



AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
PACIFIC DIVISION

NEWSLETTER

Number 42

January 5, 2004

85th ANNUAL MEETING OF THE PACIFIC DIVISION AT UTAH STATE UNIVERSITY Logan, UT June 13–17, 2004



Utah State University
(Photo courtesy USU Photographic Services)

2004 ANNUAL MEETING OF THE AAAS PACIFIC DIVISION

The AAAS Pacific Division and its affiliated societies and sections will hold their 85th annual meeting on the campus of Utah State University. The Division's Program and Special Events Committee is making a special effort to design a program of exceptional scientific merit.

All scientists and graduate and undergraduate students are invited to present research papers of their research results either orally or as posters. All registrants for the meeting may attend the scientific sessions as well as participate in the many

other activities. Some activities, notably field trips and selected workshops, require advance registration and payment of additional fees. Drs. Lynn Dudley, Department of Plants, Soils and Biometeorology, and Rhonda Miller, Department of Agricultural Systems Technology and Education at Utah State University, are co-chairs of this year's annual meeting.

Please visit the Pacific Division website for the latest news about Division activities and updated meeting information. E-mail should be addressed to aaaspd@sou.edu.

<http://pacific.aaas.org>

This *Newsletter* contains a preliminary description of the scientific program, a call for papers, directions for preparation of abstracts, and information about early registration, housing, transportation, special events, and field trips.

The following societies and sections will sponsor sessions at the meeting. The names and addresses of session chairs are listed on page 15.

Crop Science

Western Society of Soil Scientists

Agriculture and Horticultural Sciences Section

Anthropology and Archaeology Section

Atmospheric and Oceanographic Sciences Section

Biological Sciences Section

Chemistry Section

Computer and Information Sciences Section

Earth Sciences Section

Ecology and Environmental Sciences Section

Education Section

Engineering and Industrial Sciences Section

Health Sciences Section

History and Philosophy of Science Section

Psychology Section

Social, Economic and Political Sciences Section



UTAH STATE UNIVERSITY AND VICINITY

Utah State University (USU) is located in Logan, at the southern end of the 60 mile long and 15 mile wide Cache Valley. Cache Valley is a true graben, in which the relatively level valley floor has dropped downward between a fault at the base of Wellsville Mountain to the west and the East Cache Fault and the prominent Bear River Range to the east. During the Pleistocene, the valley was submerged by an arm of Lake Bonneville, the ice-age predecessor to the Great Salt Lake. For a time, Lake Bonneville's outlet was north through the valley into Idaho. The University is constructed on the large, gravelly delta formed by the Logan River as it entered Lake Bonneville. The delta lies at the Provo level and wave cut shorelines on the mountains behind the city mark the highest level of Lake Bonneville.

Located at 4,775 feet in elevation, Logan experiences an average high temperature of 79 degrees F during June. Extremes of heat or prolonged hot spells are uncommon. Humidity is low and summer nights are cool, averaging 46 degrees F in June.

The region is also known as "Bridgerland" in honor of the famous fur trapper, scout and guide, Jim Bridger. Bridger went to work for the Rocky Mountain Fur Company at the age of 20, trapping, exploring and guiding expeditions for 46 years. He is credited with the discovery of the Great Salt Lake, although he believed that it was the Pacific Ocean. During the winter of 1824-25 Bridger and the Fur Company were trapping in what was then known as the Willow Valley. Trapping in the valley was excellent that winter, and the bundles of furs were "cached," or hidden, until spring when they could be sent to eastern markets. Subsequently, the valley became known as the Cache Valley and it became a major rendezvous location for trappers. The first permanent settlement in the valley occurred in 1856 when seven families at Brigham Young's direction settled at what was first named Maughan's Fort and subsequently became the town of Wellsville.

Logan was founded in 1859. It was named by President John P. Wright after the Logan River, which ran by the early

(continued on page 3, right column)

CONTENTS

2004 Meeting of the AAAS Pacific Division ...1-15	
Utah State University and Vicinity	2
Registration	4
Housing and Food Services.....	4
Transportation and Parking	9
Meeting Rooms	9
Poster Sessions, Special Events	10
Public Lectures	11
Field Trips	11
Submitting Papers	11
Student Awards	12
Symposia.....	12
Contributed Papers	14
Society & Section Program Organizers.....	15
Division News from the 84th Annual Meeting.....	3
Presidential Lecture	16
Annual Meeting Forms	24-30
Call for Papers and Abstracts	24
Call for Workshops, Symposia for 2005	25
University Residence Hall Application	26
Advance Registration	27
Book Sale	30
Maps	31

This *Newsletter* ©2004 by the AAAS, Pacific Division.
All rights reserved.

All photos, unless otherwise indicated, were provided by Roger G. Christianson.
Printed in the U.S.A. by Valley Web Printing, Medford, OR.



Student Awards of Excellence winners, enjoying a lighter moment after the Division banquet at the California Academy of Sciences.

DIVISION ACTIVITIES AND STUDENT AWARDS AT THE SAN FRANCISCO MEETING

In June, 2003, the Pacific Division held its 84th annual meeting jointly at San Francisco State University and the California Academy of Sciences, helping the Academy to celebrate its 150th anniversary. The meeting was very successful, with 364 registrants (an increase of 14% over our last San Francisco meeting in 1999), 14 symposia, two poster sessions, three contributed paper sessions, and three field trips.

The meeting opened on Sunday morning with two field trips. One went to the Monterey Bay Aquarium and Hopkins Marine Station in Monterey, while the second examined geological features in the San Francisco area, especially as they reflected the actions of plate tectonics acting on the western margin of North America. Sunday evening featured a well-attended and very interesting lecture presentation, "Botanical Heroes and the Flora of San Francisco," by Dr. Thomas Daniel of San Francisco State University.

The technical program began Monday morning and ran through Wednesday afternoon. As part of the celebration of the California Academy's 150th anniversary, the Academy underwrote funding of three major symposia: "Biodiversity: Past, Present, and Future," organized by Drs. Stan Bloom, Brian Fisher, Michael Ghiselin, Alan Leviton, Nina Jablonski, and Peter Roopnarine (all of the California Academy of Sciences), "Museums and Other Institutions of Natural History: Past, Present, and Future," organized by Drs. Michele L. Aldrich (Cornell University) and Alan E. Leviton (California Academy of Sciences), and "The Future of Taxonomy," organized by Drs. Stan Bloom, Brian Fisher, Michael Ghiselin, Nina Jablonski, Alan Leviton, and Peter Roopnarine (all of the California Acad-

(continued on page 5, left column)

(continued from page 2, right column)

encampment, and also an Indian chief named Logan who had been kind to the settlers in the mid-west. The first buildings were two rows of log cabins with dirt floors and sod roofs, built facing each other after the pattern of Salt Lake City. The streets were wide enough for several wagons to pass each other at one time. The log cabins were replaced with native stone structures and finally structures of brick with wood framing. Although there were other settlements in the valley, Logan attracted the greatest number of settlers because of its location and abundant water supply. At the heart of the city is the Logan Latter-Day Saints Temple. Dedicated in 1877, it is the third oldest LDS temple in Utah and the structural and spiritual center of the valley. Downslope from the temple, in the Center Street neighborhood, are many historical homes constructed in the Queen Anne, Neoclassical, Prairie, and Spanish Revival styles.

With a population of over 45,000 in 2002, Logan is the commercial and cultural center of the Cache Valley. Downtown Logan has over 200 outlets, and the Cache Valley Mall features over 40 stores. Agriculture continues to dominate the basic economy, and the valley is known as the "garden spot of Utah." However, the city does have over 60 manufacturing industries. Culturally, Logan hosts the Summerfest Art Faire and Jazz Festival, Summer Theater, the Utah Festival Opera, and the Festival of the American West. The Nora Eccles Harrison Museum of Art on the Utah State University campus is a recognized center for 20th century sculpture, ceramics, painting, graphic arts, photography, and American Indian arts in the West.

Recreationally, the region has much to offer. The 40 mile Logan Canyon Scenic Byway provides breathtaking scenery alongside a rushing river. Geological markers, picnic spots and camping facilities are located throughout the canyon. Hiking and biking trails are well marked. Logan has several near-by golf courses. The Roland V. Jensen Living Historical Farm is 6.5 miles southwest of the University on Highway 89. Visitors travel back in time and can see how a farm of 1917 functioned, when farm work was done by horses. In Amalga, about 10 miles north of Logan, the Cache Valley Dairy Association operates one of the world's largest Swiss cheese factories, producing 60,000 pounds of cheese each day. Visitors can take a self-guided tour and sample many varieties of cheese.

Utah State University was founded in 1888 as the Agricultural College of Utah in order to "give young men and women in Utah a liberal education." The institution



(continued on page 4, left column)

(continued from page 3, right column)

was subsequently known as the Utah State Agricultural College and, in 1957, was renamed Utah State University. In 1902 the landmark Old Main building, the oldest academic building in Utah in continual use, was completed. In 1983 portions of Old Main were destroyed by fire. The burned areas were subsequently restored and the rest of the building was renovated. R.O.T.C. came to the Agricultural College campus in 1918, with 450 men being trained by the end of World War I. In 1945, toward the end of World War II, a small group of German and Italian prisoners were housed on the Utah State Agricultural campus. The P.O.W. camp was decommissioned in the fall of 1946.

As a Carnegie Foundation Research I Institution, the University currently supports basic and applied research in a wide variety of areas. Total research expenditures in 2003 are projected at 141 million dollars. USU was the first university in the nation to have student experiments aboard NASA space shuttle flights and has flown more shuttle experiments than any other university. University research has resulted in the start-up of over 40 high-technology companies in the Cache Valley. The University has a strong presence in the international arena, with research and education efforts in 23 countries.

In Fall 2003, the student body included 23,474 students, 70 percent of them coming from Utah and about 4.4 percent international students from 84 countries. About 10.7 percent of the student body is enrolled in the 47 doctoral and 102 master's programs offered by the School of Graduate Studies. In 2003, the faculty approved 2,773 bachelor's, 925 master's and 59 doctorate degrees.

The 719 instructional faculty of Utah State University are organized into 41 academic departments within the seven colleges of Agriculture; Business; Education and Human Resources; Engineering; Humanities, Arts, and Social Sciences; Natural Resources; and Science. Extension County Agents are found in each of Utah's 29 counties and faculty members develop and deliver educational programs based on the needs of local communities.

The 400 acre main campus features stately academic buildings surrounded by carefully groomed landscaping. Old Main Hall is a state arboretum with trees and shrubs native to Utah. Another 7,000 acres located throughout the state are used for agricultural and other research. The University Libraries — Merrill Library, Science and Technology Library, and Quinney Natural Resources Library — house more than 1,400,000 volumes, 13,979 periodicals, 1,200,000 federal publications titles, 76,600 USGS topographic maps covering the entire U.S., 2,203,000 microform items, and other film and video resources.

REGISTRATION

All persons planning to attend the meeting should preregister using the form on page 27. Advance registration fees are \$60 for professionals, \$45 for retirees, and \$30 for students and spouses of registrants. K-12 and community college teachers are encouraged to attend the meeting for a reduced professional registration fee of \$45. Advance one-day preregistration is \$45. After May 21 higher registration fees will be charged: professional, \$80; K-12, community college teachers and retirees, \$60; and students and participating spouses, \$40. One-day registration is available on-site for \$60. If you attend more than one day, you must pay the full registration fee.

About field trips: Preregistration for all field trips is required because of limited seating in the vans and the need to inform some destinations of numbers of people arriving. If you are interested in one or more of the excursions, it is recommended that you register early.

At least one member of a family group requesting field trip reservations must be a paid meeting registrant.

Please send your Advance Registration Form and accompanying payment to **AAASPD Meetings, Southern Oregon University, Department of Biology, Ashland, OR 97520.**

ACCOMMODATIONS AND FOOD SERVICE

Residence Halls: Utah State University is offering an especially attractive rate for housing in their residence halls. For \$15/night double or \$25/night single you can keep your budget under control while taking advantage of all that the meeting, Logan, and the surrounding area have to offer.

