they may also participate in a wide range of recreational programs. Eligibility extends to dependents of the civilian employees as well.

The head of Kirtland's Morale, Welfare and Recreation Division, Dick Wood, has described for LAB NEWS the facilities and programs involved. Here is a listing:

- Arts & Crafts Center, offering a ceramics workshop, photo lab, leather work, picture frame shop, sculpture, lapidary, stained glass and macrame.
- Auto hobby shop, a completely modern and equipped garage.
- Wood shop with a wide selection of wood-working tools and machines.
- Tijeras Arroyo golf course.
- two bowling facilities.
- the east and west side Child Care and Child Development Centers.
- the Breakaway Recreation Center with many programs and services.
- Youth Recreation Program.
- the Base library.
- recreation equipment rental program which loans camping and skiing gear.
- the Aero Club for instructional and recreational flying.

- gymnasiums and swimming pools.
- membership in the Officer's Open Mess or the NCO Open Mess.

Mr. Wood noted that participation by contractor employees will ordinarily be unrestricted; occasionally, however, a facility or program will be so popular that hours of use will be restricted or it may be necessary to establish a waiting list. In any event, active duty military persons have first claim on the military facilities and programs.

The Base's newest rec program—to which Sandians are invited—starts Nov. 5 at 7 p.m. Every Monday night "Giant Cash Bingo" will be offered at the Breakaway Rec Center (just across the street from east side gym). Over a thousand dollars will be made in cash payouts each night, plus additional jackpot prizes.

In future issues of LAB NEWS, we will carry features describing in greater detail the facilities and programs that Sandians may now use.

Payroll Figures Are Announced

The Sandia Laboratories payroll for fiscal year 1979, which ended Sept. 30, amounted to \$148 million at Sandia Laboratories Albuquerque, and \$24 million at Sandia Laboratories Livermore (California). For FY '78, these figures were \$134 million for Albuquerque and \$22 million for Livermore. Salaries of some 80 Sandia employees at Nevada Test Site and Tonopah Test Range (Nevada) are included in the Albuquerque figure.

At the end of FY '79 there were 7618 on roll at Sandia Laboratories, including 1030 at Livermore. The total is about 140 more than at the end of FY '78.

Assets of the Department of Energy's installations operated by Sandia Labora-

tories totaled \$436 million at the end of FY '79, compared to \$398 million in FY '78. These figures represent the acquisition cost of buildings and facilities at Sandia Laboratories Albuquerque, Sandia Laboratories Livermore and Tonopah Test Range. All assets are the property of DOE, but are used and operated by Sandia in research and development work for DOE.

Purchases by Sandia in New Mexico amounted to \$81 million for FY '79. About 98 percent of the amount, or \$79 million, went to Albuquerque firms. Purchases in the state in FY '78 amounted to \$60 million. At Sandia Livermore, purchases in the Bay Area amounted to \$13 million for FY '79.

Afterthoughts

The long perspective--It's true. Travel gives one fresh insights. In Ireland last month, we were struck by (and the order implies no ranking): the uncommon civility of the people; the stunning greenness of the countryside; the narrowness and meandering character of the roads; the high incidence of smoking and beer drinking; greyhounds and greyhound racing; the hideous traffic in the cities; women in their 70s, riding bicycles; the workman's and farmer's universal garb--tweedy suit coat, shirt, tie, cap; double-decker buses and asphyxiating diesel fumes; the bleak beauty of the rolling, rocky grasslands of Galway; the ruins of castles that the visitor may scramble through willy nilly; the sense of genuine antiquity at Trinity College in Dublin; the euphoria in anticipation of the pope's visit; freshly baked Irish brown bread; high prices (2xplus those of US); and the startlingly pretty Irish girls. We are generally positive about Ireland, but these appraisals all are set against a backdrop of Ireland's pervasive smallness. The New Mexican is at a particular disadvantage where the horizons are close and the skies blue only now and then. I was glad to get home.

* * *

Ken Morgan (2162) writes: "If you like poems, how about this one?" Well, we don't but this one, from the ancient Sanskrit, promotes an interesting philosophy:

Look to this day for it is life,
The very life of life.
In its brief course lie all the realities of existence;
The joy of growth,
The splendor of action,
The glory of power.
For yesterday is but a memory
And tomorrow is only a vision.
But today well lived makes
Every yesterday a memory of happiness
And every tomorrow a vision of hope.
Look well, therefore, to this day.

*js

Supervisory Appointments

DOMINIC RUSSELL to supervisor of Special Stock and Self-Service Stores Section 3742-1, effective Oct. 1.

After joining Sandia in May 1957 as a utility operator, Dom was assigned to the field test organization, working for two years at NTS and at various sites in the Pacific. Since that time, he has been a property clerk, a general stores stock analyst and an order analyst.

Dom served two years in the U.S. Army in Japan with the military government. He and his wife Helen have two daughters and three grandchildren. Off the job, Dom enjoys bowling and gardening.

* * *

CHARLIE CHAVEZ to supervisor of Stores Section 3742-3, effective Sept. 1.

Since coming to Sandia in June 1950 as a messenger, Charlie has progressed through the graded series from 1 through 9; he's worked as a material handler, records clerk, property clerk and order analyst. Most recently, Charlie has been a management aide and has worked as a buyer in Purchasing.

Before joining the Labs, Charlie worked for the Post Office and attended UNM and Western Business College. He and his wife Angelina are both natives of the city. The Chavezes and their three children are avid tennis players, playing in many tournaments.

* * *

Congratulations

Terry Martinez (2530) and John Holovka (1252), married in Albuquerque, Sept. 26.



DOM RUSSELL (3742-1) and CHARLIE CHAVEZ (3742-3)



Nailing down the apple is no old wive's tale. A University of California nutritionist has confirmed an old folk cure for anemia that specified eating apples in which iron nails had been marinating for at least a day or two. The researcher studded Red Delicious apples with 4 to 10 16-penny nails for 4 to 24 hours, then removed the nails and fed the apples to anemic rats. A control group was fed food laced with ferrous sulfate. "The apples," said the researcher, "provided at least as much usable iron as commercial mineral supplements."

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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.

Retirees Gather

SLL RETIREE GET-TOGETHER—Annual gathering of Sandia Livermore retirees drew a record crowd recently at Castlewood Country Club. Earlier that day a number of the retirees returned to the Laboratories to visit their former work locations with their spouses.

