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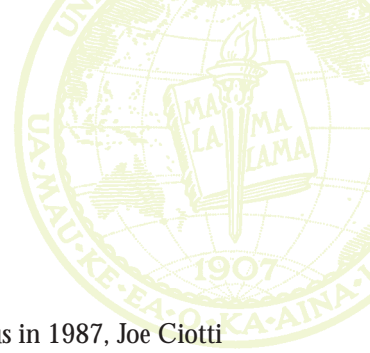
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Supporting the faculty vision

When he joined the faculty at UH's Windward campus in 1987, Joe Ciotti was asked what facility he'd like to help plan. He answered without hesitation—a planetarium has been his dream since he first visited New York's Hayden Planetarium at age 16. It is a vision he nurtured through UH graduate school, NASA training as a Teacher in Space classmate of Christa McAuliffe and selection as Hawai'i's Carnegie Professor of the Year. In October, his dream came true with the opening of Hōkūlani Imaginarium, a remarkable theater that will take students of all ages and visiting community members on explorations out to the stars and into human cells.

This is what I mean when I say that I have never been failed by a faculty that has been validated and empowered.

Inspiration and perseverance like Joe's is what will make this system great. It is what makes our university campuses a resource for the communities in which we live. It is why, when the state needed a

short-term economic infusion, lawmakers recognized the long-term benefit of investing in UH. The projects they funded—establishment of a new medical school and biomedical research complex in Kaka'ako, planning for the UH West O'ahu campus in downtown Kapolei and improvements to campuses on every island—all are part of UH's long-standing master plan and fulfillment of our faculty's vision.

These projects do not depend on state taxpayers alone. For the medical school, our use of \$150 million from the state's \$1.2 billion tobacco fund is contingent on raising a matching sum from private sources. We will secure private support for other UH initiatives as well. Governor, legislators, regents, administrators, unions, alumni, citizens—we are all responsible for this university and what it should and will be. Together, we will empower remarkable UH faculty members like Joe Ciotti and share not just in their dreams, but also in making them come true.



President Dobbelle, left, with Windward CC Professor Joe Ciotti in front of Imaginarium dome

With warm aloha,

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A Kaua'i sinkhole provides information about former human, animal and plant inhabitants



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Nūhou NEWS

Pests are in hot water with scientists

A UH-developed hot water treatment designed to disinfect plants for export may also help control the spread of Caribbean tree frogs on the Big Island. Agriculture researchers Arnold Hara, from UH Mānoa, and Marcel Tsang, UH Hilo, have demonstrated that cut flowers, foliage and even whole potted plants can be soaked in hot, then cooler water for specified times without sustaining damage. The technique kills scales, nematodes and other insect pests that would prevent sales in off-island markets. Working with state forestry and wildlife officials, they have demonstrated that the process also rids potted plants of the frogs. That allows reforestation efforts to proceed without risk of spreading the non-native frogs, which annoy human residents with noisy chirping and could pose a threat to native species.



Cross golf with lawn bowling...

To develop a Hawaiian take on a traditional game, five UH staffers thought outside the box, literally. Bocce ball is played on a rectangular packed clay court with raised edges. The patent-pending Hawaiian Rules version (H.R. Bocce) allows play on any size or shape lawn or even miniature fairways complete with sand traps and water features. Developers from the College of Tropical Agriculture and Human Resources (CTAHR) conceived the game as a secondary use of the rolling patch of grass used for UH turf management classes.

"Our idea was to incorporate golf elements in an activity that could be played near resort concessions or around clubhouses," says Joe DeFrank. "There's a lot of turf grass in Hawaiian landscapes with nothing happening on it. With H.R. Bocce, a relatively small



area can provide a great deal of fun." Players roll or toss softball-sized two-pound balls toward a target ball, gaining points by getting the closest. Landscaping—slopes, ornamental plants, even trees—add to the challenge. The developers envision licensed courts used for team building exercises, keiki activities and charitable events. "We call it our field of dreams," says DeFrank, who grew up playing bocce ball with his father in New Jersey. It's fulfilled one of his dreams. With the home-turf advantage, he finally beat his dad at the game. For more information, call 808 956-5698 or e-mail defrank@hawaii.edu.

Who will be an entrepreneur?

Chance and opportunity may be more important than personality or drive in predicting who will become an entrepreneur. Five years after UH Hilo Professor of Management Emmeline de Pillis surveyed individuals to find out how likely they were to start a business, student Audrey Idomoto revisited the participants. Those who had started businesses had originally rated themselves as very unlikely to do so. Further, she found no significant personality differences between them and the non-entrepreneurs.

The master mime speaks at UH

UH awarded French mime Marcel Marceau the Doctor of Human Letters in November for his lifetime of work in the arts. Regent and Honorary Consul to France Patricia Lee, right, assisted in the hooding ceremony. Observing that "art can be explained only when you see it," the still agile Marceau demonstrated some of the 42 positions for the "conventions of character" that comprise the alphabet of the ancient art form he revived.