The university residence halls consist of apartments with shared bathroom, living and dining areas and three bedrooms. Each bedroom has two single beds and can accommodate a maximum of two persons per room. If you rent an entire apartment (all three bedrooms), you will be the only one in the apartment. If you rent one bedroom (single or double), you (and your roommate if applicable) will not have the entire apartment to yourself. If you rent a shared room and do not specify a roommate, a roommate will be assigned to your bedroom. Please be aware that individual bedroom doors do not have locks. Bedding is provided (sheets, blanket, pillow, pillowcase). No maid service or towels are provided. Elevators, ice machines, air conditioning, extra pillows, and blankets are not available. Individual apartment phones are also not available. However, pay phones are within walking distance. **No smoking is allowed in the facilities, including the bedrooms.**

Residence Hall Registration: Register by 1) completing the form on page 26 of this *Newsletter* and sending it directly

(continued on page 5, right column)

(continued from page 3, left column)

emy of Sciences). Presenters in these symposia included such notables as Drs. Peter Raven (Director, Missouri Botanical Garden), Paul R. Ehrlich (Stanford University), Sally Gregory Kohlstedt (University of Minnesota), Pamela M. Henson (Smithsonian Institution Archives), H. Charles J. Godfray (Imperial College London), Mikael Härlin (Södertörn University College, Huddinge, Sweden), Michael J. Donoghue (Yale University), Warren D. Allmon (Paleontological Research Institution, Ithaca, NY), and Alessandro Minelli (University of Padova, Padova, Italy). *Watch for at least two Pacific Division symposium volumes to come from these three symposia in the near future.*

Other excellent symposia in the technical program included "New Non-Lithographic Methods for Controlled Patterning of Materials," organized by Dr. Michael P. Zach (University of California, Berkeley), "Scientists and Teachers Collaborating on curriculum," organized by Drs. Kathleen O'Sullivan (San Francisco State University) and Edna DeVore (SETI Institute, Mountain View, CA), "Writing Science for the Public: A Personal Histories Panel Session," organized by Dr. Walter Carl Hartwig (Touro University, Mare Island, CA), "Use of Anthropology Toward Government Political and Foreign Policy Goals," organized by Dr. Alan Bain (Smithsonian Institution Archives), "The Political Economy of Oil and Gas Production in Developing Countries: Rhetoric vs. Reality," organized by Drs. Claudia J. Carr (University of California, Berkeley) and Jeffrey A. Gritzner (University of Montana), "The Bioregional Vision in Science and Art," organized by Drs. Robert Chianese (California State University, Northridge) and Carl A. Maida (University of California, Los Angeles), "The Emerging Field of Astrobiology and Opportunities for the Public Understanding of Research," organized by Dr. Carol M. Tang (California Academy of Sciences), "Changing the Reward System for University Science Professors," organized by Dr. Kathleen M. Fisher (San Diego State University), "Innovative Approaches to College Level Teaching and Learning," organized by Drs. Dan Walker (San Jose State University) and Nancy Carnal (San Francisco State University), and "Native California," organized by Dr. Lee Davis (San Francisco State University). Additionally, the Western Society of Soil Scientists had a 1 1/2-day program on a variety of soils topics.

Noon lectures on Monday and Tuesday included "Memory and Cognition: What Are They?" by Dr. Fred C.C. Peng (Veterans General Hospital, Taipei, Taiwan) and "Generating and Distributing Power in a New Po-

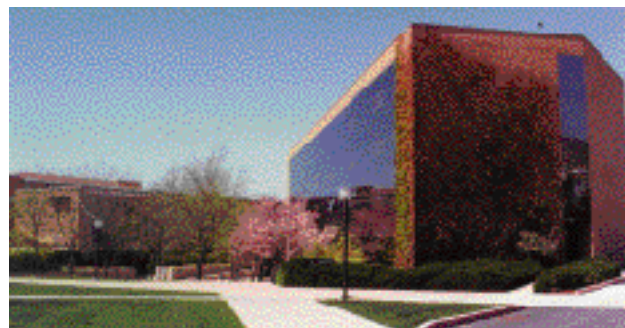
(continued on page 6, left column)

(continued from page 4, right column)

to USU Housing Services, or 2) calling USU Housing Services at 800-863-1085 or 435-797-0277, or 3) faxing the form on page 26 to 435-797-4035, or 4) going on-line to <http://joey.hfs.usu.edu/housing/index.cfm?fuseaction=lodginginfo> and clicking the appropriate links.

Residence Hall Check-in: Instructions for picking up room assignments will be mailed from USU Housing prior to the meeting.

University Inn: The University Inn is a full-fledged hotel operating on the University of Utah campus, in close



Taggart Student Center (L) and University Inn (R).

proximity to all of our meeting rooms. Amenities include free covered parking, free Aggie Ice Cream token for every guest, 24-hour guest services, all rooms non-smoking, access to USU fitness facilities, swimming pools, and outdoor tennis courts, full size iron and ironing board, hair dryer, in-room coffee and hot chocolate, computer data port, cable TV with movie channels, a study table or desk, and electronic key access. The Pacific Division has reserved a block of these rooms (both "Traditional" and "Handicapped") for meeting registrants at the rate of \$55/night single or double. Additional persons are \$4 each. Almost all rooms have two queen beds. These are very nice rooms and won't last long, so be sure to make your reservation early! Please note that **all rooms are non-smoking. The University Inn will assess a \$199 cleaning fee to any lodging room that has been smoked in.**

University Inn Reservations: In order to reserve a room at the University Inn, you may either call 800-231-5634 or 435-797-0017, or visit their website at <http://www.usu.edu/~univinn>. Be sure to identify yourself as part of the American Association for the Advancement of Science meeting, or by group number 15401.

University Inn Check-In: Check-in time is 3:00 p.m. and check-out time is 12:00 p.m. If you arrive prior to 3:00 p.m., the University Inn staff will make every attempt to accommodate you. However, in the event that rooms are not

(continued on page 6, right column)

(continued from page 5, left column)



Rhinoceros overseeing the Pacific Division banquet in African Hall at the California Academy of Sciences.

litical Environment,” by Mr. Henry Oman (consulting engineer, Seattle).

Monday evening featured the Pacific Division Presidential Lecture, “Air Quality Trends: Past, Present, and Emerging Issues,” by Dr. John J. Carroll, Pacific Division President. Look for the text of this talk beginning on page 16 of this *Newsletter*. Following Dr. Carroll’s lecture was a scrumptious dessert reception, sponsored by Dr. Robert A. Corrigan, SFSU President.

Forty-six posters were presented in two full-day sessions. All of the technical sessions were well-attended and much appreciated by attendees.

Tuesday afternoon and evening shifted to the California Academy of Sciences, which generously provided free admission for paid registrants and their families in the afternoon. Dr. Jill Tartar (SETI Institute, Mountain View, CA) presented the evening lecture, “SETI: Finding Habitable Worlds with the Help of the Inhabitants.” A reception sponsored by the Academy followed Dr. Tarter’s lecture, after which attendees moved to African Hall for a most sumptuous banquet catered to 200 persons. Student awards were announced



Dr. Patrick Kociolek, at the Pacific Division banquet.



Dr. Peter Raven, during comments at the Pacific Division banquet.

and Drs. Peter Raven and Patrick Kociolek made brief comments. The evening culminated with the transition of the Pacific Division Presidency from Dr. Carroll to

(continued on p. 7, left column)

(continued from page 5, right column)

available, arrangements will be made to store your luggage until your room is available.

On-Campus Dining: The Taggart Student Center offers a variety of dining opportunities. The HUB, located on the east end of the bottom floor of the Taggart Student Center, has eight dining choices and is open for breakfast, lunch, and dinner. Varieties include Taco Time, Pizza Hut, Teriyaki Stix, Hogi Yogi, Sunset Strips, the Grill, fresh gourmet coffee at Cafe Ibis, and Aggie Ice Cream. The QUICKSTOP is at the west end of the Taggart Student Center, bottom floor, and offers a quick pick-up for small grocery items, a snack, or fast meal. CAROUSEL SQUARE offers casual dining, with a choice of Mexican entrees, wraps, a sandwich bar, a salad bar, and the MAIN DISH, which features daily entree specials. The Carousel Square also has fresh pasta and daily vegetarian specials. It is located on the second floor of the Taggart Student Center. The SKYROOM, located on the fourth floor of the Taggart Student Center, offers a full menu of fresh, chef-prepared entrees on Monday, Wednesday, and Friday. On Tuesday and Thursday they offer an all-you-care-to-eat buffet.

There is also a variety of restaurants from fast food to elegant dining in the vicinity of the University campus and also a short distance away in downtown Logan.

Local off-campus accommodations: There are many hotels and motels in the Logan area. Nearby options include:

- **Alta Manor Suites**
45 East 500 North, Logan, UT
435-752-0808
- **Anniversary Inn Bed & Breakfast**
169 East Center St., Logan, UT
435-752-3443
- **Baugh Mansion**
164 West 100 North, Logan, UT
435-750-5860
- **Baugh Motel Best Western**
153 South Main Street, Logan, UT
435-752-5220 or 800-528-1234
- **Clint’s Bed & Breakfast**
165 North State St., Richmond, UT
435-258-3768
- **Comfort Inn**
447 North Main St., Logan, UT
435-752-9141 or 800-424-6423
- **Crystal Inn**
853 South Hwy. 89/91, Logan, UT
435-752-0707
- **Days Inn**
364 South Main St., Logan, UT
435-753-5623

(continued on page 9, left column)

(continued from page 6, left column)

Dr. William B.N Berry, Pacific Division President for 2003/2004.

Drs. Nina G. Jablonski and Alan E. Leviton served as co-chairs of the organizing committee for this meeting. They did a marvelous job!

The Pacific Division wishes to express its sincerest gratitude and appreciation to Dr. Patrick Kociolek and the entire staff of the California Academy of Sciences. Not only did they work hard to organize wonderful and scientifically challenging programs, but they also allowed attendees free access to their facility and made possible the Tuesday evening program by opening their doors after-hours and underwriting the cost of the reception and a large share of the cost of the catered dinner.

STUDENT AWARDS

Each year the Division's affiliated societies and sections conduct student competitions for best papers. San Francisco was no exception. Fifty-eight presentations were made by students, and the Division's Awards Committee had difficulty at times deciding between very good presentations. The following awards were announced:

AAASPD Laurence M. Klauber Award for Excellence: John D. Whitaker (Department of Chemical Engineering, University of Washington, Seattle), "Electrochemical Plating."

AAASPD Geraldine K. Lindsay Award for Excellence in the Natural Sciences: Marin A. McDonald (Stanford University Medical Center), "Ischemic Shock and High Potassium-Induced Depression of Synaptic Transmission."

AAASPD J. Thomas Dutro, Jr. Award for Excellence in the Geosciences: Benjamin Kocar (Department of Geological and Environmental Sciences, Stanford University), "Photochemical Oxidation of As(III) in Ferrioxalate Solutions."

AAASPD Rita W. Peterson Award for the Outstanding Presentation in Science Education: Jameze H. James (Environmental Sciences Teaching Program, University of California, Berkeley), "Gearing Up for the Challenge: The Science of Balboa High School."

Best Postor Award for Excellence: Amber V. Hess (Stevenson School, Pebble Beach, CA), "Organic Chemistry Without Solvents."

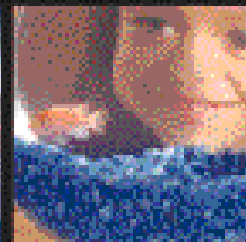
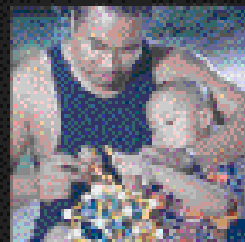
AAAS Robert I. Larus Travel Award: Cornell Wells (Department of Biology, San Francisco State University), "Receptor-Ligand Interactions of Ecdysis-Triggering Hormone."

WSSS Oral Papers: Benjamin Kocar (Department of Geological and Environmental Sciences, Stanford University), "Photochemical Oxidation of As(III) in Ferrioxalate Solutions" [first place]. Matthew Polizzotto (Department of geological and Environmental Sciences, Stanford University), "Coupled Cycling of Arsenic, Iron, and Sulfur in the Sediments of Lake Coeur d'Alene, Idaho" [second place]. Mariya Murashkina (Depart-

(continued on page 8, left column)

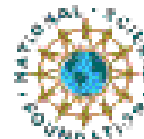


Science. It's Everywhere.



Learn More:

Call 1 888 737 2064 for a
free copy of the Family Guide
to Science or click on
www.ScienceEverywhere.org



(continued from page 7, left column)



ment of Land, Air and Water Resources, University of California, Davis), "How Do Soil Texture and Soil Mineralogy Affect Potassium Fixation in San Joaquin Valley, CA soils?" [third place].

WSSS Poster Papers: Sarah L. Pittiglio (Department of Environmental Science, Policy and Management, University of California, Berkeley), "Boron Adsorption on Magnesium Minerals" [first place]. Abby G. Sirulnik (Department of Botany and Plant Sciences, University of California, Riverside), "Enzyme Activity as an Indicator of Microbial Response to Soil and Grass Litter Nitrogen" [second place].

AAASPD Combined Agriculture and Horticultural Science, Biodiversity (symposium), Chemistry, Ecology, Engineering, Health Sciences, History and Philosophy of Science, and Museums (symposium): John D. Whitaker (Department of Chemical Engineering, University of Washington, Seattle), "Electrochemical Plating" [first place]. Hanna Rose Shell (Harvard University), "Embodying Extinction in the Natural History Museum: William Temple Hornaday and the Case of the American Buffalo" [second place]. Amber V. Hess (Stevenson School, Pebble Beach, CA), "Organic Chemistry Without Solvents" [third place].