LIVERMORE NEWS

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LIVERMORE LABORATORIES

OCTOBER 19, 1979



Hilt DeSelm, the attending senior retiree in length of Sandia service.



Steve Corder, who came the farthest distance, chats with Bud Pearson and his wife Janet.



Hellmuth Woidtke has attended annually (from Sebastopol) since retiring 11 years ago.



Jerry Maloney (right) makes a point with Dean Irvin of Benefits Administration Division 3543.



Doris and Jerry Ward (left) and Bill and Roberta Cole, two of SLL's four retired couples.



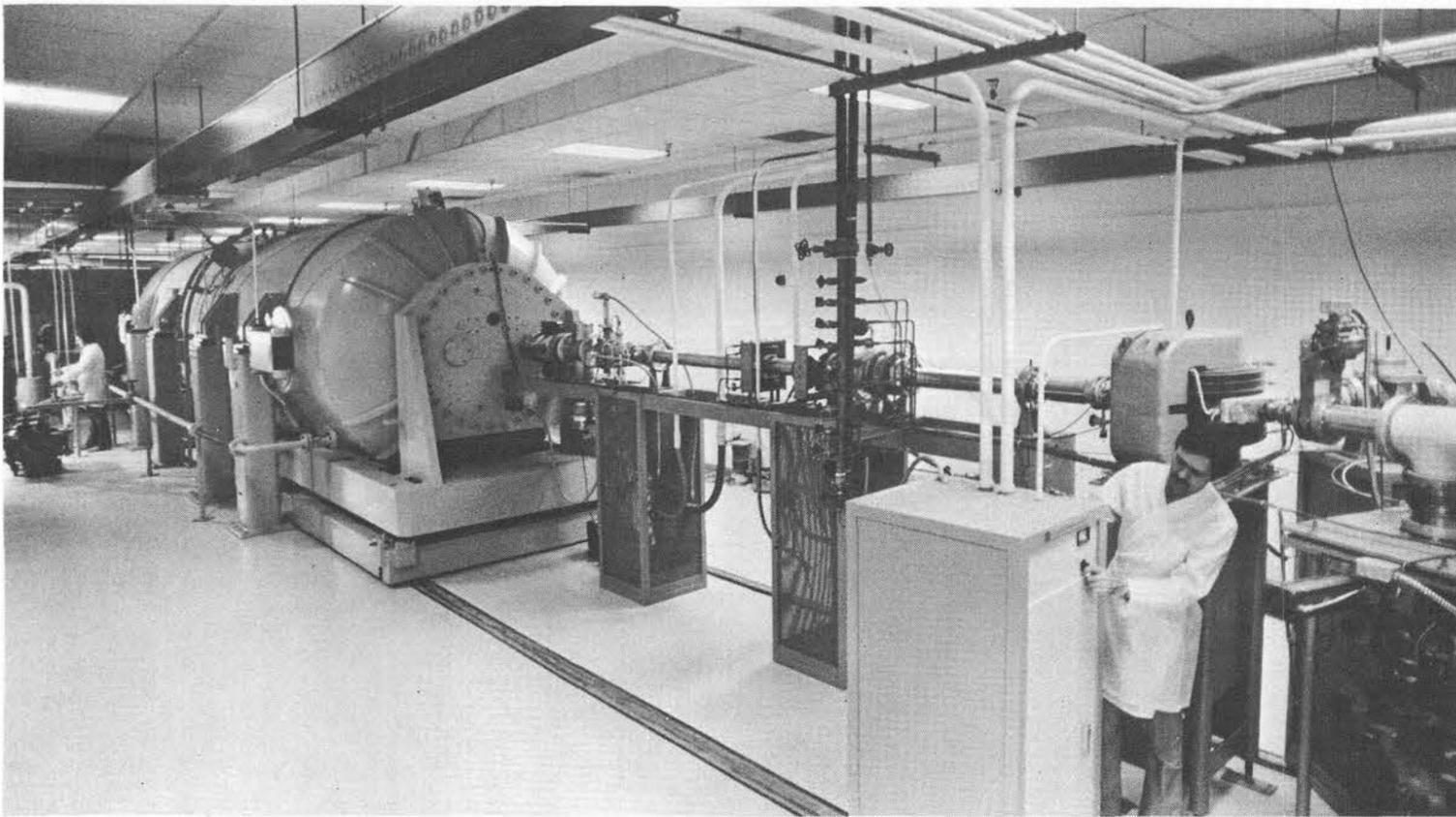
Ben Aiken with Frank Cupps (8265) enroute to SLL's Tech Art Section.

Take Note

Congratulations to Mike Malinowski (8347) who took a third award in Livermore's recent Festival '79 juried art show. His winning entry was for a stained glass panel in the three-dimensional category. Retiree Ben Aikin also won a second award in oils and acrylics for his painting "Exterior Figures."



DOE Undersecretary John Deutch, Proctor Jones of the Senate Committee on Appropriations, and Senator J. Bennett Johnston (from left) toured facilities and were briefed on current projects during a recent visit to Sandia/Livermore. In the Combustion Research Facility with President Morgan Sparks and Dan Hartley (8350), Mike Dyer (8352) explains the "combustion bomb" device which is being used to gain better understanding of particulate formation in stratified-charge engines.



VAN DE GRAAFF tandem accelerator is a powerful research tool for atomic level materials analysis. Ion beams with energies up to 30 million electron volts and velocities up to one-tenth that of light can be obtained with this machine. The beam impacts into a target chamber beyond the back shielded wall. Norman Wing (foreground) and Mark Wilkins (both 5112) ready the accelerator for operation.

At Atomic Level

Tandem Van de Graaff Accelerator Effective Materials Analysis Tool

During its first year of operation, Sandia's tandem Van de Graaff accelerator in Bldg. 884 has made unique research contributions in the area of physics concerned with atomic level composition of semiconductors, thin films and micro-electronic devices. In addition, the facility is used for advanced research on "first wall" materials for fusion reactors.

"What we have," Paul Peercy, Supervisor of Ion Implantation Physics Division 5112, says, "is a very powerful tool for materials analysis. Because of the wide variety of ions which we can accelerate and the high energies which we can obtain, we can non-destructively measure the depth distribution of any atomic species with high sensitivity and a depth of resolution of approximately one hundred atom spacings in the near-surface region of solids.