Cholesterol less of a worry for elderly

Very low cholesterol may not be such a good thing for people over age 70. In a study of 3,500 Japanese-American men age 71-93, UH researchers found that the men with the lowest cholesterol had the highest mortality rates. High blood cholesterol remains a health risk for people under 65 years of age, however, stresses Professor of Medicine Irwin Schatz, who conducted the study with colleagues at the Honolulu Heart Program, a long-term project funded by the National Institutes of Health at the Kuakini Medical Center.



Fish-eye view—Hawai'i Sea Grant researchers successfully used giant sea cages to grow thousands of moi, favored fish of traditional Hawaiian fishpond aquaculture. The 50-by-80-foot conical sea cage is made of steel and NASA-developed mesh designed to withstand 25-foot waves. It was moored 40 feet below the surface two miles off the 'Ewa O'ahu shore. Researchers predict open-ocean mariculture could become a \$100-million-a-year industry.

Study disputes link between TV watching and violent behavior

Television violence had little connection with aggressive behavior in a study conducted by UH Hilo Assistant Professor of Sociology Thom Curtis. Using the 1976 National Survey of Children and two follow-up surveys, Curtis analyzed the quantity and content of TV watching by 1,126 children at ages 6–11 and their behavior as teens and adults. There was little or no relationship between TV viewing and later violence toward people or property. However, there was a strong relationship between witnessing or being the victim of family violence as a child and acting violently as a teen or adult. For more information, see Curtis's article, beginning on page 9 of the National Council on Family Relations' *Family Focus* publication at www.ncfr.com/pdf/Focus_M20011.pdf.

Rewriting the water rules

The U.S. Environmental Protection Agency (EPA) has long measured the presence of certain bacteria to test for sewage contamination of water. But UH researchers have demonstrated that the indicator bacteria—fecal coliform, *E. coli*, enterococci—live in O'ahu soils and can wash into waterways even when no sewage is present. Water Resources Research Center scientists finally convinced EPA to hold a workshop in Honolulu to review the data. Participating experts from around the world agreed that EPA water quality standards aren't reliable here. UH researchers are testing whether the same holds true on Kaua'i and Hawai'i while EPA officials reconsider tropical water quality standards.

UH tackles disaster management

Even before the Sept. 11 terrorist attack focused attention on rescue and recovery, UH programs and professors were addressing disaster management.

- * A new, graduate certificate program offered by the Mānoa College of Social Sciences takes a multi-disciplinary approach. Faculty from UH and other agencies train students to play a professional role in disaster management, humanitarian assistance and international peacekeeping. Topics include contextual issues as well as psycho-social responses and logistics. Call Anthony Marsella, 808 956-6701 or Ann Sakaguchi, 808 956-3265 or e-mail dmha@hawaii.edu.
- * Maui CC will provide disaster management training opportunities in cooperation with the Maui High Performance Computing Center, Pacific Disaster Center and other institutions. Internet courses will lead to an associate degree. Contact Robert Converse at 808 984-3447 or bob.converse@mauicc.hawaii.edu.
- * Gary Helfand and Ross Prizzia, of the UH West O'ahu public administration faculty, discuss emergency preparedness and disaster management in Hawai'i in the Summer 2001 issue of *Disaster Preparedness and Management: An International Journal*. Their article describes interagency coordination at the federal, state, county and community level to improve disaster and emergency response capability.

This canoe makes the mold

Marine Education and Training Center students at Honolulu CC have created a 52-foot mold for making double-hulled Hawaiian voyaging canoes. UH Hilo's Hawaiian Language College commissioned the mold to build Hōkūalaka'i, a voyaging canoe. The Polynesian Voyaging Society and Friends of the Hōkūle'a and Hawai'i Iloa assisted with design and resources. The mold—the first for a canoe this size—will be available to other educational, cultural and community groups. While the construction technique isn't traditional, UHH's Chad Baybayan says use of a resin/fiberglass skin over a foam core preserves the native forest while providing a canoe that is more durable, less expensive and easier to maintain.

Honolulu CC Instructor Robert Perkins with mold for canoe hull



Poe PEOPLE



Nancy Smith



Daniel Suthers



Hae Okimoto



Chennat Gopalakrishnan



William Stormont

HONORED Mānoa Professor **Roger Fujioka**, American Water Works Association's George Warren Fuller Award; Hilo Professor of Management **Hank Hennessey**, Society for Human Resources Management Research Award; Mānoa Professor of Nursing **Jillian Inouye** with the Anna M. Shannon Mentorship Award from the Western Institute of Nursing; KTUH Radio General Manager **Lori Ann Saeki** with a Scripps Howard Foundation Most Valuable Staffer award; Mānoa Associate Professor **Nancy Smith**, National Organization of Nurse Practitioner Faculties' Outstanding Nurse Practitioner Educator award; Mānoa Assistant Professor of Information and Computer Science **Daniel Suthers**, National Science Foundation CAREER award; Mānoa Assistant Professor of Sociology **Guobin Yang**, the Outstanding Recent Contribution award from the American Sociology Association's Sociology of Emotion Section.