AAASPD Biology: Cornell Wells (Department of Biology, San Francisco State University), "Receptor-Ligand Interactions of Ecdysis-Triggering Hormone" [first place]. Marin A. McDonald (Stanford University Medical Center), "Ischemic Shock and High Potassium-Induced Depression of Synaptic Transmission" [second place]. Kimberly S. Austin (Department of Biology, San Francisco State University), "Airborne Vocal Communication in the Pacific Harbor Seal, *Phoca vitulina richardii*" [third place].

AAASPD Education: Jameze H. James (Environmental Sciences Teaching Program, University of California, Berkeley), "Gearing Up for the Challenge: The Science of Balboa High School" [first place].

AAASPD Psychology: Lisa Y. Chen (University of California, Los Angeles), "3-D Brain Imaging of Mismatch Negativity Response" [first place].

EXECUTIVE COMMITTEE AND COUNCIL MEETINGS

The Division's Executive Committee met on Saturday, June 14. At the meeting, chaired by Division President John C. Carroll, Dr. Roger Christianson, Pacific Division Executive Director, reported on Division activities which occurred during the preceding seven months, reviewed Division finances, and presented the 2004 budget for approval. Final plans for the San Francisco meeting were discussed, as were plans for the 2004 meeting in Logan. The possibility of the three symposia sponsored by the California Academy of Sciences being compiled into Pacific Division publications was discussed. It was noted that speakers in all three symposia will be recorded and their talks transcribed to ease the preparation of the publications.

The Council met on Wednesday, June 18, to consider various recommendations from the Executive Committee and other business of the Division. The Council acted favorably on the Executive Committee's



Dr. Lynn M. Dudley

Nominating Committee recommendation of Dr. Lynn M. Dudley (Department of Plants, Soils and Biometeorology, Utah State University, Logan, UT 84322-4820) as President-Elect. There was considerable discussion about nominations for vacancies on the Executive Committee and at-large positions on the Council. It was decided to conduct a vote by mail as soon as more information about various candidates is available. Dr. Dudley presented a report on the status of planning for the 2004 meeting at Utah State University and encouraged everyone to take an active role in planning the program. Council members also voted unanimously to send Dr. Robert I. Bowman (emeritus, San Francisco State University) a plaque acknowledging and thanking him for his outstanding service on behalf of the Pacific Division over the past many years.

.....



(continued from page 6, right column)

- **Logan House Inn**
168 North 100 East, Logan, UT
435-752-7727
- **Providence Inn Bed & Breakfast**
10 South Main St., Providence, UT
435752-3432
- **Sherwood Hills Best Western**
Hwy. 89/91, Wellsville, UT
435245-5054
- **Super 8 Motel**
865 South Main St., Logan, UT
435-753-8883
- **Western Inn Best Western**
250 North Main St., Logan, UT
435752-5700

Please make your reservations for off-campus housing directly with the hotel/motel of your choice. Note that AAAS, Pacific Division, presents the above hotels and motels for information only, not as an endorsement for any specific commercial enterprise.

TRANSPORTATION AND CAMPUS PARKING

By Automobile: Utah State University is located 83 miles northeast of Salt Lake City and 20 miles south of the Utah-Idaho border. From Salt Lake City, drive north on I-5 past Ogden and Willard and take exit 364 to Logan via Hwy 89/91. Continue through the scenic Sardine Canyon. Hwy 89 becomes Main Street in Logan. Turn right on 400 North. Continue to 700 East and turn left. Continue up the hill, curving to the right. After going through the intersection at the top of the hill, the Parking Terrace will appear on the right. The University Inn and Taggart Student Union are behind the parking lot and adjacent to the Parking Terrace. To check in at the University Inn, turn right into the parking lot and proceed through the gate to the end of the lot.

By Air: Logan is not served by a commercial carrier. However, Salt Lake City is served by major airlines. Car rentals are available at the airport. Cache Valley Limousine Airport

UNITED AIRLINES SPECIAL MEETING OFFER

Save up to 15% on airfare for travel on United to Salt Lake City between June 10 and June 22, 2004.

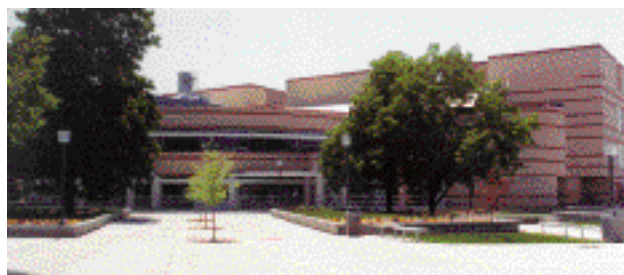
Your or your travel agent call UAL's Meeting Plus Reservation Center at **800-521-4041**, 8:00 a.m. to 10:00 p.m. E.T., 7 days a week.

Refer to **Meeting ID Number 523AD**.

Call at least 30 days in advance for best discounts.

Service offers shuttle service from the airport to Logan. As of December 16, 2003, the cost of the limousine service for one person was \$44 one-way or \$78 round trip. For two persons traveling together the cost was \$59 one-way and \$98 round-trip, and for three persons traveling together the cost was \$74 one-way and \$118 round-trip, a significant per-person savings over the single person rate. The trip takes about 1.5 hours. Reservations should be made at least a day in advance by calling 800-658-8526 or 435-563-6400.

Parking: Validation parking for the Parking Terrace will be provided to registrants staying in the University Inn. Registrants staying in the University Residence Halls will be given complementary passes for the adjacent parking lot, about a 5 minute walk to the Eccles Science Center. Others will need to secure a parking permit upon registration. The current fee is \$5/day



Front entrance to the Eccles Science Center, location of the meeting Registration Center.

REGISTRATION CENTER

The Registration Center will be set up in the lobby of the Eccles Science Center (see campus map, p. 31). It will be open at 2 p.m. on Sunday and 8 a.m. on Monday through Wednesday, and remain open daily until 5 p.m. except Wednesday, when it will close at 2 p.m.

MEETING ROOMS

This year's technical sessions will meet in the new Eccles Science Center, the Taggart Student Union and the University Inn. Meeting rooms will be equipped with a 35 mm slide projector, an overhead projector, and a standard computer projector. Speakers requiring other specialized equipment must make their requests when they submit their abstracts. Specialized equipment, such as VHS/TV, will be provided if available. If rental costs are incurred for specialized equipment, payment will be the responsibility of the requestor. A Speaker's Preview Room, with projection equipment, will be open during the meeting. The meeting rooms and times of presentations will be published in the "Program with Abstracts" issue of the *Proceedings* (vol. 23, part 1), which will be given to those who have registered for the meetings. Speakers will receive final confirmation of the time and place

of their presentation via e-mail two weeks prior to the meeting.

POSTER SESSIONS

Posters will be assigned a display space of 40" X 60" (1 m X 1.5 m). If you need more space, please contact the Division office by e-mail: aaaspd@sou.edu or telephone: 541-552-6869 to discuss your needs *no later than May 11, 2004*. By action of the Pacific Division Council in order to assure fairness, all student posters must fit within the assigned display space of 40" X 60" to be eligible for student awards of excellence. A request for extra space will disqualify a student from the award competition. Posters will be grouped by discipline and subject matter. Each presenter will be given at least two hours for poster display, although more time will likely be available. Presenters should set up their posters no less than 15 minutes before the beginning of their presentation session and are expected to be available to discuss their work during the time their poster is on display. Posters should remain in place until the close of the session, and be removed within 15 minutes of that time. Student posters will be judged for awards of excellence. Students must be present during the judging of posters.

With the permission of Dr. Carol Waite Conner and the Geological Society of America, the Pacific Division has reprinted Dr. Conner's article, "The Poster Session: A Guide for Preparation." It can be found on the Division's website, <http://pacific.aaas.org>. From the 85th Annual Meeting home page, click on **Poster Preparation** (listed in the left-hand column).

SPECIAL EVENTS

Sunday Evening Welcome Wagon and Cracker Barrel Mixer, hosted by the Pacific Division and its affiliated societies and sections. All registrants and their families are invited to enjoy the conviviality of this social on June 13 from 8:00 to 10:00 p.m. A selection of soft drinks, chips and pretzels, and good conversation will be available.

Monday Evening President's Reception. Utah State University President *Kermit L. Hall* will welcome conferees at an informal hosted reception from 8:00 to 9:30 p.m. All participants and their families are invited to enjoy this relaxed occasion. Nonregistered family members are welcome, but must be accompanied by a registrant. Please wear your registration badge.

Tuesday Evening Reception, Banquet, and Announcement of the Winners of the Student Awards for Excellence. The no-host Divisional Dinner will be held Tuesday evening beginning at 6:00 p.m. at the Bullen Center, 43 South Main Street in Logan. The cost is \$25 per person and you must sign up in advance (please see Advance Registration Form,

p. 27). Students who are paid registrants and have presented a paper or poster are invited to attend as guests of the Division. Dinner will be preceded by a no-host cocktail reception. Wine, beer and a variety of soft drinks will be available, starting about 6:00 p.m. Following dinner, Division representatives will announce the names of student winners of awards of excellence and also winners of the Division's Laurence M. Klauber Award for Excellence (unrestricted), Geraldine K. Lindsay Award for Excellence in the Natural Sciences, J. Thomas Dutro, Jr. Award for Excellence in the Geosciences, Rita W. Peterson Award for Excellence in Science Education, the President's Award for Excellence (unrestricted), the Best Poster Award (for poster presentations only but otherwise unrestricted), and the AAAS-Robert I. Larus Travel Award, which provides for travel and other expenses for the awardee to attend the 2005 annual meeting of AAAS in Washington, D.C., February 17 - 22, in order to present his/her winning presentation as a poster.

The Klauber, Lindsay, Dutro, Presidents', Best Poster, Peterson, and AAAS-Larus awards are given to those students whose presentations are judged the most significant in the advancement or understanding of science. Eligible students must: (1) register for the meeting, (2) present the paper or poster, and (3) be the principal research investigator. Student presentations, oral and poster, are judged on their abstracts, content, style of delivery or presentation, and audiovisual aids and/or handouts (if used). The evaluation forms (oral and poster) are posted on the Division's website.

All are invited and encouraged to attend these annual events.

Business Meeting of the Council of the Pacific Division. The Council of the AAAS, Pacific Division will hold its annual breakfast and business meeting at 7:00 a.m. on Wednesday, June 16. The Council will elect officers, discuss programs for the 2005 and 2006 annual meetings, and transact such other business as is required by the Division's By-Laws.

Trivia Question. This interesting table was recently observed on the USU campus. It is reported to have had, in the past, a profound significance to "Aggie" students. The names of everyone who correctly describes this significance will be placed into a hat with one lucky winner's name being drawn. The winner will receive a free and postpaid Pacific Division publication of his or her choice (see list on page 30). Replies must be date-marked (postmark or e-mail date) by February 27, 2004. E-mail your entry to aaaspd@sou.edu or address it to AAAS Pacific Division, TRIVIA QUESTION, Southern Oregon University, Department of Biology, Ashland, OR 97520. The name of the winner will be included in the spring Newsletter.



PUBLIC LECTURES

Sunday, June 13, 7:00 p.m. “Using Ecological Insight to Promote Drug Discovery and Conservation in Tropical Forests,” *Dr. Phyllis Coley* (Department of Biology, University of Utah, 257 S 1400 EAST, Salt Lake City, UT 84112).

Monday, June 14, 7:00 p.m. Annual Presidential Lecture, *Dr. William B.N. Berry* (Department of Earth and Planetary Sciences, 307 McCone Hall, University of California, Berkeley, CA 94720-4767), President of the Pacific Division.

Additional lectures: “Cerebral Laterality and Cerebral Dominance: Fact or Fiction?” *Dr. Fred C.C. Peng* (Neurological Institute, Department of Neurosurgery, Veterans General Hospital–Taipai, Taipai, Taiwan 11217).

“Command Strategies of the 9-11 Terrorist Attack on the World Trade Towers,” *Mr. Henry Oman* (Consulting Engineer, 19221 Normandy Park Drive SW, Seattle, WA 98166).

FIELD TRIPS

All field trips are open to meeting registrants and their families. Due to limited space, advance registration is required for all trips. Reservation and payment of field trip fee(s) are included on the Advance Registration Form.

A full refund will be granted if a trip is cancelled by the Division. If a registrant cancels via e-mail or written notification postmarked by May 24, 2004, the registrant will receive a refund of the fee(s) paid less a \$10 processing fee. If paid by credit card, an additional 3% will be deducted from the amount being refunded.

The following field trips are being planned:

(1) Sunday, June 13: 9:00 a.m. – 4:00 p.m. Preston Valley Trail. Led by Mary Barkworth and Michael Piep (Department of Biology and Intermountain Herbarium, Utah State University), The Preston Valley Trail has probably more plant species per linear foot than any other trail near to Utah State University that is open in mid-June. It is narrow and winds up the north side of the ridge separating Green Canyon from Logan Canyon. We shall take it slowly, and possibly break into two groups – one continuing to the ridge and the other stopping lower down. The trail starts at about 5,900 feet in elevation in a shady maple area, winds to open slopes with mountain mahogany, then around and around to douglas fir, breaking out at the top to a wonderful view over both canyons at an elevation of about 8,100 feet. The views are superb all the way up so those who decide not to go to the top will still have a great day. Bring a day pack for lunch and water. Birders will want to bring binoculars. Don’t forget to dress for the weather and bring a hat and sunscreen. Includes transportation, field guide and a sack lunch. Cost: \$20. Limited to 24 participants.