"We have long been interested in the role of hydrogen in solids—outgassing, permeation, embrittlement, passivation—all of the ways that hydrogen affects materials and especially those used in neutron generators. This led us into implantation and analysis of hydrogen atoms in materials, and for years Sandia has conducted very advanced ion implantation research programs. The work is continuing in both our group and in Division 5111 under Tom Picraux."

Paul continues, "We are still much concerned with hydrogen—it's a major problem in fusion reactor first wall materials. And we are concerned with hydrogen in thin films used in micro-electronics applications. Minute quantities of hydrogen and the manner in which it is distributed affect the electrical performance of many microelectronic devices—for example, the silicon nitride Sandia uses for semiconductor memories. Using the tandem accelerator facility and our diagnostic techniques, we can study the hydrogen in detail and arrive at some

understanding of what's occurring on an atomic level. We can perform a complete non-destructive analysis of the in-depth atomic composition of microelectronic materials and devices."

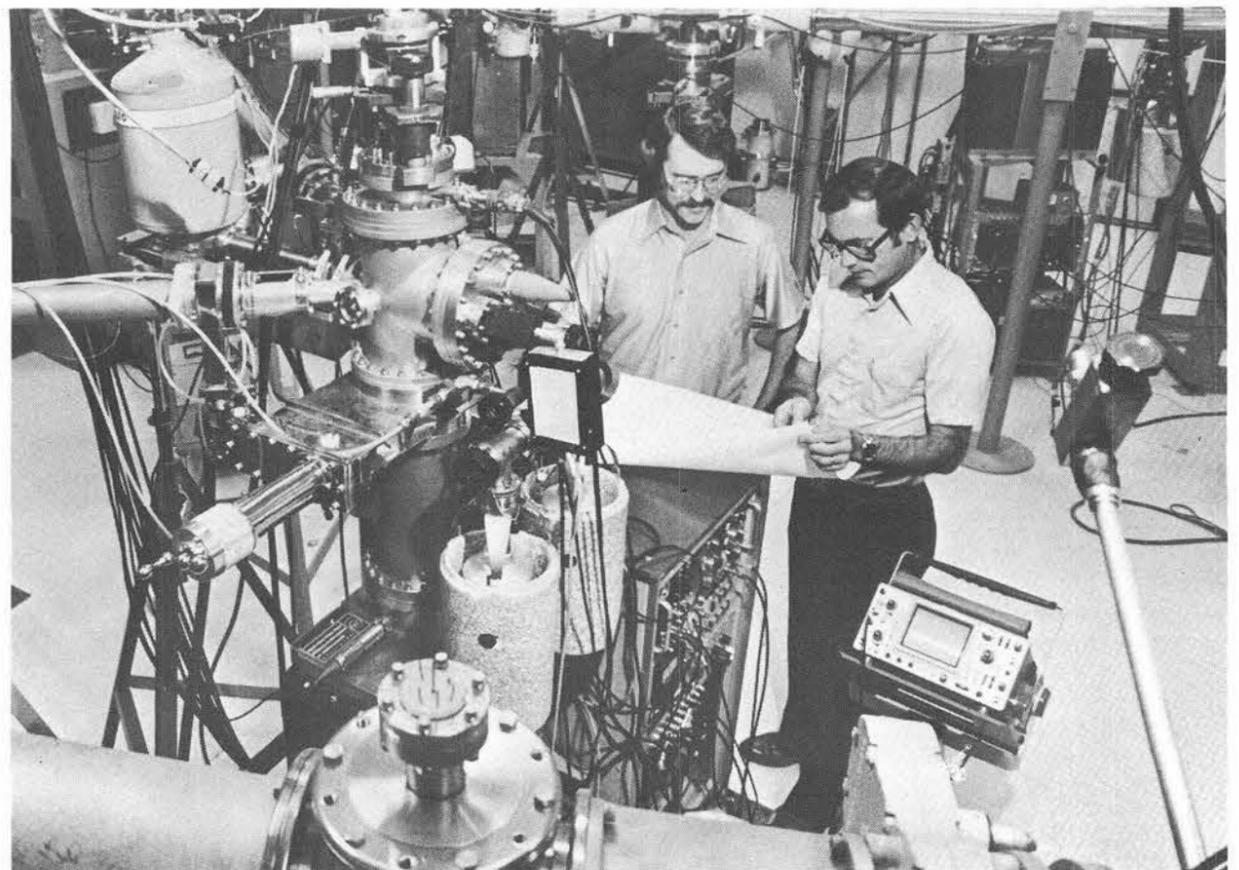
The accelerator facility is actually two machines—a six million volt tandem Van de Graaff accelerator and a 300 kilovolt accelerator. The larger machine is called "tandem" because the ion beam starts with negative ions at ground potential that are accelerated to a high energy positive terminal. They are then stripped of two or more electrons and further accelerated back to ground potential. Because of the tandem action, energies up to 30 million electron volts can be obtained for many

different species of ions. At this energy, the velocity of the ions is approximately one-tenth that of light.

The 300 kilovolt machine is used to implant ions in solids and the tandem is predominantly used for analysis. The two machines share a common vacuum chamber where samples undergo sequential implantation and analysis.

The primary analysis techniques used are ion backscattering/channeling, elastic recoil detection, nuclear reaction analysis and ion induced x-rays.

For ion backscattering/channeling, light ions (typically H or He) are accelerated into a solid of heavier mass atoms. The light ions scattered back at a particular



CONVERGING BEAM LINES in a target chamber of the Van de Graaff accelerator facility provide for sequential ion implementation and analysis of materials samples. The tandem accelerator works in concert with smaller 300 kilovolt accelerator. Barney Doyle and Paul Peercy (both 5112) check experimental data.

angle from the target are then energy analyzed to determine the depth distribution of the different atomic constituents.

The elastic recoil detection technique, which is also used for profiling, reverses the action of ion backscattering. For example, instead of accelerating a light ion such as hydrogen into a sample of silicon, a beam of silicon ions is accelerated into a sample containing hydrogen. Silicon knocks some of the hydrogen out of the sample in a forward direction. By measuring the energy distribution of the recoiled hydrogen, the hydrogen concentration versus depth in the sample can be determined. This technique was developed at Sandia for simultaneously profiling the separate depth distributions of hydrogen isotopes.