ELECTED Professor of Law **Ron Brown** to the International Society for Labor Law and Social Security executive board; Director of Distributed Learning and User Services **Hae Okimoto** to the American Association for Higher Education board of directors.

SELECTED Mānoa Professor **Chennat Gopalakrishnan** to the editorial board of *International Journal of Water Resources Development*; Mānoa planetary astronomer **Karen Meech** to the Astronomical Society of the Pacific Board of Directors; Mānoa Professor of English **Cristina Bacchilega** for a Guggenheim Fellowship.

APPOINTED **Margaret Haig**, dean of the UH Hilo College of Continuing Education and Community Service; **Ramsey Pedersen** and **Mark Silliman** to be provosts of Honolulu CC and Leeward CC, respectively; **William Stormont**, director of Mauna Kea management with responsibility for the Mauna Kea Science Reserve; **Alan Teramura**, director of the Harold A. Lyon Arboretum.

Regents' Medal

Recipients for 2001

Excellence in Teaching

Dana Bekeart, professor of philosophy, Kaua'i CC
Kent (Kim) Bridges, associate professor of botany, Mānoa

A. Didrick Castberg, professor of political science, Hilo

Harry Davis, associate professor in natural science/chemistry, Kapi'olani CC

Rowena Fong, associate professor of social work, Mānoa

E. Dean Garrett, professor of English, Leeward CC, and coordinator of the Wai'anae education center

David Hanlon, professor of history, Mānoa

John Hardman, professor of pathology, Mānoa
Mikahala Helm, assistant professor in counseling and guidance/student services, Maui CC

Chris Iijima, assistant professor of law and director of pre-admissions program, Mānoa

Wei-Ling Landers, instructor of mathematics, Windward CC

Carolyn Lee, instructor in speech, Hawai'i CC

Karen Umemoto, assistant professor of urban and regional planning, Mānoa

Robert Vericker, assistant professor in administration of justice, Honolulu CC

Excellence in Research

Full Professor Level

Nina Etkin, professor of anthropology, Mānoa
Michael Landry, professor of oceanography, Mānoa

Associate Professor Level

Maqsudul Alam, associate professor of microbiology, Mānoa



Head UH baseball coach for 31 years, Les Murakami, received the 2001 Willard Wilson Award for service to the university. Before stepping down last year, his career encompassed six conference titles, a second-place College World Series finish, 16 all-American baseball players and induction into the American Baseball Coaches Hall of Fame. Rainbow Stadium, the award-winning facility his teams' success helped build, will bear his name.

RANKED UH as **15th in the world** on an *Education Guardian* list of 41 top physical science research institutions, just behind Yale and ahead of Stanford; UH as having the **best Indian philosophy program** and the third-best Chinese philosophy program in the English-speaking world by Blackwell Publishers.

RECEIVED Renewal of the **Native Hawaiian Leadership** Project scholarship program with \$4.4 million in funding from the U.S. Department of Education; A \$675,000 NASA grant to develop **educational opportunities in astronomy** in kindergarten through college.

HOSTED Japan's Prince Takamado and Princess Hisako for the 50th anniversary in Hawai'i of the Urasenke



Japanese royals at Coconut Island

school of tea ceremony, marked by a \$1 million gift from Grand Tea Master Sen Soshitsu XV; An international **conservation biology symposium** at UH Hilo attended by 1,200 scientists from 40 countries; The first **Trans-Pacific Conference**

on Business and Economics involving UH Hilo and a consortia of Taiwan universities.

PUBLISHED A special issue of *Asian Perspectives* on **archaeology in Burma**, co-edited by UHM faculty members Miriam Stark and Michael Aung-Thwin; *Hawai'i's Russian Adventure: New Look at Old History*, by UHH Professor Peter Richard Mills; The *Philippines: Story of a Nation*, a high school and college workbook, by Mānoa alum Grace Mateo and the Center for Southeast Asian Studies; *Public Administration: Cases in Managerial Role-Playing*, a textbook by UHH Associate Professor of Political Science Bob Watson; *A Trauma Artist: Tim O'Brien and the Fiction of Vietnam*, by Mānoa Associate Professor of English Mark Heberle.

DONATED **\$1 million** from Walter and Diane Dods to fund scholarships with preference for children of immigrants; A \$2 million grant from the Donald W. Reynolds Foundation to develop a **curriculum in geriatrics** for all medical students and residents.

OPENED **The Imaginarium** multi-media facility at Windward CC; Grades K-6 at **Nāwahiokalani'ōpu'u**

School, a component of the UH Hilo Ka Haka 'Ula O Ke'elikōlani College of Hawaiian Language.

HONORED Mānoa

Professor of English Mary-Elisabeth Tobin's 1999 book *Picturing Imperial Power* with a Historians of British Art **best book award**; The television documentary *The Japanese American Saga*, co-produced by the Smithsonian Institution in association with UH West O'ahu's Center for Labor Education and Research, with the **United States-Japan Foundation Cornerstone** Prize.