(2) Sunday, June 13: 8:00 a.m. - 5:00 p.m. History of local Indians, Mountain Men and early Mormon Settlements. Ross Peterson, Professor of History and Director of the Intermountain Center for Regional Studies, will lead this trip. Travel by van up through Logan Canyon to Bear Lake, with a brief stop at the lake for raspberry shakes. Then continue north along Bear Lake and turn south, coming back over the Wasatch Mountains into Cache Valley to the site of the Bear River Massacre. Returns to Logan in the late afternoon. Includes transportation via vans and box lunch. The raspberry shakes are on your own. Cost: \$35.

(3) Sunday, June 13: 8:00 a.m. - 5:00 p.m. Idaho Museum of Natural History. This trip will follow the Lake Bonneville channel north to the Idaho Museum of Natural History. Includes transportation via vans, entry fee to the museum and box lunch. Cost: \$35.

(4) Wednesday, June 16: 8:00 a.m. - 5:00 pm. Wasatch Formation. Sponsored by the Western Society of Soil Scientists and led by Dr. Janis Boettinger (Department of Plants, Soils, and Biometeorology at USU). More details will be included in the Spring *Newsletter* and also posted on the Pacific Division website, *pacific.aaas.org*, as they become available. Includes transportation and box lunch. Fee: \$25.

(5) Thursday, June 17, 8:00 a.m.–Saturday, June 19, 5:00 p.m. Yellowstone National Park. Led by J. Thomas Dutro, Jr., retired from the U.S. Geological Survey and American Museum of Natural History (Smithsonian), will lead this trip. Leaving Logan Thursday morning, the group will travel into Yellowstone National Park through the west entrance at West Yellowstone, Montana. Both nights will be spent at Old Faithful Inn. Thursday afternoon and Friday we will tour the two main loops of Yellowstone, observing the many hot springs and other signs of volcanic activity. Saturday morning we will depart Yellowstone, again through the west entrance, and return to Logan by late afternoon after a detour to Craters of the Moon National Monument. Includes two nights lodging at Old Faithful Inn, transportation via charter tour bus, written materials, and lunches. Other meals and items of personal nature are the responsibility of participants. Cost: \$300 per person, double occupancy only. Minimum 18 participants, with a maximum of 25 participants.

INSTRUCTIONS FOR SUBMITTING PAPERS

Members of AAAS and its affiliated societies, students, teachers, and other scientists are encouraged to participate in the annual meeting and present papers. Those wishing to present a paper at one of the sessions should send a title and abstract (see page 24) to the program coordinator of the society or section at which you would like to present the paper (see page 15 for names and addresses). Abstracts may be submitted electronically as attachments via e-mail or by regular mail. If submitting by mail, it will be helpful if the



abstract is submitted on disc, preferably using Microsoft Word, to accompany the paper copy. Abstracts should also be copied to the Division's meetings office, again either electronically as an e-mail attachment, to aaaspd@sou.edu, or to the postal address: AAAS, Pacific

Division, Southern Oregon University, Department of Biology, Ashland, OR 97520.

STUDENT AWARDS FOR EXCELLENCE

The AAAS, Pacific Division offers each affiliated society and section participating in the annual meeting the opportunity to recognize outstanding student participants through the presentation of awards of excellence and cash prizes of \$175 for first place and \$100 for second place. Societies often supplement these awards with their own cash prizes.

In 2004, seven Division-wide awards are available: Laurence M. Klauber Award for Excellence (unrestricted); Geraldine K. Lindsay Award for Excellence in the Natural Sciences; J. Thomas Dutro, Jr. Award for Excellence in the Geosciences; Presidents' Award for Excellence (unrestricted); Rita W. Peterson Award for Excellence in Science Education; Best Poster Award (for posters only but otherwise unrestricted); and the AAAS Robert I. Larus Travel Award, which provides travel and other expenses for the awardee to attend the 2005 annual meeting of AAAS in Washington, D.C., February 17 - 22, 2005, for the purpose of presenting their paper as a poster.

The Klauber, Lindsay, Dutro, Presidents', Peterson, Best Poster, and Larus awards are given to those students whose presentations are judged the most significant in the advancement or understanding of science. To be eligible, a student must: register for the meeting, present the paper or poster, and be the principal research investigator. Student presentations, oral and poster, are judged on their abstracts, content, style of delivery or presentation, and audiovisual aids and/or handouts (if used). The evaluation forms for both oral and poster presentations are posted on the Division's website. Students who register for the meeting and present papers are invited to be the Division's guests at the Division Banquet Tuesday evening, June 15. Festivities that evening include the presentation of student awards.

TECHNICAL SESSIONS SYMPOSIA

The following symposia are planned for the annual meeting. Although most symposia are organized around invited papers, organizers often will consider adding one or

more contributed papers if they are relevant to their programs. Should you wish to participate in one of these symposia, contact the symposium organizer. Should you wish to present a paper in one of the contributed paper sessions, refer to pages 15 and 24 of this *Newsletter*. Check the Division's website, pacific.aaas.org, for the latest information on symposia and other program events.

Please remember, at this time the listings below are tentative and subject to change. If you plan to attend the meeting largely for one symposium or technical session, check the Division's website for updates to the program or phone the Division's meeting office at 541-552-6869 to confirm the status of the session(s) before committing travel funds. As additional symposia are added to the program, they will be posted on the website and will appear in the Spring *Newsletter*.

(1) Agricultural Genomics: Who, What, and Why. Organized by Dr. Kamal A. Rashid (Associate Director, Education and Development, Biotechnology and Genomics Research Center Research, Utah State University, Logan, UT 84322; E-mail: krashid@cc.usu.edu; Web Site: www.usu.edu/biotech). This symposium, sponsored by the USU Biotechnology and Genomics Research Center, focuses on the recent advances in agricultural genomics for plants, animals and microbes. The symposium addresses the impact and new developments for agricultural sciences. Presentations and discussions will focus on utilization of functional genomics, proteomics and bioinformatics data, and how to turn such data into applicable knowledge and industrial products. Several distinguished speakers will address symposium participants.

(2) Return of the Wolf to the West. Organized by Dr. Robert Schmidt (Utah State University, Logan, UT 84322; E-mail: Rschmidt@cc.usu.edu).

(3) Future Climate Change: Implications for Western Environments. Organized by Dr. Fred Wagner (Utah State University, Logan, UT 84322; E-mail: fwagner@cc.usu.edu). This symposium will have speakers in three sequential groups: (1) evidence that the globe, and western North America, began to warm and experience increased precipitation during the 20th century as predicted by the general circulation models for the 21st century; (2) evidence that the warming is being induced by increasing levels of greenhouse gases, especially CO₂; and (3) evidence of environmental effects that began appearing in the West during the 20th century. Speakers will come from western universities and public agencies.



(4) Water-wise Landscaping. Organized by Dr. Roger Kjeldgren (Utah State University, Logan, UT 84322; E-mail: rkjel@mendel.usu.edu).

(5) Electromagnetic Techniques in Soil Science. Organized by Drs. Lynn Dudley (Dept. Plants, Soils & Biometeorology, Utah State University, Logan, UT 84322-4820; E-mail: *ldud@mendel.usu.edu*) and Paul McDaniel (University of Idaho, Ag Sci 242, Moscow, ID 83844-2339). The success of time domain reflectometry (TDR) sparked interest in a variety of other electromagnetic methods of investigating soil water, salinity, geometry and interfacial properties. Methods such as impedance, ground penetrating radar and electromagnetic induction are being used to determine soil properties with a minimum disturbance. Moreover, some of these techniques have potential applications to mapping soil properties on field or larger scales. This seminar will bring together researchers using a variety of electromagnetic methods to report on the state of the science.

(6) Examining a Leaky Pipeline: Research on the Academic Careers of Women in Science and Engineering. Organized by Dr. Ronda Callister (Department of Management and Human Resources, Utah State University Logan, UT 84322-3555; E-mail: *callister@b202.usu.edu*). National Science Foundation (NSF) statistics show women leaving science and engineering careers at much higher rates than men. They also show that the percentage of women at full professor rank has not changed in the last two decades, despite dramatically increasing percentages of women getting Ph.D.s in these fields (new Ph.D.s in Biology, for example, are now approximately 50% women).

Questions about why this is happening prompted NSF to

develop its Advance program. Two rounds of Advance awards have been made. Four (tentatively) of these institutions will be discussing their programs of research to address these questions.

(7) Nuclear Transfer Implications and Status. Organized by Dr. Kenneth White (Utah State University, Logan, UT 84322; E-mail: *kwhite@cc.usu.edu*). This symposium will provide an update of the current research developments in the area of somatic cell nuclear transplantation using animal cells to produce live offspring. Presentations will focus on application and efficiencies of the process to various species, developmental implications and gene expression profiles of nuclear transfer embryos and the relation to somatic cell nuclear re-programming efficiencies.

(8) Snake and Colorado Rivers: Rights and Restoration. Organized by Drs. Jack Schmidt, Joel Pederson and Joanna Enter-Wada (Utah State University, Logan, UT, 84322).

(9) Emerging Diseases of Significance in the West. Organized by Dr. Robert Sidwell (Utah State University, Logan, UT 84322; E-mail *rsidwell@cc.usu.edu*).

(10) Colorado Plateaux to Great Basin—A Natural Laboratory From Grade School to Grad School. Organized by Drs. C. Frederick Lohrengel II, Robert L. Eves, Mark R. Colberg (Department of Geology, Southern Utah University, Cedar City, UT 84720; E-mail: *lohrengel@suu.edu*) and Ronald M. Martin (Department of Biology, Southern Utah University, Cedar City, UT 84720; E-mail: *martin@suu.edu*).

Library Book Packs

\$90 postpaid
A \$292 value!

U.S. and Canada only...others please contact us for shipping costs.

Have library access to all of the AAAS, Pacific Division books that are currently in print. Give this order form to your librarian and request that they place the order today! For only \$90 postpaid, your library will receive one copy of each of the following:

- Genecology and Ecogeographic Races (cloth, 1995)
- Dietary Factors and Birth Defects (paper, 1993)
- San Francisco Bay: The Ecosystem (cloth, 1996)
- San Francisco Bay: Use and Protection (paper, 1982)
- Crater Lake: An Ecosystem Study (cloth, 1990)
- Late Cenozoic History of the Pacific Northwest (cloth, 1985)
- Cracking Rocks and Defending Democracy: The Life and Times of Kirtley Fletcher Mather, 1888–1978 (cloth, 1994)
- Agroecosystems and the Environment: Source, Control, and Remediation of Potentially Toxic Trace Element Oxyanions (cloth, 1998)
- Frontiers of Geological Exploration of Western North America (paper, 1982)
- Patterns of Evolution in Galapagos Organisms (cloth, 1983)

WHILE QUANTITIES LAST!!

Tables of Contents posted at *pacific.aaas.org*

Attention _____ Institution _____

Address _____ City, State & Zip _____

Please make check out to **AAAS, Pacific Division**, or call with credit card • Purchase orders accepted from institutional libraries

Questions? Phone 541-552-6869 or e-mail *aaaspd@sou.edu*

MAIL TO:

AAAS, Pacific Division • Southern Oregon University • Department of Biology • Ashland, OR 97520

The Colorado Plateaux and Great Basin are occupied by, or surrounded by, a large number of educational institutions that work with all ages of "students," Grade School through Grad School and beyond. This is an open symposium to allow everyone interested an opportunity to share the sorts of activities they are carrying out in these spectacular regions of western North America.

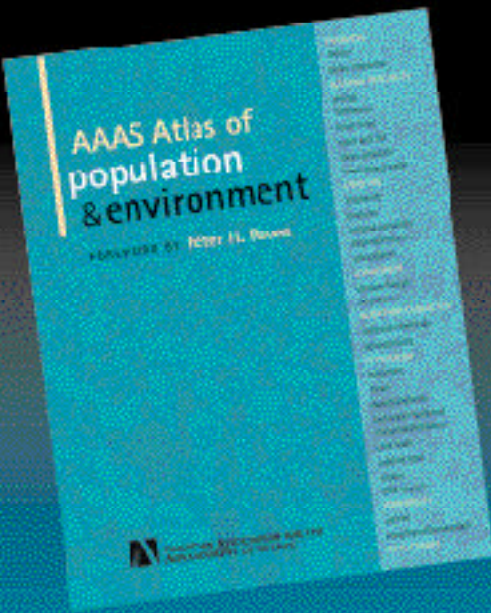
(11) Strategies to Accommodate Dual Career Couples in Academic Science and Engineering Departments. Organized by Dr. Kim Sullivan (Department of Biology, Utah State University, Logan UT 84322-5305; E-mail: yejunco@biology.usu.edu). Partner accommodation is a significant recruitment and retention issue for colleges and universities. National Science Foundation data indicate that 55% of women scientists and 32% of male scientists are married to another scientist. The challenges of recruiting and retaining dual career couples in the science and engineering fields is particularly difficult for colleges and universities located outside of major metropolitan areas where the college or university is often the only higher education institution in the area and the major employer. We will present innovative university programs on partner accommodation. Following the presentations will be a workshop to discuss best practices and develop a white paper.