"Because of the high energy available," Paul says, "we can profile several microns deep into most solids."

Nuclear reaction analysis is also used for hydrogen isotope profiling. One technique relies on the fact that at sufficiently high energies, a variety of nuclei undergo a resonant reaction with protons to produce a gamma ray. By measuring the gamma ray yield as a function of the energy of the incident beam, the hydrogen depth distribution can be determined with a depth resolution of 100-200 Angstroms and a sensitivity of 200 parts per million.

In ion-induced x-ray analysis, the incident ions interact with the electrons around the nucleus of the atom in the solids to produce x-rays. These x-rays provide a more sensitive means for detecting some impurities in solids than the previously mentioned techniques but do not offer good depth resolution. The different techniques are combined for a complete analysis.

Paul and his group are also conducting research on laser-annealed semiconductor materials where considerably more hydrogen may be incorporated into crystalline materials than by conventional techniques. With laser annealing—very high temperatures for very short times delivered by a powerful coherent light beam—the hydrogen is stabilized into the crystalline structure of the semiconductor.

"We are moving into areas of super-saturated solutions of dopants in silicon and producing hydrogenated crystalline silicon. These materials are being investigated for microelectronic applications, which means tailoring the properties of materials to fit specific applications," Paul says. "These techniques are also being explored for developing new materials for photovoltaic applications.

"The end result of all this," Paul says, "is developing an understanding of materials properties and tailoring materials to meet the requirements of new and exotic applications."

Sympathy

To Sam Griego (1485) on the death of his father in Albuquerque, Oct. 2.

To Seyfred Toledo (1472) on the death of his brother in Gallup, Oct. 9.

To Antonio Salazar (3618) on the death of his father-in-law in Golden, Oct. 2.

To Dorene Yepa (1472) on the death of her father-in-law, Oct. 15.



LAWTON MILLER & DON RIGALI of Exploratory Systems Division 5623 accept President Spark's congratulations for awards bestowed on them by the Air Force's Space & Missile Systems Organization (SAMSO). The awards read: "For providing rapid response and outstanding engineering in developing the primary payload for the first large ballistic recovery vehicle launch in direct support of the Intercontinental Ballistic Missiles Programs." Don, who heads Div. 5623, says the Air Force was particularly pleased with the Labs meeting the nine-months' schedule established for development of the payload.



DOGS, CATS & OTHER — First entry in our series on unusual pets is Denver, a poodle/spaniel mix who isn't himself all that unusual, but his mode of transportation is. Retiree Don Bliss uses his bike as his primary means of transportation and for a while this meant that Denver stayed home while Don did his bike riding. So Don fashioned this box for the pooch. He isn't certain that Denver actually likes the arrangement but, as Don says, "Denver probably figures that anything beats staying home."

Events Calendar

Oct. 19-20—NM Symphony Orchestra, Richard Stoltzman, clarinetist, soloist, 8:15 p.m., Popejoy, 842-8265 or 277-3121.

Oct. 21—Albuquerque Youth Symphony, 3 p.m., Popejoy.

Oct. 22—Audubon Film: "Into Australia's Red Center," 7:30 p.m., Popejoy.

Oct. 26-Nov. 3—Tiffany Playhouse: "Frankenstein," 8 p.m., Sheraton Mercado Mall, Old Town.

Oct. 28—Special Holiday Halloween performance by the NM Symphony Orchestra Ensemble, free, 4 p.m., Kimo Theater.

Oct. 28—Music Vesper Series: Gillian Weir, organ concert, 4 p.m., 1st Methodist Church, 4th & Lead SW.

Nov. 2-3—Albuquerque Opera Theater: Menotti's "The Consul," 8:15 p.m., Popejoy.



NANCY ARNALL & CAP—Nancy was one of the first to get a Sandia Labs cap from the latest shipment. She's an electronic fabrication apprentice in Org. 1474. Caps run \$4.25, are available in LAB NEWS office (Bldg. 814). Proceeds go to support South Highway 14 Village Project.

Fun & Games

Basketball—An organizational meeting for team captains and those interested in playing will be held Tuesday, Oct. 23, at 5 p.m., at the Coronado Club to set the schedule for the upcoming fall season.

* * *

Running—Do you run when you travel? Your Adidas and running shorts take up little room, and the novelty of doing your mileage in a different setting can make the run more enjoyable. LAB NEWS is planning a series of short articles that describe good running courses in the various cities most often visited by Sandians. According to Traffic, they are: Washington, Amarillo, Las Vegas, Kansas City, San Francisco, Los Angeles, Santa Barbara, Santa Maria, Tampa/St. Pete., Seattle, Pasco, Philadelphia, Hartford, Boston, Providence, San Diego, Dallas and St. Louis. Have you found a good place to run in any of these cities? We'd appreciate a paragraph or two describing the course—including its approximate length, proximity to hotel/motel, and whether a vehicle is needed to get to it. Send your write-up to John, LAB NEWS, Org. 3162.

* * *

Triathlon—Set for Sunday, Nov. 4, at 8 a.m., the third annual Triathlon of Albuquerque, the Jay Benson Memorial, is sponsored by the Coronado Club and is a unique athletic event. Contestants first bicycle ten miles, then run five miles, and conclude with a quarter-mile swim, all back-to-back with no pause between events. Winner is person with shortest elapsed time from the start of the biking phase to the conclusion of the swimming phase. The Triathlon is held on Base, with the first two phases performed over the road south to Manzano Base; the Olympic pool is used for the swim (a quarter-mile is eight lengths). The entry fee is \$3 and forms are available in the LAB NEWS office as well as at the Coronado Club. All entrants get a Triathlon T-shirt, and trophies are awarded to persons excelling in the various brackets.

* * *

Powerlifting—Richard Cernosek (1254) was meet director at the recent invitational powerlifting meet, held on KAFB, and he reports that a number of Sandians participated. Chuck Barnes (5133) set a state record in the squat with a lift of 450 lbs. in the 165-lb. class. Hamp Richardson (4218) had a total lift of 1000 lbs. and Dave Douglass (5831) a total of 800 lbs. Cernosek himself set two state records in the 220-lb. class, 560 lbs. squat and 1615 lbs. total.

* * *

Self-Defense—C-Club rec director Skip Dougherty would like to determine interest in a 6-weeks, twice-a-week self-defense course to be instructed by Lou Zelnio (3642), a 1st degree black belt holder. Two other instructors would assist, and the class would be limited to 18 people. Classes would be held on Mondays and Wednesdays from 5 to 6:30 at the Base gym.