ACCREDITED Mānoa's bachelor's and master's degree **nursing programs** by the Commission on Collegiate Nursing Education and National League of Nursing Accrediting Commission; The College of Tropical Agriculture and Human Resources' undergraduate Didactic Program in **Dietetics**, cited as one of the best in the nation, by the American Dietetic Association; The **School of Architecture** by the National Architectural Accrediting Board; The **College of Education** by the National Council for the Accreditation of Teacher Education.

BOOSTED UH Mānoa student-run radio station KTUH's signal with a new 3,000-watt radio tower.

SCHEDULED An **international think tank** on sustainable tourism to be hosted by the School of Travel Industry Management in spring 2002.

WON The Intercollegiate Sailing Association North American Women's **National Championship** by the UH Wahine sailing team.



Winning Wahine sailors



Windward's imaginarium dome

Photo: Mikki O'Phelan

SIGNED A contract worth up to **\$181 million over 10 years** to manage the Maui Supercomputing Center for the Air Force Research Laboratory; **Lease agreements** for development of the Faulkes Telescope at the summit of Haleakalā on Maui for education and outreach and with the Hawai'i Health Systems Corporation to operate Lē'ahi Hospital complex.

ESTABLISHED A Mānoa **PhD in music** program approved by the National Association of Schools of Music with emphasis in composition, music education or ethnomusicology; A certificate in **healthcare administration**



Shamisen lessons

offered in conjunction with UH West O'ahu's bachelor in public administration degree; The **Hawai'i Music Institute**, offering non-credit courses in various aspects of the music business, at Windward CC; A **student travel prize** for philoso-

phy undergraduates by UHM Professor Roger Ames in memory of a colleague.

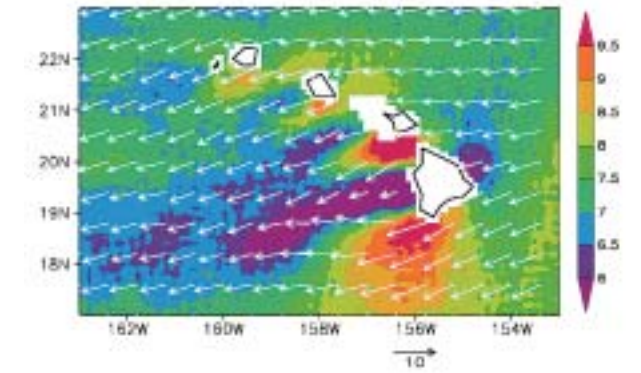
ONLINE A School of Travel Industry Management distance learning graduate **certificate for travel industry managers**.

IN RESIDENCE Author Scott C. S. Stone to **consult about writing** with students, faculty and community members at UH Hilo.

RECENT UH DISCOVERIES

Cloned mice aren't perfect copies of the original, with abnormalities that may result from faulty DNA methylation, a non-genetic modification of one of the four building blocks of genetic material, according to researchers led by Professor Ryuzo Yanagimachi. (*Genesis*, Vol. 30, Issue 2, and *Science*, July 5, 2001)

Like toothpaste pressed from the tube, some islands form when a dense layer of oceanic crust and mantle slides over a thinner continental layer, forcing the under layer to thin and ooze through cracks in the heavier crust according to **a new theory developed** by Hawai'i Institute of Geophysics and Planetology researchers. (*Nature*, June 21, 2001)



Meteorologist Shang Ping Xie has demonstrated that **surface winds react to sea surface temperature** variations as small as a few tenths of a degree, indicating that climate sensitivity is much higher than originally thought. (*Science*, June 15, 2001)

Hawai'i's black coral fishery has been sustainable for the past 40 years, oceanographer Richard Grigg reports, but **more stringent regulation** may be needed as technological advances increase the potential harvest. (*Pacific Science*, July 2001)