Additional ideas for symposia are always welcome but time is of the essence. As soon as possible, potential organizers should submit to the chair of the section in which

the symposium will be presented (see list on page 15) a title, brief description of the symposium, and a list of potential speakers and/or titles of presentations. Once approved, the symposium information will be added to the Division's website. The information will also appear in the spring *Newsletter*. At this time we are also considering ideas for the 2005 annual meeting in Ashland, Oregon. See the "Call for Workshops and Symposia" on p. 25.

CONTRIBUTED PAPERS

Those wishing to submit papers for presentation at a contributed paper session should refer to the "Call for Papers" form, page 24 in this *Newsletter*, or download instructions from the Division's website (pacific.aaas.org). Send the title and abstract (see page 24) to the program coordinator of the society or section at which you would like to present the paper (see page 15 for addresses) and copy the mailing to the Division's Meetings Office at aaaspd@sou.edu. Abstracts should be submitted electronically as attachments via e-mail. If you are unable to do this, you may submit your abstract via regular mail. If submitting by mail, it is helpful if it is sent as a text file (Microsoft Word preferred) on either diskette or CD-ROM, as well as a paper copy. If submitting your abstract by regular mail, address the Division copy to AAAS, Pacific Division Meeting Office, Southern Oregon University, Department of Biology, Ashland, OR 97520.



From the AAAS Directorate for International Programs and the University of California Press

"If a picture is worth a thousand words this presentation of the environmental impact of human activity is worth at least a million."

■ THE ECOLOGIST


"The best available source of empirical information on population and environmental trends."

■ TIMES HIGHER EDUCATION SUPPLEMENT (UK)

The AAAS Atlas of Population & Environment is a groundbreaking publication which illustrates through text and full-color maps and diagrams the relationships between human populations, resource consumption; and the environment.

The full contents of the Atlas can be viewed online at:
atlas.aaas.org

To order visit:
www.ucpress.edu



Do not forget, *the deadline for submitting titles and abstracts is April 26, 2004*. If a title comes in after this date, it may not make it into the program. Also, be aware that the abstract you submit will be published as written. It will not be edited. If it contains errors, they will appear as submitted. Use your word processor's spell checker. And remember, keep the length of your abstract within the limits stated in the directions for preparation of abstracts (page 24). Use 10-point Times (or variation) font (no exotic fonts, please!) for your abstract. An abstract submitted in a smaller type size will be reformatted to 10 point. Lastly, if yours is a student presentation, oral or poster, please state clearly that it is such so that it will be included in the judging competition.

PACIFIC DIVISION AFFILIATED SOCIETIES AND SECTIONS ACCEPTING CONTRIBUTED PAPERS FOR PRESENTATION AT THE MEETINGS

Western Society of Soil Science. Section Chair and Program Coordinator: Dr. Matthew J. La Force, Dept. of Geosciences, San Francisco State University, 1600 Holloway Avenue, TH 509, San Francisco, CA 94132-4163. Phone: 415-338-6869; e-mail: laforce@sfsu.edu.

Agriculture and Horticultural Science. Section Chair and Program Coordinator: Dr. Rhonda L. Miller, Dept. of Agricultural Systems Technology and Education, Utah State University, Logan, UT 84322-2300. Phone: 435-797-3772; e-mail: rlmiller@cc.usu.edu.

Anthropology and Archaeology. Section Chair and Program Coordinator: Dr. Walter Carl Hartwig, Division of Basic Medical Sciences, Touro University College of Osteopathic Medicine, Mare Island, CA 94592. Phone: 707-638-5238; e-mail: whartwig@touro.edu.

Atmospheric and Oceanographic Sciences. Section Chair and Program Organizer: Dr. John J. Carroll, Atmospheric Sciences Section, Dept. of Land, Air and Water Resources, University of California, Davis, CA 95616. Phone: 530-752-3245; e-mail: jjcarroll@ucdavis.edu.

Biological Sciences. Section Chair and Program Coordinator: Dr. A. Michelle Wood, Dept. of Biology, University of Oregon, Eugene, OR 97403. Phone: 541-346-0454; e-mail: miche@darkwing.uoregon.edu.

Chemistry. Section Chair and Program Organizer: Dr. Owen M. McDougal, Department of Chemistry, Southern Oregon University, Ashland, OR 97520. Phone: 541-552-6407; e-mail: mcdougao@sou.edu.

Computer and Information Sciences. Section Chair and Program Organizer: Dr. Alan E. Leviton, Dept. of Herpetology, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118. Phone: 415-752-1554; e-mail: aleviton@calacademy.org.

Earth Sciences. Section Chair and Program Organizer: Dr. J. Thomas Dutro, Jr., U.S. Geological Survey (E-308),

National Museum of Natural History, Washington, DC 20560-0137. Phone: 202-343-3222; e-mail: dutro.tom@nsmnh.si.edu.

Ecology and Environmental Sciences. Section Chair and Program Organizer: Dr. Michael Parker, Department of Biology, Southern Oregon University, Ashland, OR 97520. Phone: 541-552-6796; e-mail: parker@sou.edu.

Education. Section Chair and Program Organizer: Dr. Kathleen M. Fisher, Center for Mathematics and Science Education, 6475 Alvarado Road, Suite 206, San Diego State University, San Diego, CA 92120. Phone: 619-594-4453; e-mail: kfisher@sciences.sdsu.edu.

Engineering and Industrial Sciences. Section Chair and Program Organizer: Mr. Henry Oman (Boeing Company, ret.), 19221 Normandy Park Drive SW, Seattle, WA 98166. Phone: 206-878-4458; e-mail: homan@ieee.org.

Health Sciences. Section Chair & Program Organizer: Dr. Carl Maida, UCLA Div. General Internal Medicine and Health Services Research, Department of Medicine, School of Medicine, Center for Health Sciences, 10833 LeConte Avenue, Los Angeles, CA 90095. E-mail: cmaida@ucla.edu.

History and Philosophy of Science. Section Chair and Program Organizer: Dr. Donald McGraw, Associate Provost, University of San Diego, San Diego, CA 92110-2492. Phone: 619-260-4553; e-mail: mcgraw@SanDiego.edu.

Psychology. Section Chair & Program Organizer: Dr. J. Ken Nishita, California State University, Monterey Bay, 100 Campus Center, Seaside, CA 93955-8001. Phone: 831-582-3563; e-mail: ken_nishita@csumb.edu.

Social, Economic and Political Sciences. Section Chair and Program Organizer: Dr. Mark Aldrich, Dept. of Economics, Smith College, Northampton, MA 01063. Phone: 413-585-3603; e-mail: maldrich@smith.edu.

2005 PACIFIC DIVISION ANNUAL MEETING AT SOUTHERN OREGON UNIVERSITY

Southern Oregon University is located in Ashland, OR, about 14 miles north of the California border on I-5. Ashland is perhaps best known as the home of the Oregon Shakespeare Festival, with many other theater and musical groups close-by. Ashland is situated in a very interesting biogeographical area. Located at the south end of the Rogue Valley, where the Cascade and Siskiyou Ranges meet, visitors will have access to a large variety of intriguing ecosystems, such as those associated with serpentine soils, dormant volcanoes, and the recently created Cascade-Siskiyou National Monument.

Address ideas and proposals for the Ashland meeting to: AAAS Pacific Division, Southern Oregon University, Department of Biology, Ashland, OR 97520, or e-mail: aaaspd@sou.edu.



Dr. John J. Carroll

Air Quality Trends: Past, Present and Future Issues

John J. Carroll
President, AAAS Pacific Division, 2002 - 2003

(Editor's note: This is the text of the Presidential Address given by Dr. John J. Carroll at San Francisco State University on the evening of June 16, 2003, at the 84th annual meeting of the Pacific Division.)

In this address, I will examine some of the significant events and issues from the history of human efforts to preserve air quality while trying to improve other aspects of the quality of life. Chief among the issues is the ever increasing use of energy for comfort; food production, preservation and preparation; and to power industrial development with, for example, the burning of carbon-based fuels. Before doing so, let us examine, in a general way, what substances are of concern by focusing on those pollutants that are ubiquitous rather than those that are associated with a limited number of sources or are unique to a limited number of locations.

Historically, the primary concerns about air quality have centered on the impact of gases and particles on human health. Among the pollutant gases, health effects are known to result from exposure to oxidants (Ozone, PANs), carbon monoxide, a wide array of hydrocarbons, pesticides and herbicides, and vapors of sulfuric, nitric and organic acids. Pollutant particles (liquid and solid materials) consist, among others, of soot, smoke, a variety of hydrocarbons, sulfuric, nitric and organic acid droplets, silica, industrial process wastes, and plant materials. The effects of oxidants, acids, and particles include acute respiratory irritation, distress, and reduced lung function, which amplify existing cardio-pulmonary problems. Chronic exposure leads to irreversible lung scarring. Exposure to carbon monoxide at ambient concentrations amplifies existing cardio-pulmonary problems. Particles and hydrocarbons often contain mutagenic or carcinogenic substances. Pesticides, herbicides and other airborne toxics can cause organ damage, and may cause birth defects.

More recently the impacts of pollutants on human "welfare" have received greater attention. Here, welfare includes economic impacts, various environmental impacts, and the loss of scenic and recreational values. In addition to the pollutants listed above, additional impacts result from deposition of nitrogen (as ammonia, ammonium or as nitrates), sulfates, methane, carbon dioxide, the freons (chloro-flouro-carbons or CFCs), nitrous oxide, and others. The effects of oxidants, agricultural chemicals, and organic air pollutants include phytotoxicity, reduced plant vitality, and increased sensitivity of plant communities to pests and disease, which result in agricultural losses and forest declines. Acidic air pollutants lower the pH of surface water and trigger aquatic

ecosystem changes, alter soil chemistry and nutrient availability, and cause “rock cancer,” which results in infrastructure decay and the loss of architectural treasures, sculptures and monuments. Nitrogen deposition is accelerating the eutrophication of lakes and estuaries, and altering the natural nutrient status of soils. Particles increase the frequency and density of fogs, reduce visibility, and degrade scenic values. Radiatively active gases (carbon dioxide, methane, nitrous acid, freons etc.) enhance the natural atmospheric greenhouse effect, causing a general warming of the lower atmosphere and forcing continental scale climate changes.

Where do most of these pollutants come from? Mostly combustion, which schematically looks like:

FUEL (C_xH_y + impurities such as N, S, Ash, ...) + AIR (N₂, O₂)

YIELDS:

GASES: Water vapor + carbon monoxide and dioxide + oxides of nitrogen
+ oxides of sulfur + unburned fuel fragments + traces of lubricants and coolants + ...

PARTICLES: unburned fuel fragments + soot (carbon) + ash + traces of combustor parts...

In addition, industrial processes emit solvents (mostly organic compounds), toxic by-products, dust and vapors. Agricultural activities emit pesticides, herbicides, fertilizers, soil and plant material dusts, ammonia, methane, nitrous oxide, hydrocarbons, smoke, soot, carbon monoxide, carbon dioxide, and odors. There are also natural emissions of many of these same substances, such as wind blown dust, pollens, molds and plant fragments, natural sources of ammonia, methane, hydrocarbons, oxides of nitrogen, smoke, carbon monoxide and carbon dioxide, and geothermal emissions of sulfur and ash particles. Except for geothermal emissions, most natural emissions per unit area of surface are low, resulting in widely dispersed, low concentrations of contaminants. Man-made emissions are concentrated in small areas, resulting in high local and regional concentrations of primary and secondary pollutants.

Note that many of the substances emitted as primary pollutants are not among the harmful pollutants described above. In fact, the oxidants, acids, many harmful organics, nitrates and sulfates are secondary pollutants formed in the atmosphere from both natural and man-made emissions. Oxidants are primarily produced by complex photochemical processes involving oxides of nitrogen, reactive hydrocarbons, and sunlight. The products of these reactions include ozone, PANs, nitric acid, sulfuric acid, organic acids, organic nitrates, and a variety of polycyclic and aromatic hydrocarbons. Nitric and sulfuric acids, in turn, react with ammonia to form ammonium nitrate and ammonium sulfate, which fertilize phytoplankton and algae growth in lakes, streams and estuaries.

The negative aspects of pollution have been recognized for thousands of years. Clearly, cave dwellers learned early on to put their fires outside the mouths of their caves. Early structures included smoke holes and eventually chimneys. In England, as early as 1272, the king banned the use of “sea coal” in London to reduce smokiness. In 1661 a London physician correlated

coal smoke with respiratory distress among the citizenry. Killer fogs (fog drops with high soot and sulfuric acid concentrations) occurred in England in 1873, 1931, 1951 and 1956, in Belgium in 1930, and Donora, PA in 1948. Attempts to control emissions were, until the middle of the 20th century, limited to royal limitations on coal use in London (1272 and 1380 - 1420), and the banning of visible “vapors” from steam powered automobiles in the U.S. (1895). Finally, in 1956 the British Clean Air Act decreed the phasing out of soft coal usage.