Cost, \$30. Call Skip on 4-8486 if you're interested.

* * *

Aerobic dancing—Session no. 3 of this popular way of gaining fitness is set to begin Oct. 29 at the C-Club. Cost is \$24 for two 1-hour classes per week, Monday and Wednesday. You don't have to be a dancer, it's for men, too, and you do your thing to music—not the dreamy kind, more like the polka at a Polish wedding after a few toasts. Class size is limited to 30. Call Skip on 4-8486 to sign up.

* * *

Shooting—Gary Malin (3432), Jim Swanson (DOE) and Franco Briceno (DOE) distinguished themselves in the recent Police Combat State Championship matches held at Los Alamos. The three are among the "Governor's 20 Winners"—those shooters who placed in the top 20.

Gary had a 1477x56, Jim a 1481x98, and Franco a 1433x55. All three are security inspectors.

* * *

Skiing—The Coronado Ski Club's Get-in-Shape-for-Skiing class has already had its first session, but if you're interested, it runs Tuesdays and Thursdays at the Base gym starting at 7 p.m. The classes extend through Dec. 13. Bob Butler, 4-4940, is the contact.

A safety and maintenance clinic has been set for Tuesday, Oct. 30, from 6:30 to 8:30 at the C-Club, with Brian Gallagher of Action Sports presiding. Brian will give instruction on ski and binding maintenance, and binding release settings will be checked (so bring your boots as well).

The Club's first major ski trip, to Steamboat Springs Jan. 12 to 19, still has openings. Bob Butler, 4-4940, should be called.

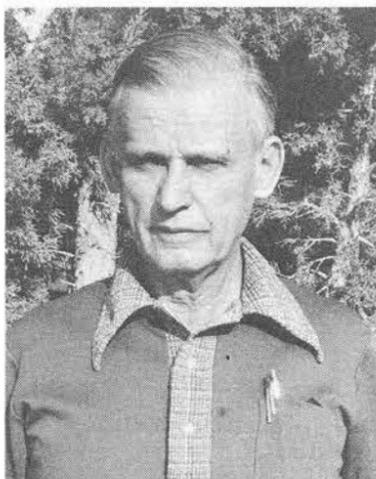
R E T I R I N G



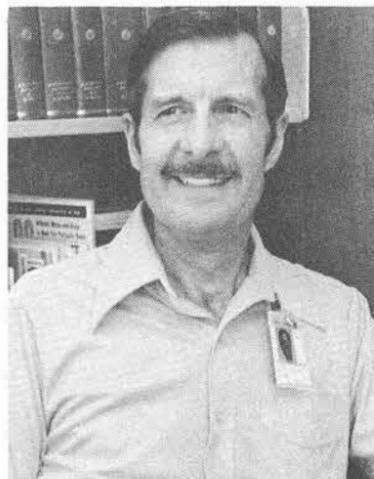
Walter Halpin (1221)



Sol Chavez (3155)



Eugene Acton (1245)



Charles Maak (5832)



Vernon Barcafer (1126)



Eulalio Trujillo (3614)



Marie Carlson (2457)



Marvin Aaron (3421)



THE PRES DEPARTS—LAB NEWS photographer Bill Laskar says he's snapped every president since (and including) Truman, so he was one of the first in line to get press credentials when Jimmy Carter came last week. Bill took this

shortly before the President left Albuquerque after meeting with western governors in the city.

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 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

SANDIA LABS caps, new shipment now in, \$4.25. LAB NEWS office, Bldg. 814, S. Hwy. 14 Village Project.
 14" or 15" wheels to fit GM or Chrysler products, \$4 ea. Prevender, 299-5253.
 CAMPER SHELL, LWB, insulated & lighted, walk-in-door, woodtone & white, \$400 firm. Naranjo, 294-7714 after 6.
 KITCHENAID Superba built-in dishwasher, copper-tone finish, 10 yrs. old, \$35. Cilke, 296-3665.
 PIANO, Cable upright, 48" high, walnut, just tuned. Holmes, 292-0898.
 CLARINET, Reynolds Medalist, \$100 or make offer. Montoya, 881-6898.
 BOSCH QUARTZ Iodine headlights, 5 1/2" (quad), high & low beam, \$25/pair. Shane, 884-7925.
 FISHER 500C stereo receiver, pair Janson speakers in cabinets, matching console for components. Linerooth, 884-8615.
 END TABLES, coffee tables: redwood & other woods, burls from northern Calif. Hesch, 256-0161.
 TIRE CHAINS, L78-15, and LR78-15, never used, \$30. Bedaux, 345-1465.
 PROJECTOR, Kodak carousel Mod. 600H for 35mm slides, \$95. Lenz, 298-9121.
 MAG WHEELS, 15 x 7, \$15 ea. Sokel, 299-8130.
 SIX mink pelts, four female, 2 male. Skillern, 298-5150.
 VASQUE hiking boots, size 6N, worn 4 times. Rug, 293-8581.
 PUPPIES, six, mother purebred pit bull, born Sept. 27, avail 5-6 weeks following birth, \$15. Granger, 869-2528.
 CAMPER SHELL, aluminum over wood frame, 8x6x2 w/door & window, \$100 or best offer. Hochrein, 299-5225.
 SINGLE BED, extra long; 4-dwr, metal file cabinet; dbl. bed hide-a-bed sofa; 3 chairs; desk & chair; window AC; toaster; 10-spd. bike. Haas, 294-2879.
 COUCH, \$50; Singer sewing machine, \$25; Hoover attachments, \$10; swag lamp, \$15; 2 wood frame screens, \$5/ea. Young, 256-9158.
 GENTLE 8-yr.-old paint mare, 14.2 hands high, \$475. Brumley, 877-2667.
 MOTORCYCLE TOTE-BOX w/side hinge to avoid back rest, \$35; square tube Bates luggage rack for BMW, \$15. Anthes, 293-0926.