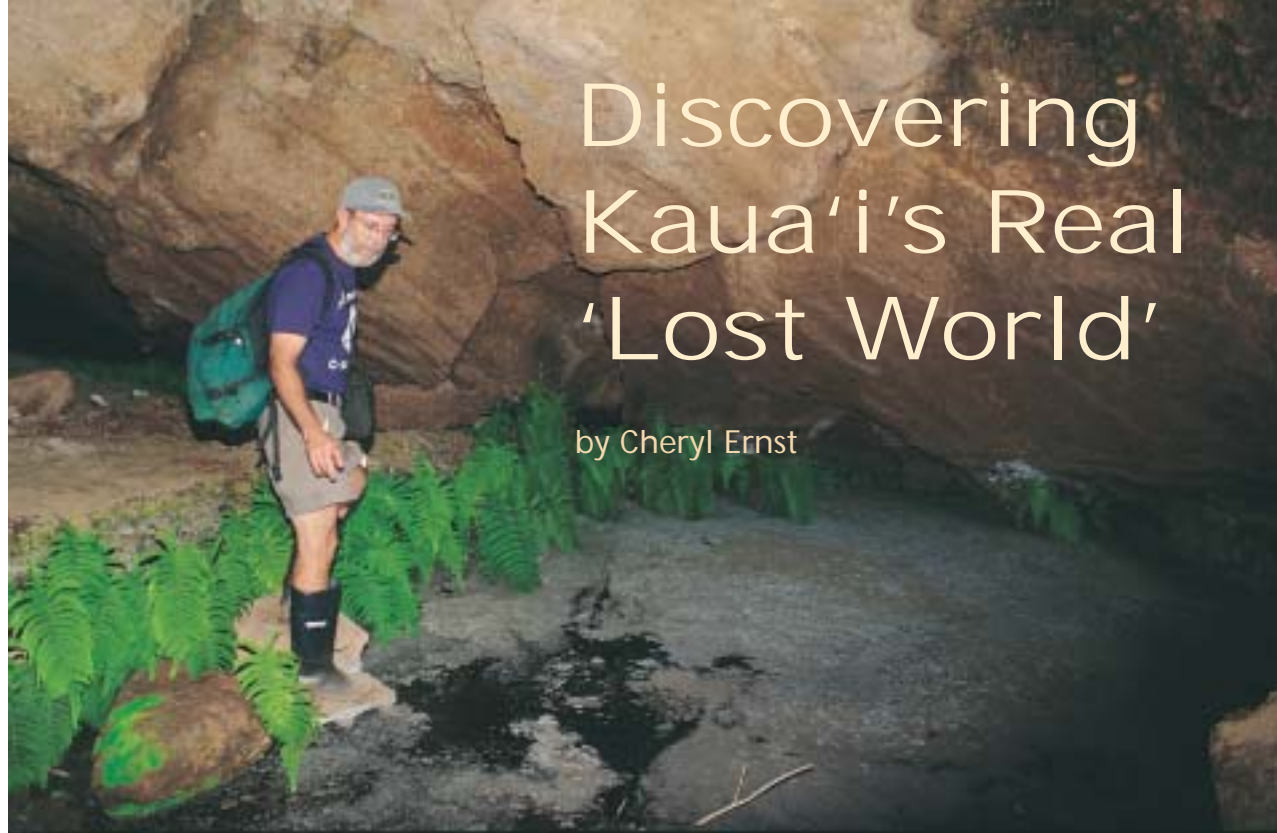
An international team, including several members of the High Energy Physics Group, observed differences in the **behavior of matter and antimatter** created in Japan's KEKB particle accelerator, showing with near certainty that the universe is not symmetric. (Lepton Photo 01 International Physics Conference, July 23, 2001)



Nitrogen-fixing microorganism

Oceanographers found that the deep sea is teeming with organisms that produce **natural fertilizers**, including a previously unknown group of bacteria that convert atmospheric nitrogen to a form that can be used by other organisms. (*Nature*, Aug. 9, 2001)

Detailed observation of helium cobwebs between galaxies and stars observed by NASA's Far Ultraviolet Spectroscopic Explorer satellite bolster theories about the **architecture of the early expanding universe** according to a team that included Astronomers Antoinette Songaila Cowie and Lennox Cowie. (*Science*, Aug. 10, 2001)



Discovering Kaua'i's Real 'Lost World'

by Cheryl Ernst

With help from Kaua'i CC, visiting scientist David Burney has unearthed important plant and animal finds below the water table in an ancient cave

The site is unusual because it provides both a well-preserved and continuous record, like the pages of a diary. The clay that discouraged earlier pot hunters and fossil seekers didn't deter Burney. He used a coring technique to sample various sections of the cave and sinkhole floors.

The rich site has yielded 10,000-year-old specimens

Results were tantalizing, but it takes hard labor and heavy duty water pumps to reach the paleontological gold that lies below the natural water table.

"Pila got his anthropology group involved. Right from the beginning, Kaua'i Community College gave us the momentum to get going," Burney says. Students, alumni, school groups and community members help shovel clay, shift rocks and sift muck in search of artifacts and fossils that can range from a 16th of an inch to a foot in length. One regular is Kikuchi's wife Dolly. "I was never very interested in birds. Now I can find the toe bone of an extinct owl and know what it is," she says.

Another volunteer is Marge Ferguson, an accountant whose interest in archaeology led her to Kikuchi's class in 1998. She went to the Makauwahi dig, got hooked and wound up involved in Na Mālama Māhāulepū, which raises funds and promotes efforts to preserve the area that includes the cave. The effort requires diplomacy. The researchers work with the island's burial council to ensure that human remains known to be in remote recesses of the cave remain undisturbed. They also coordinate their activities with Grove Farm, which holds title to the

sinkhole and surrounding land.

Certain that the effort is worthwhile, Burney has convinced the National Oceanic and Atmospheric Administration, Smithsonian Institution, National Science Foundation and National Geographic Society to provide funding over the past nine years. Now 30 feet down in the center of the sinkhole and having examined 300 cubic yards of earth, he's obtained thousands of specimens dating as far back as 10,000 years. He estimates scientists could work the site for another 100 years or more.

Burney's wants to understand the past. By the end of the Polynesian period, nearly all the birds were gone from the lowlands, snails were disappearing and the land crabs had steadily diminishing claws. Was it the effect of over-exploitation and Hawaiians' introduction of dogs, pigs, rats and burn agriculture tech-

niques that turned forests into grasslands? How did the arrival of the Europeans with so many non-native plants and animals influence the extinction of most remaining native species? "I want to reconstruct the landscape, looking at bones, pollen, seeds and artifacts. At Māhāulepū, you have it all together in one site," he says.