During the 1950’s the roles of oxides of nitrogen, hydrocarbons and sunlight in the formation of secondary pollutants comprising Los Angeles smog were recognized. Auto emissions were recognized as the primary source of these reactants. In 1970, the landmark U.S. Clean Air Acts were enacted, creating the U.S. EPA with the authority to establish air quality standards and require emissions reductions to meet these standards. By 1975, U.S. automobiles were required to have catalytic converters, which reduced hydrocarbon and carbon monoxide emissions and required use of unleaded gasoline, leading to the reduction of lead emissions. In 1981, three-way catalytic converters coupled with computer controlled ignition and fuel injection became available, further reducing emissions as shown in Table 1.

TABLE 1. 1985 vs. 1970 Auto Emission Reductions (US EPA):

Hydrocarbon emissions reduced by	98%
Oxides of Nitrogen emissions reduced by	89%
Carbon Monoxide emissions reduced by	96%

A number of standard, gasoline powered 2003 model cars have half the emissions of the already clean 1985 models. The list can be found at the California Air Resources Board web site. Through greater operational efficiencies, control technology, and switching to cleaner burning fuels (e.g. from coal to natural gas), significant reductions in emissions of many pollutants from all sources have occurred since 1970, even though population and energy consumption have increased (Table 2).

TABLE 2. U.S. National Changes 1970 - 1997 (US EPA)

<u>Variable</u>	<u>Change</u>
Population	+31 %
G.D.P.	+114 %
Vehicle miles driven	+127 %
Sum of 6 pollutants (below)	-31 %
Carbon Monoxide	- 32 %
Oxides of Nitrogen	- 11 %
Hydrocarbons	- 38 %
Fine particles	- 75 %
Oxides of Sulfur	- 35 %
Lead	- 98 %

Note that these improvements were achieved mainly for chemically active substances that are important to human health. Emissions of welfare-affecting pollutants, such as ammonia, methane and carbon dioxide, have increased during the same period. Figure 1 shows the time history of greenhouse gas concentrations in the global atmosphere. The upper three curves follow the same shape as human population growth. Figure 2 is a time plot of the deviation of the global near ground air temperature from its 1902 - 1980 average value. Clearly, during the 20th century the mean surface temperature has increased about 1 degree C. Some of this change is part of the natural variation in climate, but a significant part, especially over the last 25 years, is man-made.

The overall national improvements listed above do not represent local changes very well. Focusing on California as an example, areas that were severely impacted in the 1970's have become significantly less so as the emission reductions have had a greater effect than increased energy use. Conversely, areas with low impacts in the 1970's have seen little change or slight increases over the past 25 years as populations and energy use have increased both locally and upwind of these regions. Examining

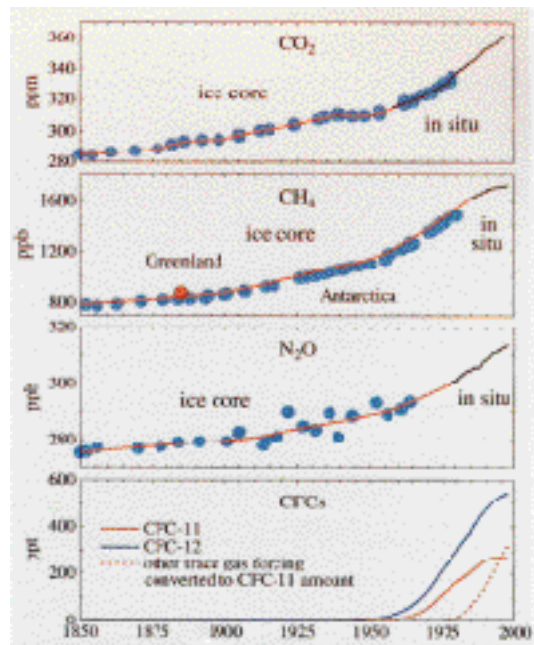


FIGURE 1. Time plot of the average atmospheric concentrations of carbon dioxide in parts per million by volume (ppm), for methane and nitrous oxide in parts per billion (ppb) and freons or CFC's in parts per trillion (ppt). After Ledley, et. al., EOS September 28, 1999.

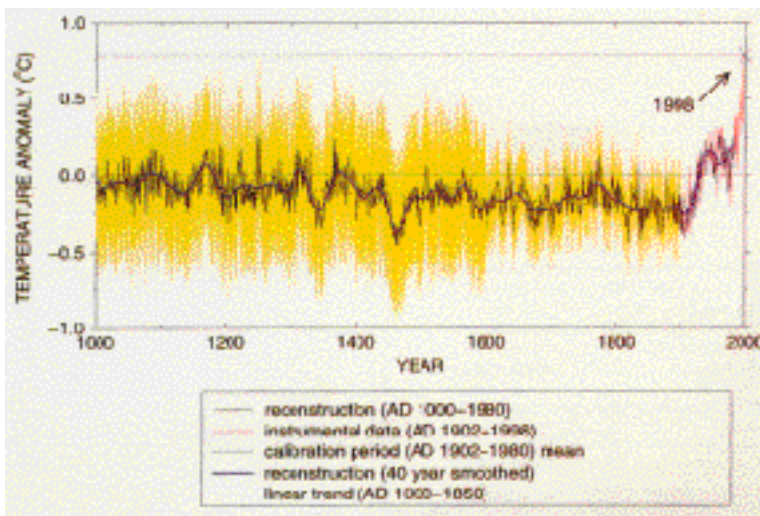


FIGURE 2. Time plot of the difference in globally averaged, ground level temperatures from its average over the period 1092 - 1980. After Ledley, et. al., EOS September 28, 1999.

the ozone data for several California regions shown in Figure 3, the number of days per year experiencing ozone concentrations in excess of 90 ppbv (upper panel) have decreased in the Los Angeles (SoCoast) and San Francisco Bay (SFBA) areas, decreased slightly in the Sacramento Valley (SacVly), but increased in the San Joaquin Valley (SJV). An ozone concentration of 90 ppb is considered by the State of California to be the threshold for human health effects. These data show that in the major population

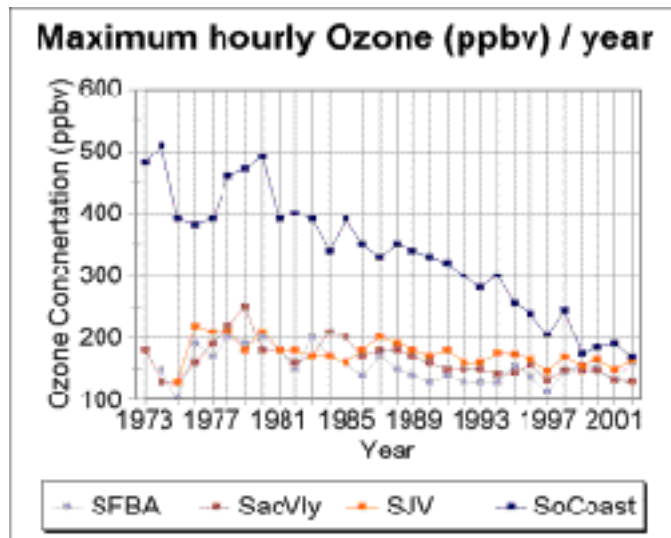
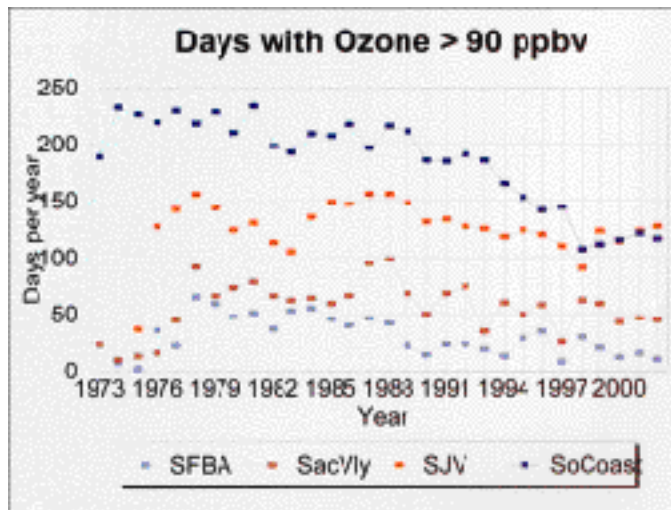


FIGURE 3. Time plot of two forms of ozone data for the San Francisco Bay Area (SFBA), the Sacramento Valley (SacVly), the San Joaquin Valley (SJV) and the greater Los Angeles area (SoCoast). Upper panel shows the number of days in each year during which the one-hour average concentration exceeded 90 ppb. The lower panel shows the maximum hourly averaged ozone concentration measured during each calendar year.

generating machines, industrial processes, and end use appliances. For example, modern light sources (fluorescent lights and light emitting diodes) consume about 1/100th the energy compared to the earliest incandescent light bulbs, and modern steam turbines are about 90% more efficient than early ones. A result is that pollutant emissions per unit of useful work have decreased over time. There has also been a continuous transition to cleaner fuels over time. An interesting measure of this is to consider the hydrogen-carbon ratio (H/C) in the world fuel mixture. Around 1800 AD, wood (H/C = 0.1) was the predominant fuel. By 1930, the predominant fuel was coal

centers, the frequency of exposure of the population to harmful ozone levels has declined, but not so in more rural areas. The lower panel illustrates that the peak ozone concentrations have declined in all areas, but most dramatically in Los Angeles. So all areas have had a reduction in the doses their populations receive.

While the ozone situation has generally improved, the same is not so for fine particles, which are the most likely to penetrate deep into the lungs. Figure 4 shows that the number of days during which fine particle concentrations exceeded 50 micrograms per cubic meter declined until the mid 1990's, after which the trend reversed, with a worsening of particulate pollution over the past 6 years in all regions.

From this sampling of available data and analyses, it is clear that industrial societies such as the U.S. have continued to expand their populations, industrialization, and energy consumption, while reducing or at least not significantly worsening exposure to substances harmful to human health. However, pollutants affecting human welfare, such as carbon dioxide, methane and ammonia, have increased in rough proportionality to increased population and energy consumption.

In general, there have been great increases in the efficiency of power

Qs & AAs

Questions and Answers.

We live in a demanding world, a world of questions. Science is being asked to help deliver answers more quickly than ever before. Keeping up to date with the latest scientific news and developments is ever more critical at this time in order to succeed. The question is how.

Science magazine, published by AAAS, gives you an inside track to a world of scientific information, understanding, and knowledge. Every week, AAAS members read about astounding discoveries inside the pages of *Science* and are kept up to the minute with privileged access to the latest research via *Science* Online.

AAAS has been helping to answer the questions of science and scientists since 1848 and today is the world's largest multidisciplinary nonprofit membership association for science-related professionals. We work hard at advancing science and serving the needs of our members and society—by supporting improved science education, sound science policy, and international cooperation.

So, if the question is how to become a member or renew your membership, here's the answer. Simply go to our website at www.aaas.org/membership, or in the U.S. call 202 326 6447 or internationally call +44 (0) 1223 326 515 and ask for code T31.

Join AAAS or renew your membership today. And you'll discover the answers are all on the inside.



ADVANCING SCIENCE. SERVING SOCIETY.

www.aaas.org/membership

(H/C = 1), by 1980 it was oil (H/C = 2), and, projecting to 2020, natural gas (methane, H/C = 4) will dominate. This trend has reduced ash, sulfur, nitrogen and carbon dioxide emissions per unit energy produced, but energy consumption continues to increase.

Controlling many of these harmful emissions is impossible if we continue to rely on burning carbon-based fuels as our primary energy source. What other possibilities exist? Hydrogen-based economies and nuclear power.

Even with no conscious plan to do so, we have been moving toward a hydrogen economy since the beginning of the industrial revolution. Hydrogen is one of the most plentiful elements on earth and, in principle, is a renewable fuel. To utilize hydrogen as a fuel, it is not burned. Rather, it is allowed to react with oxygen in fuel cells to produce electricity, water vapor and heat. Hence, no combustion emissions are produced. Fuel cells are not new, but use expensive catalysts and are expensive to produce given current technologies and low production numbers. Also, infrastructure to distribute hydrogen does not exist, but for the immediate future is unnecessary. In a hydrogen fuel cell economy, power would be generated locally, on demand, with one generator per block or even one per house. The current source of most hydrogen is natural gas, which is reacted in reformers that convert methane (CH_4) to carbon dioxide and hydrogen. Most developed countries deliver natural gas to most urban and suburban areas. Thus, a source of hydrogen is locally available. Using reformer–fuel cell combinations, three times as much electrical power could be produced compared to the burning of the same amount of natural gas in a thermal (steam) generating plant. By generating power locally, losses associated with long distance transmission of power would be saved, and the vulnerability of power grids to blackouts, natural disasters or sabotage would disappear. Even though carbon dioxide would still be emitted, its rate of emission could be cut to one-third of its present level with no change in energy usage. In the long run, diffuse energy sources such as solar energy, wind power, tidal, and wave energy could be used to make hydrogen by the dissociation of water.