VANITY for bathroom w/lavatory, \$45; TRS80 computer interface minidisk 64Kbytes memory, DOS basic, \$99; misc. floppy diskettes. Magee, 881-1544.
 MAN'S golf clubs & bag, \$200 or make offer. Jackson, 345-4411, 883-8842.
 ROCK SLAB cutting saw, 14", extra blade, \$80. Calek, 281-3285.
 BALDWIN Orga-Sonic concert organ w/Leslie speaker, solid walnut cabinet & bench, asking \$750, consider offer. Lyon, 299-9423 or 884-8515.
 FRANCHI over/under trap gun, 30" barrels, F/M, \$500 or trade for Mod. 870 trap plus \$\$\$, Benson, 268-9727.
 TIRES, 2 L78/15 studded, 1 wheel, \$30; trade 7 GM 9.50 x 16.5 wheels for 5 GM 7.50 x 16 wheels. Warthen, 884-8172.
 TOOLS: shopsmith lathe chisel set, new, \$30; Craftsman jigsaw w/self contained motor, \$25. Bear, 881-7128.
 GERMAN violin & case, made about 1900, \$550. Downs, 293-9320.
 CARPET, rust color, short pile shag, from new house 1 mo. old. Franklin, 821-8440.
 1970 TENT TRAILER, cooker, cold box, elec., new tires, sleeps 8, \$850; climbing frame, swings, etc., \$50. Worledge, 294-7891.
 WOMEN'S GOLF CLUBS w/bag, \$50; blue formal, used once, size 8-10, \$15; amber/black lg. light fixture, \$10. Rodriguez, 883-8424.
 ORGAN, electronic Hammond Piper, cost \$1100, sell \$700. Jones, 298-8492.
 SECTIONAL garage door hardware, \$9; Clairol hairsetter, \$12; elec. knife, \$7; ceramic cat, 12" high, \$3; humidifier, \$3. Joseph, 299-6989.
 1/4 HP electric motors, 3 ea., \$14.50 ea. or all for \$40 cash. Williams, 266-6724.
 DOBERMAN PUPPIES, tails docked, dew claws removed, 1 male, 2 female, \$40 ea. Minor, 865-5117.
 SEARS HD router, case, table, edge guide, contour finger, templates, trammel point, bits, \$55, no checks. Hobart, 281-5331.
 PICKUP truck tire, w/tube, snow tread, 7.50x16, Firestone Town & Country, \$10. Freyermuth, 299-2053.
 AMERICAN Airlines special 50% discount coupon, \$50. Gregory, 268-2022 after 5.
 LHASA APSO PUPPIES. Kuehn, 293-2727.
 THOMAS ORGAN, Playmate, bench & books, \$800. Trujillo, 293-0755 after 5.
 GOLF sand wedge, Wilson X-31, \$15; 13" auto wheel, 4-hole, \$7. Stang, 256-7793 after 5.
 SKI BOOTS: Hansen size 9, \$45; Koflach, size 7, \$20; boys' stretch ski pants, size 8, \$5; brass fp screen, \$35; garage window steel casement 39 1/2 x 28 1/2, \$25. Shipley, 298-2433.
 HAM STATION 80/10 MTR Swan 270, AC/DC vox mike, spare tubes, SWR meter, all for \$350 or make offer. Nogle, 299-3863.
 GM 15" wheels from '77 Grand Prix Pontiac, set of 5, \$25; Head skis & bindings, \$100; other skis. Chandler, 296-3323.
 DIAMOND RING, Tiffany setting, 1/4 carat, new cost \$850, sell \$400.

McQueen, 296-6725.
 SEARS Commentator elec. typewriter, 44-key port., power return, correction & stencil keys, cassette ribbon, \$175 cash. Beardsley, 292-5910.
 BELL STAR II helmet, orange, size 7, used little, \$110 new, \$80 or best offer. Yingst, 293-7980.
 ETHAN ALLEN love seat, \$50. Gammon, 268-1032.
 REFRIGERATOR, 14' Frigidaire, yellow, 2-dr., \$200. Maloney, 821-6661.
 RECORD CABINET, solid maple, 30x29x18", \$55; black wrought iron etagere, 6' high, 4 glass shelves & plant hanger, \$60. Dalphin, 265-4029.
 TWIN 16hp farm tractor w/attachments; built-in cook top, double oven, vented stove hood; dual panel ray heater; misc. doors. Ward, 869-3580, 884-9266.
 GARAGE SALE: Magnavox stereo console; Char Broil BBQ; 10-spd. bicycle; Sears radial arm saw; misc. Clement, 298-4994.
 PACK SADDLE, X-brace type, leather & sheepskin trim, w/harness, \$100. Baxter, 344-7601.
 FIREPLACE SET w/tools, \$25; 1200x 16.5-8-ply nylon truck tire, half tread, \$25. Stephenson, 299-3914.
 TONNEAU COVER, approx. 52"x55" w/center zipper, \$5; nurse uniforms, size 8 & 10, \$8 ea. Coalson, 298-0061.
 TWO American Airlines discount coupons, \$50 for the pair. Craven, 298-0978.
 GARAGE SALE: baby items, La Leche carrier; trains; TVs; some electronics; bike parts, Sat. 9:30-4, 1822 Somervell NE. Myer, 294-3368.
 BED, king size mattress, dual box springs, metal frame, \$75. Hansen, 898-3173.

TRANSPORTATION

'67 CHEVY Suburban, 292 cu. in., 6-cyl., 4-spd., positrac, trailer hitch, 86,000 miles, \$850. Granoff, 296-6289.
 '50 WILLYS JEEP, \$400 or make offer, not running, but has all parts. Gallegos, 881-1363.
 '71 MAVERICK, mechanics special, 2-dr., 6-cyl., \$550 or make offer. Montoya, 881-6898.
 '72 PONTIAC Grandville, AC, AM-FM radio, new tires, PB, PS, \$1000 or best offer. Griffin, 294-5702.
 '75 RABBIT, 4-dr., AT, AM-FM stereo, reg. gas, bluebook price or trade for newer pickup at bluebook exchange. Gallegos, 255-5264.
 '71 PONTIAC Catalina, 2-dr., AC, radio, new tires, new battery, \$800. Pollard, 296-1202.
 '75 TOYOTA Land Cruiser, low mileage, new wide tires, \$4500. Hamilton, 293-3640.
 '69 DODGE stn. wgn., 78,000 miles, recent work done, \$450 or make offer. Eldredge, 881-4528.
 '72 OLDS Cutlass, 2-dr., V8, AC, PS, AT, bronze & white, radio, Botner, 298-6007.
 ELEC. MOPED, 2-spd., Mono shock, headlight, tail light, stoplight, front & rear brakes, 25 mile range, complete w/charger, \$295. Bassett, 898-1840.
 '55 FORD sedan w/OD, 31,000 miles,