But Burney also considers himself a futurist—someone who would "like to see society get safely past the present." To that end, his work could bolster restoration efforts. Demonstrating that species such as the Laysan duck and 'Io, or Hawaiian hawk, existed on Kaua'i suggests that reintroduction from the Laysan Islands and Island of Hawai'i, respectively, might be appropriate. Discovery that the kou tree arrived in Hawai'i even before the Polynesians supports it as a viable indigenous

Everywhere David Burney explored in his quest to continue the paleontology work of Smithsonian scientists on Kaua'i, the residents told him the same thing—he needed to talk to Pila. "It was clear I wasn't going to work on this island without his OK," the Fordham University professor recalls with a grin.

The researchers hope to recreate past landscapes

Pila is the nickname of Kaua'i CC Emeritus Professor William Kikuchi, who has done archaeological research on the Garden Island since 1958. The two scientists formed a warm friendship and productive partnership. "We both love the field, we love what we do and we love playing in the mud," Kikuchi jests. "We don't do it for the money or the fame...although a little fame would be nice." Fame of a sort arrived last fall—in a segment on the *Nova* television series on evolution

and an article printed in *Ecological Monographs*.

Beyond the golf course at Po'ipū, just off the horse trail, beneath water and layers of clay and sand inside an ancient sinkhole called Makauwahi, the pair have discovered plant and animal fossils that are changing what is known about prehistory Kaua'i. "This is the Olduvai Gorge or La Brea Tar Pits of Hawai'i," exclaims Burney. "We keep finding things. We could dig here forever." Findings include unexpected plants, land crabs and flightless birds that grazed like goats (see box). "It really was wild, almost beyond imagining," says Burney. "This is Kaua'i's real lost world."

Several hundred thousand years ago, fluctuating sea levels deposited ground up coral on the south shore of Kaua'i. The sand recrystallized in a dune field. Fresh water flowing between the dunes and the underlying lava hollowed out one of Hawai'i's few limestone caves. Sea levels rose again, flooding the cave with sea water about 7,000 years ago. Parts of the cave roof collapsed, cutting off the sea, and by the 13th century the sinkhole had become a freshwater

lake and natural fish pond. Sediment gradually turned the lake into a swamp, creating a 15-foot layer of peat-like material full of shells and bones. A tsunami deposited a layer of rock, sand and Polynesian artifacts about 350 to 400 years ago. Sand



Kaua'i CC's Pila Kikuchi hopes to preserve island artifacts

from over-grazed dunes blew in during the era of European contact. Finally, erosion from the draining of a nearby pond during the 1950s topped it all with a 6-foot layer of clay, sealing off what Burney calls a "poor man's time machine."

Discoveries at Makauwahi

Fossil remains of 40–50 types of birds, most extinct or near extinction, have been identified at the sinkhole. Some have augmented finds by famed Smithsonian ornithologists Storrs Olson and Helen James on nearby but less well-preserved dunes. Others represent new species. Among the finds—

- * The endangered Laysan duck
- * A flightless, Kaua'i goose
- * The turtle-jawed moa-nalo bird
- * A long-legged owl that probably fed on other birds
- * A little duck with tiny eyes, a flat skull and tiny wings that probably fed on forest insects at night
- * A new species of bat
- * Seed pods and pollen from kanaloa, whose two known surviving plants cling to Kaho'olawe cliffs
- * Canoe fragments and pipipi picks



Laysan duck



Turtle-jawed moa-nalo



Bird-catching owl

Drawings by Julian Hume

A Kaua'i Diary

Layers of earth in the Makauwahi sinkhole digs record life on the islands for the past 10,000 years