Following the Hindenberg accident in the late 1930's, hydrogen got a bad name. True, the molecule is the smallest of all naturally occurring gases, and plumbing that does not leak natural gas could be quite porous to hydrogen. But this is a tractable design issue, not a major obstacle. When hydrogen does leak, being so light, it tends to rise, unlike natural gas which tends to sink. Given a leak occurring, would you rather have an explosion in your basement or in your attic?

The second alternative is nuclear power. Nuclear power is in disfavor for two reasons: it is viewed as dangerous, and the long-term toxicity of nuclear waste is a serious impediment. In

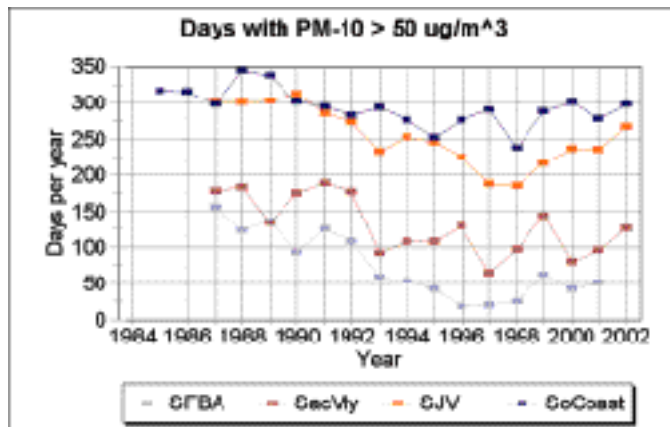


FIGURE 4. Time plot of the number of days in each year during which the concentrations of fine particle with diameters less than 10 micrometers (PM-10) exceeded 50 micrograms per cubic meter of air.

my opinion, the safety issues are exaggerated. Modern reactor designs are very safe. Except for the disaster at the known-to-be-badly-designed Chernobyl reactors, there have been no major nuclear power accidents affecting the public. Three Mile Island was the worst in the U.S., and the safety measures designed into it did what they were designed to do. Conversely, how many deaths and injuries have occurred from coal mining and oil and natural gas production and use? How many steam plants have had catastrophic failures? These accidents are usually less dramatic and have smaller radii of impact than a hypothetical major nuclear accident, but the latter are far less likely to occur.

The environmental impact of uranium mining and processing and the implications of the very long-lived wastes to the environment are significant. But the amounts of fuel and waste are small compared to the amounts of fuel and wastes associated with current coal and oil usage. The environmental impacts of their extraction and use are not small, and many of them are long-lived as well. Coal mining, whether strip mining or subsurface tunneling, greatly disturbs the landscape, contaminates surface and ground water, and scars the land for decades. Collapse of old mines and subsidence in petroleum production areas are accelerating, ongoing, and permanent problems. The eutrophication and acidification of waterways as a result of these activities are phenomena with 100-year time scales. The buildup of carbon dioxide and enhanced greenhouse warming could persist for centuries. So “business as usual” also has long-term environmental consequences which, in fact, are less well understood than the problem of long-lived nuclear waste.

Finally, the social costs of continued reliance on fossil fuels is enormous. The U.S. military spends tens of billions of dollars annually just to protect the delivery of oil and gas to our shores. Several additional tens of billions are spent for foreign “aid” to insure that friendly governments will continue to allow U.S. companies access to foreign gas and oil. Add to this the human costs of the scores of military actions, incursions, and wars that have been undertaken by the industrial West since WWII in petroleum producing regions, and the true cost of oil becomes more clear. Currently, many indigenous peoples are being displaced or annihilated to provide unimpeded access to new oil and gas fields, or to allow construction of and access to pipeline routes.

Assuming that the earth’s supply of petroleum is finite, its value as raw material in the future becomes ever more important. How will our descendants view us if we continue to burn up what they will need in order to manufacture textiles, structures, and the everyday necessities of life?

Eliminating burning as our primary source of energy will eliminate a wide range of significant social and environmental problems. In the short run, we should seriously re-examine the nuclear option objectively, and include the real social and environmental costs of continued use of fossil fuels in the analysis. In the longer run, we should be working harder and with greater urgency toward a hydrogen economy that can provide a truly renewable, clean, and efficient energy supply. Isn’t it time for the industrialized world to abandon what are essentially highly refined versions of the technology developed by the cave men in favor of a cleaner, renewable source of energy?

.....



American Association for the Advancement of Science Pacific Division

85th Annual Meeting Utah State University June 13–17, 2004 Call for Papers

Members of AAAS and its affiliated societies, students, teachers and other scientists are encouraged to participate in the annual meeting and present papers and/or posters. Persons wishing to present a paper or poster at one of the sessions should e-mail the title, abstract and other required information (see instructions below) to the chair of the appropriate society or section (see page 15) and also the Pacific Division office, aaaspd@sou.edu. The deadline for submission is April 26, 2004. Students must identify themselves so that judges will be able to evaluate their presentations for awards of excellence.

Please format your submission as follows:

Line 1: Your name

Line 2: Your telephone number and e-mail address

Line 3: Name of presenter (if different from above)

Line 4: Presenter's telephone number and e-mail address

Line 5: Society, section or program to which you are submitting your presentation

Line 6: Is the presentation oral or a poster?

Line 7: Special equipment needs (other than 35mm, overhead, and computer projectors)

Line 8: Is the presenter a student?

Line 9: Paper title in title case and italics (i.e. *Paper Title in Title Case*)

Author(s) name(s) in **ALL CAPS AND BOLD**

Full address(es), including institution, mailing address, city, state and zip code.

Line 10: Leave blank

Line 11: Text of abstract. Limit: 250 words.

Example of properly formatted abstract submission (lines 9-11)

Advanced Knowledge Acquisition in Elementary Biology. **KATHLEEN M. FISHER and STACY GOMES** (Center for Research in Mathematics and Science Education, San Diego State University, San Diego, CA 92120).

Advanced knowledge acquisition differs in important ways from introductory learning. Advanced knowledge acquisition refers to learning a content area beyond the introductory stage but before extensive experience and practice (Spiro, Coulson, Feltovich, and Anderson, 1988). At this stage, knowledge must be reasonably correct and active rather than inert. The goals of learning shift from knowledge reproduction to knowledge use. Advanced students need to become more comfortable with learning in different ways, more adaptive in using and applying knowledge, and more inclined to spontaneously restructure their knowledge. These advanced students are preparing themselves to leave school and enter practice in the workplace. They need to attain a deeper understanding of content material; reason with it; and apply it flexibly in diverse contents (Spiro, et al, 1988, p 375). They need to shift from being passive receivers of information to active organizers and users of their knowledge. In teaching biology to prospective elementary school teachers in their senior undergraduate year, we use a variety of strategies to achieve these ends, including: 1. stimulating curiosity and eliciting prior knowledge; 2. prompting students to build runnable mental models through prediction and interpretation; 3. promoting conceptual change by prompting 3a) cognitive disequilibrium and 3b) knowledge elaboration and by presenting 3c) ill-structured cases and 3d) knowledge construction activities; 4. promoting students' active learning; 5. providing scaffolding and support for student knowledge construction; 6. diagnosing and remediating underdeveloped cognitive and metacognitive skills; 7. prompting students to identify central ideas; 8. prompting students to integrate ideas; 9. avoiding oversimplification and overregulation; 10. prompting students to construct multiple representations; 11. building confidence and teamwork; and 12. evaluation for meaningful understanding. Two aspects which will be emphasized here are the use of SemNet[®] software to help students develop the skills and habits of meaningful knowledge organization and the use of two tiered multiple choice questions to assess conceptual understanding.



*American Association for the Advancement of Science
Pacific Division*

*86th Annual Meeting
Southern Oregon University
Ashland, OR
June 12–16, 2005*

Call for Workshop and Symposium Proposals

Members of AAAS and its affiliated societies, students, teachers and other scientists are encouraged to participate in the annual meeting by developing workshops and/or symposia. Persons wishing to develop a workshop and/or symposium for the 2005 Ashland meeting should e-mail the title, description and other required information (see instructions below) to the chair of the appropriate society or section (see page 15 of this *Newsletter*) and also the Pacific Division office, aaaspd@sou.edu. The deadline for submission is **October 15, 2004**, although late submissions will be considered.

Questions? Contact Dr. Roger Christianson, Executive Director, AAAS Pacific Division, Southern Oregon University, Department of Biology, Ashland, OR 97520. Phone: 541-552-6747; e-mail: rchristi@sou.edu.

Workshops generally are 1/2- or full-day and may or may not accompany a symposium. If special facilities and/or equipment are required, be sure to identify what you need as completely as possible in your submission (see Line 8 below). If a cost is incurred, it will be passed along to participants as a workshop fee.

Symposia may be 1/2- or full-day or longer. Individual presentations are usually scheduled with more time than for contributed papers (30 minutes rather than 20 minutes) but the actual scheduling depends on the needs of the symposium and may be longer or shorter, even a mixture. Please contact Dr. Christianson to discuss your specific needs. When preparing your submission, please indicate which presenters are confirmed (see Line 8 below). If you do not yet have a list of presenters, you may submit a list of potential presentation topics. Please keep in mind that we need as much information as possible early on in order to adequately publicize the symposium.

Format your submission as follows:

Line 1: Organizer's name.

Line 2: Organizer's full mailing address, including academic/professional affiliation, telephone number and e-mail address.

Line 3: Co-organizer (if any).

Line 4: Co-organizer's full mailing address, including academic/professional affiliation, telephone number and e-mail address.

Line 5: Is this a Workshop or a Symposium?

Line 6: Number of 1/2-day (roughly three hours, depending on the needs of the program) sessions needed.

Line 7: Title of proposed program.

Line 8: If a symposium, list the name of each (proposed) speaker, including academic/professional affiliation, telephone number and e-mail address for each. Topic titles are optional at this time and will be requested later, along with an abstract for each presentation (see Call for Papers, page 24).

If a workshop, indicate facilities and/or special equipment required and number of participants that can be accommodated.

Line 9: Brief description of proposed program (please limit to 250 words).

**AAAS Pacific Division Meeting—June 13 - 17, 2004
Utah State University Residence Halls Application**

Name _____ Male Female
 Arrivale Date _____ Departure Date _____
 Roommate's Name _____ Male Female Spouse
 Mailing Address (Home) _____
 City _____ State _____ Zip _____
 Phone (Day) _____ (Night) _____

Lodging application must be sent for EACH person.		
LODGING OPTIONS	FEE	TOTAL
Double Occupancy	\$15/night	\$ _____
Single Occupancy	\$25/night	\$ _____
Total Amount Enclosed:		\$ _____

Four Ways To Register

1. Complete the registration form and return it to the address below with full payment by enclosing a check payable to Utah State University or credit card billing information.

2. Call USU Housing Services at 800-863-1085 or 435-797-0277. They will register you with Visa, American Express, MasterCard or Discover.

3. Fax your registration form with your credit card number. The 24-hour fax number is 435-797-4035.

4. Go on-line to <http://joey.hfs.usu.edu/housing/index.cfm?fuseaction=lodginginfo> and follow the appropriate links to the on-line reservation form.

Method of Payment (Full payment is required)

Check (payable to Utah State University)

Credit Card (circle one)

Visa
 AmEx
 MasterCard
 Discover

Name _____

Number _____

Exp. Date _____

Signature _____

Cardholder Phone Number _____

Cancellation/Refund Policy

All cancellations must be made in writing to the address listed below. Cancellation must be made at least 10 (ten) days prior to the first night of lodging to receive a full refund. No refunds will be given to individuals cancelling during the 7 days prior to first night's lodging reservation.

The university residence halls consist of apartments with shared bathroom, living and dining areas and three bedrooms. Each bedroom has two single beds and can accommodate a maximum of two persons per room. If you rent an entire apartment (all three bedrooms) you will be the only one in the apartment. If you rent one bedroom (single or double) you (and your roommate if applicable) will not have the entire apartment to yourself. If you rent a shared room and do not specify a roommate, a roommate will be assigned to your bedroom. Please be aware that individual bedroom doors do not have locks. Bedding is provided (sheets, blanket, pillow, pillowcase). No maid service or towels are provided. Elevators, ice machines, air conditioning, extra pillows, and blankets are not available. Individual apartment phones are also not available. However, pay phones are within walking distance.

I have read and understand the cancellation policy. Registrations will not be processed unless this box has been checked and form signed.