\$1800. Spence, 266-3002.
 '63 CORVAIR 4-dr., AT, R&H, SR tires, \$2500. Kerr, 299-7527.
 4-WD PLYMOUTH Trail Duster, Sport, AC, PS, AM-FM-8T-radio, loaded w/extras. Shively, 867-5439.
 '78 280Z, AC, 5-spd., 8900 miles, special paint, transferrable 3-yr.-50,000 mile warranty. DeWerff, 298-1029.
 '73 VOLKSWAGEN, 7-pass. bus, \$2850. Whitley, 842-6715.
 SCHWINN Stingray boys' bicycle, 20" wheels, thornproof tires, maintained at Vans, \$35. Atkins, 298-5762.
 '74 HONDA 750K, 7500 miles, wind-jammer SS, bags, luggage rack, quartz light, Mulholland shocks, new Michelin rear tire. Warren, 294-7958.
 MOTO GUZZI Le Mans, 1000cc, unique, many extras, \$3300. Watterberg, 294-6759.
 '76 CHEVY Nova, six, hatchback, AC, AT, PB, PS, white w/blue trim, \$2895. Brooks, 299-1884.
 '67 JEEPSTER Commando 4-wd., V6, 3-spd., restored condition, \$2400 or best offer. Tucker, 877-1140.
 BICYCLE, women's Schwinn Suburban 5-spd w/lights, baskets, low miles, \$75. Northrop, 298-5849.
 '78 MUSTANG, 10,000 miles, 4-spd., bucket seats and console, Ghia pkg., AM-FM stereo, white, below book at \$4500. Ray, 298-0408.
 '67 OLDS Delta 88, AT, PS, PB, AC, low mileage, \$575. Fite, 255-6943.
 '73 MERCURY Cougar, \$2000 or make offer; 11' Mobile Traveler pickup camper, \$1500. Hansen, 898-3173.
 '74 OLDS Custom Cruiser stn. wgn., loaded, \$1500. Strassel, 298-3816.

REAL ESTATE

LOT overlooking lake in Lake Havasu, Ariz., sell or trade. Noel, 298-2142.
 '78 MOBILE HOME, 14x70, 2-bdr., 1 1/2 bath, evap. AC, skirted, all major appliances, \$3000 down & take over payments. Gonzales, 821-5356.
 '73 WAYSIDE 12x60, 2bdr., 1 bath, awning, fully equipped, near bus, set up in adult park. Jaramillo, 294-4457 after 5:30.
 1/2 ACRE +, Valencia, 10'x36' mobile home w/12'x42' addition, fp, 2 bdrs., 1 1/2 baths, 2 wells, pumps, fruit trees, pump house w/storage, \$28,000, \$6000 down. Dunning, 865-9479.
 LARGE ADOBE, vigas throughout, stream borders property, baseboard HW heat, 3 stoves, community water system, custom cabinets. Gall, 1-834-7307.
 WOODED mountain land, views of Sandia Ski area, Santa Fe, Los Alamos, partial stream, some meadow. Clement, 298-4994.
 '74 SCHULTZ mobile home, 12x70, 2-bdr., W/D, all appliances, North Hills MHP, \$8900 is \$2800 below appraisal. Bullington, 299-1433.
 2.5 ACRES, 1 mile NE of Moriarty, Sweetwater Estates, elec., good water, bordered by 2 county roads, \$2500/acre, low down, terms. Cook, 869-6921.

FOR RENT

TOWN HOME, 3-bdr., 2 bath, fenced yard, 2-car garage, NE heights, near Sandia bus, \$480 + gas/elec., avail. mid-Dec. O'Bryan, 293-4621.
 TAOS SKI Valley chalet, 3-bdr., 1 1/2 bath, sleeps 8+, fully equipped, ski to lifts. Marion, 294-8256.
 SKI CHALET, near Taos Ski Valley, fully equipped kitchen, sleeps 8. Peet, 294-1250.
 2-BDR. CONDO, 1 1/2 baths, washer-dryer, appliances, swimming pool, tennis courts nearby, \$325 (includes maintenance fee). Wilson, 821-8069.
 PURGATORY condominium, ski to & from, furnished 2-bdr., 2 bath unit, view, fp, sleeps 8. Carson, 898-8847.
 3-BDR. HOUSE, carpet, fenced backyard, near base, \$350/mo., \$100 DD, water paid. Cooke, 294-3233 after 4.

WANTED

VAN POOL being organized for Placitas, Algodones & Bernalillo area to SLA. If interested, call Salazar, 4-3959, or Davis, 4-6730.
 FRONT BUMPER for '67-'68 Cougar. Bland, 265-6286.
 TELEPHOTO & wide angle lens for Argus C-4 camera. Harris, 255-6577.
 2 1/2 - 3 1/2 CU. FT. electric cement mixer. Carroll, 296-0256.
 SHARE RIDE, vicinity of Del Rey Mobile Home Park to Area 1, will alternate driving days or weeks to suit. Courtin, 821-2042.
 PASSENGERS to share expenses of 4- to 5-hr. weekend flights to Austin/Houston area in Cessna-182, dates negotiable. Schkade, 265-5473.
 L-SHAPED pole for basketball backboard support. Prevender, 299-5253.
 3-BDR. HOUSE on 1/2 + acres w/ approx. 2000 sq. ft. & good access to Sandia. Crooks, 296-6182.
 WHEEL for '67 VW bug, have 5-hole, one for trade or sale. Wentz, 881-7125.
 KIDS' pedal tractor, AMF power chain brand or equivalent. Schroeder, 344-1011.
 USED automatic washing machine; FM stereo tuner (solid state). Mayer, 294-3368.

LOST AND FOUND

LOST—Brown wallet, man's gold wedding band, diamond ring, bike lock, man's 2-tone blue RH glove.
 FOUND—Gold ankle bracelet, man's off-white cardigan, black-frame bifocal glasses in black case, silver religious necklace, gold-frame bifocal glasses in black case, brown/black pipe. LOST AND FOUND, Bldg. 832, 264-1657.