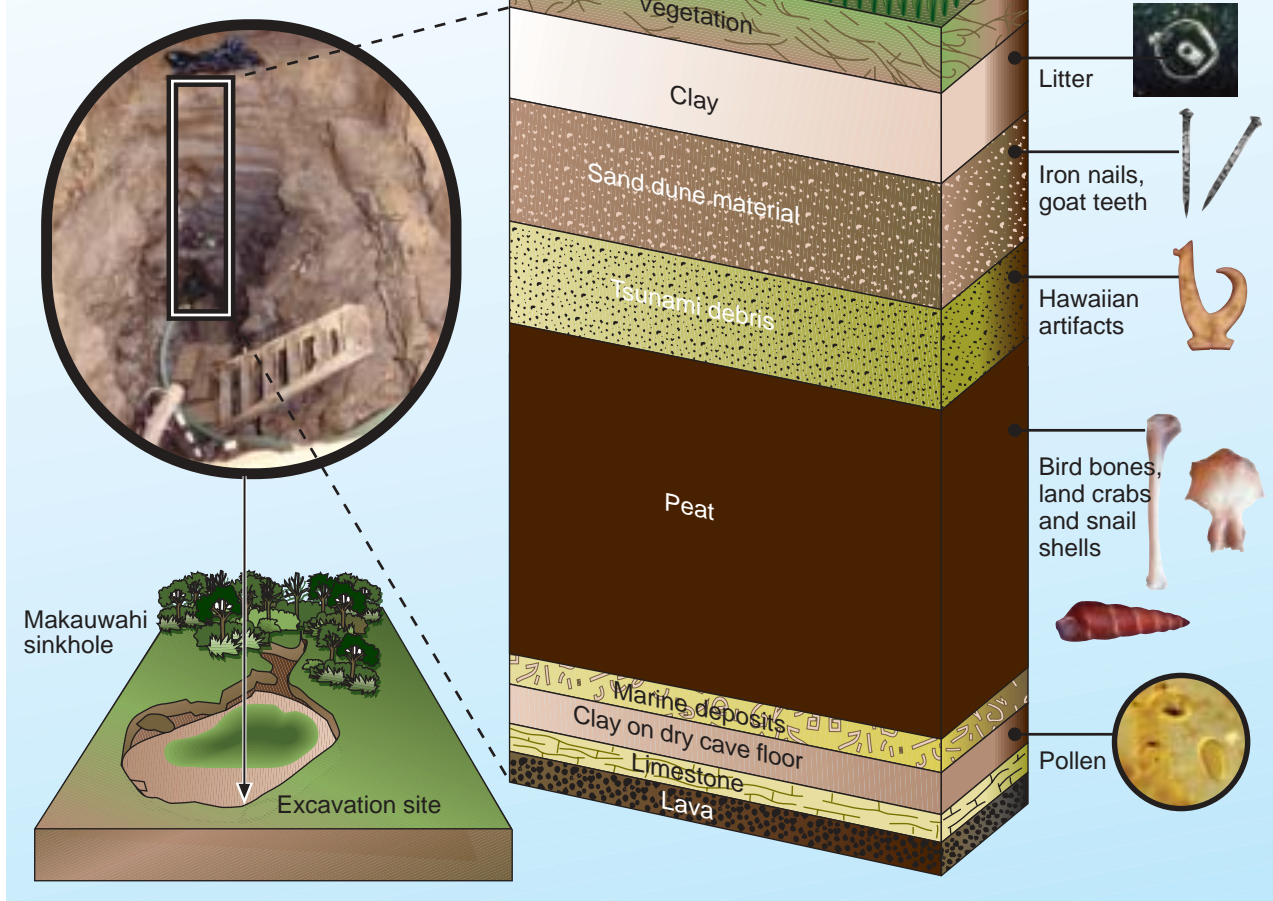


Illustration: Martha Hernandez

forestry crop. Evidence that the fragrant *Zanthoxylum* tree now found in Kōke'e once grew at lower elevations expands the range where reintroduction is feasible.

Speaking to volunteers and community leaders on Kaua'i earlier this year, Burney concluded with an invitation: "Pitch in with us to ensure that these resources will always be here for the people of Hawai'i."

For information on the sinkhole project, group tours or volunteer opportunities, contact Kaua'i CC's Shirley Tani at 808 245-8377 or shirley@mail.kauai.cc.hawaii.edu. 📧

Cheryl Ernst is creative services director and Mālamalama editor

Preserving the past on the island

A brush with prostate cancer last year got William "Pila" Kikuchi thinking about his own mortality and the future of the archaeological data produced by surveys and excavations on Kaua'i. Both materials and documentation should be preserved for future education and research on the island where they were found or made, Kikuchi concluded. With the support of Kaua'i CC, Kikuchi proposed raising funds to build an archaeological archival storage center to be available to researchers, integrated into cultural and scientific courses and used for public exhibits. The project advisory board includes paleoecologist David Burney, who is conducting research at 12 Kaua'i sites; veteran Bishop Museum archaeologist Yoshihiko Sinoto; Hallett Hammatt and William Folk of Cultural Surveys Hawai'i; and Martha Yent from the state parks department's Historical Sites Division. For more information on the project, contact Shirley Tani at 808 245-8377 or shirley@mail.kauai.cc.hawaii.edu.

COURAGE

by Jennifer Crites

Social Justice: Eric Yamamoto creates a framework for conciliation

Anger and confusion about race has been called America's number one problem. UH law professor Eric Yamamoto thinks so. He's seen some Americans retaliate against fellow citizens of Arabic heritage in their anger over the September terrorist attack on the United States. He fears that strict national security measures could trample on civil liberties. He knows it's happened before—to Japanese Americans during World War II.

For 15 months during the early '80s, Yamamoto volunteered on the legal team attempting to overturn the wartime internment conviction of Fred Korematsu. The team succeeded, and that decision along with a 1987 case swept out the legal foundation of the WWII Supreme Court decision that justified internment as military necessity. As a result, Congress passed the 1988 Civil Liberties Act, which called for a presidential apology and reparations for Japanese Americans who had been interned. Yamamoto received the Korematsu Civil Rights Award for his efforts. The lesson: "We must not scapegoat other people. Both U.S. citizens and our courts need to be vigilant about protecting civil liberties while addressing genuine threats to national security."