Signature _____ Date _____

FOR OFFICE USE ONLY	
Batch Date _____	Initials _____
Participant No. _____	Date pmt. Rec'd. _____
Order No. _____	Check <input type="checkbox"/> business # _____
Confirmation Sent _____	<input type="checkbox"/> personal # _____
<input type="checkbox"/> Invoice No. _____	<input type="checkbox"/> cash <input type="checkbox"/> Visa <input type="checkbox"/> MC <input type="checkbox"/> Dis
Cancel Date _____	<input type="checkbox"/> Div <input type="checkbox"/> AMEX
<input type="checkbox"/> CR Refunded _____	Total Amt. Rec'd. _____

Mailing Address

USU Housing and Food Services • Attn: Cydnee Roper • 8600 Old Main Hill • Logan, UT 84322-8600

AAAS PACIFIC DIVISION 85th ANNUAL MEETING

Utah State University

Logan, UT

June 13-17, 2004

ADVANCE REGISTRATION FORM

FOR EARLY REGISTRATION, FIELD TRIPS, AND OTHER SPECIAL EVENTS

*Note: Do not send this form to Utah State University
Address it to: AAAS Pacific Division, Southern Oregon University
Department of Biology, Ashland, OR 97520.*

Name: _____

Mailing Address: _____

City, State, Zip: _____

E-mail: _____ Day Phone: _____

Institution/Company, (for your name tag--if none, city & state will be used): _____

AAAS member: Yes No Affiliated Society Membership: _____

Do you plan to present a paper or poster? Yes No
If so, in which affiliated society or PD section or program? _____

REGISTRATION FEES: *Check all that apply.*

Full Meeting:

	Received by May 21	Received after May 21	
Professional	<input type="checkbox"/> \$60	<input type="checkbox"/> \$80	
Teacher K-14	<input type="checkbox"/> \$45	<input type="checkbox"/> \$60	
Student	<input type="checkbox"/> \$30	<input type="checkbox"/> \$40	
Spouse	<input type="checkbox"/> \$30	<input type="checkbox"/> \$40	→ Name, City, State (for name tag): _____
Retired	<input type="checkbox"/> \$45	<input type="checkbox"/> \$60	_____

One-day

Professional \$45 \$60 → Select day: Mon. Tues. Wed.

DIVISION BANQUET (June 15, Tuesday): The Division banquet will be held at the Bullen Center, located near the USU campus. The program will include, among other things, the presentation of Student Awards of Excellence. Tickets must be purchased in advance. Students who are registered for the meetings and who have presented an oral or poster paper are invited to be guests of the Division and do not have to pay to attend the banquet. If you are a student presenter who is planning to attend the banquet, please fill in the appropriate information below.

____ tickets @ \$25 each \$ _____ # vegetarian # sirloin tip # herb crusted salmon

student presenter ticket @ no charge # vegetarian # sirloin tip # herb crusted salmon

SEE REVERSE FOR FIELD TRIPS AND SUMMARY

FIELD TRIPS: Identify the trip(s) you in which you would like to participate.
See page 11 of this *Newsletter* for descriptions.

Field Trip #1: Preston Valley Trail Hike, on Sunday ___ tickets @ \$20/person \$ _____

Field Trip #2: History of Local Indians, Mountain Men ___ tickets @ \$35/person \$ _____
and Early Mormon Settlements, on Sunday

Field Trip #3: Lake Bonneville and the Idaho ___ tickets @ \$35/person \$ _____
Museum of Natural History, on Sunday

Field Trip #4: WSSS Field Trip to the Wasatch Front, ___ tickets @ \$25/person \$ _____
on Wednesday

Field Trip #5: Yellowstone National Park, ___ tickets @ \$300/person \$ _____
on Thursday - Saturday

SUMMARY:

Registration \$ _____

Banquet Tickets \$ _____

Field Trips \$ _____

TOTAL ENCLOSED \$ _____

(Make checks payable to AAAS Pacific Division or use your credit card—see below.)

PLEASE NOTE: Requests for refunds must be in writing and postmarked no later than May 21, 2004. A \$10 handling fee will be applied. An additional 3% surcharge will be applied to credit card refunds.

To obtain a count of the numbers of people planning to participate in one or both of the events listed below, please indicate the number of people in your party that plan to attend each.

___ **Cracker Barrel Mixer** (Sunday evening, no charge to registrants and family)

___ **Presidential Reception** (Monday evening, no charge to registrants and family)

CREDIT CARDS

To pay for your advance registration by credit card, you may

- mail this completed form to the address below or
- phone the information to 541-552-6869 between 9:30 a.m. and 1:30 p.m. Pacific Time or
- fax this completed form to 541-552-8457 (dedicated fax line).

Type of Card: Visa Master Card Discover AmEx

Credit Card # _____ Expiration Date _____

Name on Card _____

Signature of Cardholder _____

COMPLETE AND RETURN THIS FORM WITH YOUR PAYMENT TO:

AAAS Pacific Division • Southern Oregon University • Department of Biology • Ashland, OR 97520

Should you have questions, e-mail us at aaaspd@sou.edu

or call 541-552-6869 M - F between 9:30 a.m. and 1:30 p.m., Pacific Time.



2004 AAAS Annual Meeting

Save the Date
Join Us in Seattle!
12–16 February 2004

This is your opportunity
to be a part of the world's
finest showcase for
scientific discovery!

Discuss up-to-the-minute
advances in everything from
genomics to nanotechnology –
surrounded by the picturesque
waters and mountains of
Seattle, Washington.



Symposia and Topical Lectures

- Over **130 Symposia** and **Topical Lectures** feature talks by the best and the brightest of the world's scientific, engineering and technology communities.
- Plenary Lectures** by noteworthy leaders such as:
 - **Mary Ellen Avery**, AAAS President, Children's Hospital Boston
 - **Sir David King**, FRS, United Kingdom, Office of Science & Technology, Chief Scientific Advisor
 - **Kenneth R. McIntosh**, Division of Infectious Diseases, Children's Hospital Boston
 - **Kip S. Thorne**, Feynman Professor of Theoretical Physics, California Institute of Technology
- 250 Poster Sessions**



In-depth 2-Day Seminars

Seminars at the AAAS Annual Meeting afford the opportunity for in-depth examinations of some of the most exciting and fast-moving areas of research. These special seminars bring together leaders in the areas of research and education.

- Proteomics: Networking Proteins for Biology and Medicine**
- Nanotechnology: Nanoscience and Nanoengineering**
- Vaccines: Vaccines in the 21st Century**
- Forum for School Science: Leading Edge Issues in Science and Mathematics Education**

Special Opportunities

- Career Building Workshops**
- Science Career Fair**
- K-12 Lesson Writing Competition**
- Young Scientists' Resource Center**
- Student Poster Sessions**
- Family Science Days**



Register today online at
www.aaasmeeting.org



Pacific Division Publications
 Huge Book Sale—All Books \$10.00 ea
 Includes shipping to U.S.A. and Canada.
 Sale ends March 15, 2004.

Agroecosystems and the Environment: Source, Control, and Remediation of Potentially Toxic, Trace Element Oxyanions (1998; cloth, 213pp.); ~~\$20.00~~ **\$10.00** (ISBN 0-934394-12-1)

San Francisco Bay: The Ecosystem (1996; cloth, 542pp., col. plts.); ~~\$45.00~~ **\$10.00** (ISBN 0-934394-11-3)

Genecology and Ecogeographic Races (1995; cloth, 275pp.); ~~\$28.95~~ **\$10.00** (ISBN 0-934394-10-5)

Cracking Rocks and Defending Democracy: The Life and Times of Kirtley Fletcher Mather, 1888-1978 (1994; cloth, 342pp., 39 photos); ~~\$31.95~~ **\$10.00** (ISBN 0-934394-09-1)

Dietary Factors and Birth Defects (1993; paper, 410pp.); ~~\$28.50~~ **\$10.00** (ISBN 0-934394-08-03)

Crater Lake: An Ecosystem Study (1990; cloth 224pp.); ~~\$26.95~~ **\$10.00** (ISBN 0-934394-07-5)

Late Cenozoic History of the Pacific Northwest (1985; cloth, 417pp.); ~~\$28.95~~ **\$10.00** (ISBN 0-934394-06-7)

Patterns of Evolution in Galapagos Organisms (1983; cloth, 568pp.); ~~\$32.50~~ **\$10.00** (ISBN 0-934394-05-9)

San Francisco Bay: Use and Protection (1982; paper, 310pp.); ~~\$17.95~~ **\$10.00** (ISBN 0-934394-04-0)

Frontiers of Geological Exploration of Western North America (1982; paper, 248pp); ~~\$16.95~~ **\$10.00** (ISBN 0-934394-03-2)

Proceedings Series

Meeting Program with Abstracts (Proceedings Vol. 1, Part 1, 1983 through Vol. 23, Part 1, 2002); **\$7.50 each**

Evolutionists Confront Creationists (Proceedings Vol. 1, Part 3, 1984; paper, 213 pp.); **\$10.00**

Scientific Research and New Religions (Proceedings Vol 2, Part 2, 1985, paper, 180 pp.); **\$10.00**

California's Master Plan for Higher Education in the Twenty-first Century (Proceedings, Vol 13, Part 2, 1996; paper, 118 pp.); **\$10.00**

Address orders to: AAAS Pacific Division • Southern Oregon University • Department of Biology • Ashland, OR 97520
 Phone: 541-552-6869; FAX: 541-552-8457; E-mail: aaaspd@sou.edu

ALL SALES FINAL—NO RETURNS

Payment must accompany all orders. Make checks payable to AAAS, Pacific Division.

Quantity	Title	Price Each	Total
SHIPPING (no charge to USA & Canada; others contact us for amount)			
TOTAL DUE WITH ORDER			

Name _____

Address _____

City _____ State _____ Zip _____

Daytime Phone _____ e-mail _____

CREDIT CARD

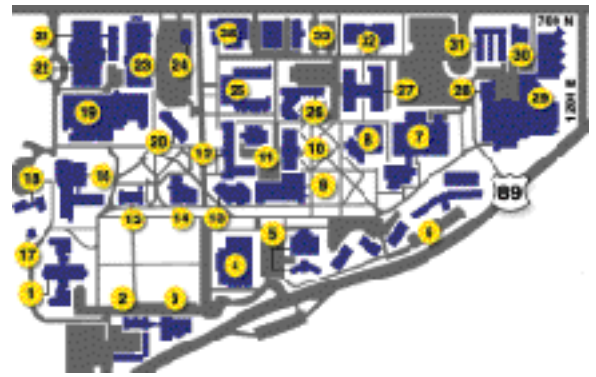
Visa Master Card Discover American Express

Credit Card # _____ Expiration Date _____

Signature _____



Map of Utah and surrounding area. Logan is north of Salt Lake City and marked with a large arrow.



Map of Utah State University South Campus. Meeting buildings are bolded in the key.

Key:

1. Old Main
2. English Building
3. Family Life Building
4. Merrill Library
5. Business Building
6. Residence Halls - South
7. Engineering Building
8. SER Building
9. SciTech Library
10. Computer Center
11. Biotechnology Building
12. Agricultural Science
13. Eccles Conf. Center
14. Geology Building
15. Animal Science
- 16. Widtsoe Hall and Maeser Lab**
17. Media Relations
18. Alumni Center
- 19. Taggart Student Center**
- 20. University Inn**
21. Nelson Fieldhouse
22. Military Science
- 23. Parking/Visitor Services**
24. The Barn
25. Biology Building
26. Natural Resources
27. Technology Building
28. Art Museum
29. Fine Arts Center
30. UR Graphics Building
31. Forage and Range Lab
32. Industrial Science
33. Communicative Disorders
35. Veterinary Science

AAAS PACIFIC DIVISION 85th ANNUAL MEETING
Utah State University
Logan, UT
June 13 - 17, 2004

**PRELIMINARY ANNOUNCEMENT OF SYMPOSIA,
FIELD TRIPS AND OTHER EVENTS**

SYMPOSIA

- **Agricultural Genomics: Who, What, and Why**
- **Return of the Wolf to the West**
- **Future Climate Change: Implications for Western Environments**
- **Water-wise Landscaping**
- **Electromagnetic Techniques in Soil Science**
- **Examining a Leaky Pipeline: Research on the Academic Careers of Women in Science and Engineering**
- **Nuclear Transfer Implications and Status**
- **Snake and Colorado Rivers: Rights and Restoration**
- **Emerging Diseases of Significance in the West**
- **Colorado Plateaux to Great Basin--A Natural Laboratory From Grade School to Grad School**
- **Strategies to Accommodate Dual Career Couples in Academic Science and Engineering Departments**

FIELD TRIPS

- **Botanical Hike in Logan Canyon**
- **History of local Indians, Mountain Men and early Mormon Settlements**
- **Idaho Museum of Natural History**
- **The Wasatch Formation**
- **Yellowstone National Park**

2005 PACIFIC DIVISION MEETING SITE
Southern Oregon University, Ashland, OR



American Association for the Advancement of Science
Pacific Division
Southern Oregon University
Department of Biology
1250 Siskiyou Boulevard
Ashland, OR 97520

NON-PROFIT ORG.
U.S. POSTAGE PAID
Medford, OR
Permit No. 292