Coronado Club

Take Note

HAPPY HOURS—Tonight, veal cordon bleu tops the buffet spread while a group called Y Sus Gatos makes the happy music. Next Friday, Oct. 26, the Carter Express Disco is in charge of the music while the Club's kitchen staff goes all out with Chateaubriand with mushroom sauce heading the buffet menu. To reserve tickets for Friday buffets, call the Club office, 265-6791, by midweek.

TOMORROW IS OKTOBERFEST at the Club. This means German specialty items such as sauerbraten and bratwurst on the super buffet spread, German beer flowing light and dark plus lots of singing and dancing. Prosit! Believe it or not, Anastassios Nicolaidis and his authentic German band will make the oom-pah music. Call the Club office *right now* to find out about reservations.

ASSORTED SPOOKS, goblins, monsters, witches and vampires crawl out of the woodwork on Halloween (Oct. 31) starting at 6 p.m. to scare the pants off anyone who has the courage to wander through the Club's Chamber of Horrors. Set up to entertain the kids, the Chamber also welcomes parents. There will also be bobbing for apples, packages of goodies, etc., for kids.

TRAVEL—a Caribbean cruise, packages to Europe and Hawaii—what else could you want? See Travel Director Ed Neidel in the lobby tonight between 6 and 7 and tell him about it. He has the full scoop.

JUNIOR BOWLERS—There's a few spots left in the Coronado Club junior bowling league for youngsters age 7 through high school. The group meets Saturday mornings starting at 8:45 at San Mateo Lanes. For more details, call Cis Kelly (3542), 4-6989.

Bread baker's please note. Those of you who tried Reece Gilmer's prize-winning recipe for whole wheat bread (LAB NEWS, Oct. 5) have probably produced a bland loaf slightly thicker than Mideastern pita bread. This is no fault of Reece's. Gremlins, or whatever those things are that attack type galleys, somehow changed the yeast measurement from tablespoons to teaspoons. And to the best of our knowledge, silverfish also ate an entire line of type in the list of ingredients, the one dealing with sweeteners. The rest of the recipe was O.K., so here, for the record, is a complete (and correct) list of ingredients:

BASIC WHOLE WHEAT BREAD
(Makes 3 1/2 lb. loaves)

- 3 1/2 cups milk
- 1/2 cup oil or shortening
- 1/2 cup sugar, honey or molasses
- 4 teaspoons salt
- 2 3/4 tablespoons dry yeast
- 7 1/2 to 9 cups flour
- 1 egg (room temp) beaten

* * *

Ham radio operators at Sandia have been invited to participate in the 20th annual CQ-WE Amateur Radio Contest. Pete Havey (5842) is coordinating at Sandia. The contest will be held Nov. 10-11. More info from Pete at 4-1273.

* * *

Former State Department official Christian Herter will speak on United Nations Day, Oct. 24, at a banquet starting at 6:30 p.m. at the KAFB East Officers Club. He will discuss "The United Nations at 34"—marking the 34th anniversary of the founding of the UN.

Awards to organizations helping children will also be made at the banquet. The United Nations has named 1979 as the "International Year of the Child." Mrs. Bruce King is New Mexico chairman for the International Year of the Child and will present the awards.

The banquet is open to the public. For tickets (\$7 each), call Marjorie Johnston, 842-8614.

* * *

The YWCA Women's Resource Center will hold an "Abuse From the Parents' Perspective" workshop on Oct. 23 at 1:00 p.m. at the downtown building, 316 Fourth SW. The workshop is being presented by Parents Anonymous. A "Living Estate Planning" workshop on Oct. 23, and a "Conflict Resolution" workshop on Oct. 25 are also scheduled. Both meet from 7 to 9 p.m. Call 247-8841 to sign up for any of these courses.

* * *

"Nacimientos" is the name of an art exhibition that features nativity sets by Indian artisans from the Southwest, to be shown at the Adobe Gallery in Old Town starting Oct. 28. Thirty-seven artists will display unique nativity sets, most formed from clay but some carved from wood, deer antler, or cactus spine. The Indian

artists represent the Navajo, Papago, Pueblo and Choctaw tribes. Gallery hours are 10 to 6. It's located at 413 Romero NE.

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Registration for the U of A's term II evening classes is being held today, Oct. 19, from 3 to 7 p.m., in Bldg. 602, KAFB. Classes begin Oct. 22. Term II offers more than 40 accelerated 8-week classes in fields ranging from accounting to speech. For more information, call the Office of Admissions on 831-1111, ext. 312.

* * *

In our last issue we carried a few lines to the effect that color prints of Tech Area I were available in limited quantity, and people wanting a copy should drop a line to LAB NEWS. Well, we had 20 copies to give away and something like 275 people applied, leaving us with mouths agape and a pretty fair deficit. At the moment we're holding our heads trying to decide what to do. Please be patient.

* * *

Murl Moore (3654) called to report next week's Arabian Horse Show at the State Fair Grounds. The national show runs from Oct. 21 to 27, and some 1400 Arabians will be competing for titles in 45 classes. Events begin every day at 8 and continue through the evening. It's free in the morning, but there's a general admission charge in the afternoons and evenings. If you like horse trading, there will be an auction of 40 Arabians Thursday evening at 7 at the Horse Arena. It's free, though the horse flesh is expected to run to \$10k and more per animal. And on Friday evening there's the stall decoration contest. In this, horse owners decorate their stalls to resemble the Bedouin tent households of the Arabian culture.

* * *

If you think disco dancing may be your thing, Pete Slater (5641) and his wife, Nancy, may have an offer you can't refuse. They're planning classes at the Coronado Club in the two-step, the Latin Hustle and/or the New York Hustle. If disco turns you off, don't despair, however, since Pete and Nancy are also planning a ballroom dancing course featuring all-time favorites like the waltz, the cha-cha, swing and tango. Classes, on dates to be selected by consensus, will begin about 4:45 p.m. Final schedules and costs will be announced after prospective students let the Slaters know what they'd like. Contact Nancy or Pete at 294-5858.

* * *

The 24th annual Fun Fly for radio controlled model airplanes is set for the Oct. 27-28 weekend with aerobatics, precision flying demonstrations, pylon racing and aerial dogfights scheduled as part of the competition. Sponsored by the Albuquerque Radio Control Club, the meet is open to the public. The flying begins at 10 a.m. both days at La Boca Negra Park on the West Mesa near Volcano Cliffs.



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