After helping win reparations for Japanese Americans interned during World War II, Eric Yamamoto has turned his attention to racial reconciliation

Two UH professors challenge the status quo to help individuals and right entrenched wrongs

Yamamoto addresses that topic in his books, *Race, Rights and Reparation: Law and the Japanese-American Internment* and *Interracial Justice: Conflict and Reconciliation in Post-Civil Rights America*. The latter, named one of the top 10 books on human rights, social justice and civil rights published in North America, deals with interracial discrimination—one group using social, economic or political structures to subordinate another. The wounds such discrimination inflicts—interracial justice grievances, Yamamoto calls

them—are being overlooked in the courts' fervor to outlaw race consciousness.

"The majority of the justices say that to analyze historical and current racial differences can actually damage the nation's interest in racial harmony," he says. "The court is mistaken. We are seeing more, not less, interracial tension across America." The anger it generates exists in areas like housing, education, business and law. Because the courts turn a blind eye, old wounds remain open.

Talking about racial justice can only make our country stronger

—Eric Yamamoto



"Racial discrimination isn't motivated purely by racial dislike, but more by self-interest and past actions," Yamamoto explains. "We have to find out what justice grievances lie beneath the surface of the immediate conflict and set about healing the wounds."

To do that, Yamamoto proposes a four-point framework of racial conciliation—recognition, responsibility, reconstruction and reparations. "It's not a magic formula. It's a method and a language for asking questions and moving the process forward. People have to learn how to do this. It's going to take some disciplined and serious work." The

courts should encourage discussions about racial justice grievances, but the law itself is too narrow, so most of the process must take place outside a legal context, he says.

Surprising words from a lawyer, but Yamamoto didn't plan to enter law when he majored in humanistic studies in UH's experimental '70s New College. The turbulent times—Vietnam war protests, the breakdown of communities, stirrings of the Native Hawaiian movement—and discussions with his father, a UH professor who taught race relations, profoundly influenced the thoughtful young man immersed in Nietzsche and Zen Buddhism. He decided to study law at Berkeley's Boalt Hall to “shape how communities would be.” After the Korematsu case, Yamamoto joined a Hawai'i law firm. He also served on the boards of the Legal Aid Society of Hawai'i and the Native Hawaiian Legal Corporation and was counsel to Alu Like and the Women's Health Center. In 1985, he joined the UH law school faculty. He's assisted Native Hawaiian Homelands trust beneficiaries, sovereignty activists and the Spark M. Matsunaga Institute for Peace. He's received the UH Presidential Citation for Excellence in Teaching twice and been named Outstanding Professor of Law three times. This spring, he will hold the Haywood Burns Chair for Civil Rights at the City University of New York.

Yamamoto prefers to remain in the background. “Sometimes having less of a profile makes it easier to help people accomplish their goals,” he says. Still, he hopes his framework will get people talking to each other about racial justice. “It can only make our country stronger,” he says.

Medical Change: Milton Diamond challenges gender reassignment

As a UH professor of anatomy and reproductive biology, Milton Diamond teaches neuroanatomy and sexology. But his international notoriety resulted from what he calls



Milton Diamond's stand on infant sex reassignment changed medical practice and brought continuing international attention to his studies of sex and gender

a simple search for evidence.

“Some people think there has to be something strange about me to study sex,” says Diamond, who directs the medical school's Pacific Center for Sex and Society and lectures worldwide. “Personally, I wonder why more people aren't studying sex. It's so intrinsic to so many aspects of our lives.”

A graduate of Bronx High School of Science and college ROTC, Diamond pursued anatomy, endocrinology and experimental psychology at the University of Kansas. In 1967 colleagues asked him to help start UH's John A. Burns School of Medicine. Diamond and his wife thought the islands would be a good place to raise their four daughters. He found it a good place to work—writing several books, developing PBS's award-winning “Human Sexuality”

series and contributing to the American Medical Association's handbook on sexual problems.

A few years ago, Diamond's investigation of what he calls the “John/Joan case” thrust him into the limelight. The 1960s case involved a 7-month-old twin whose penis was severely burned by the electrocautery instrument used during circumcision. The boy's parents contacted psychologist John Money, a leader in the field of gender identity at Johns Hopkins University, who counseled them to raise their son as a girl. Money believed a child's sexual identity is determined by the appearance of the genitals and the child's upbringing. “It's the nature/nurture debate,” says Diamond. “Nurture advocates believe that if you're raised (figuratively) in a blue room you become a boy and in a pink room, a girl. The only problem is, that theory doesn't work.”

The child underwent surgery to remove his testes and fashion female genitals. His parents were instructed to raise him unambiguously as a girl. In journal articles and a book, Money described behavior “so normally that of an active little girl and so clearly different by contrast from the boyish ways of her twin

I expected them to throw rocks at me—I told them what they'd been doing for 40 years was wrong

—Milton Diamond

brother.” *Time* magazine reported the experiment “has apparently succeeded.” Skeptical, Diamond called for evidence in various publications.

The medical establishment embraced Money's conclusions. Surgical reassignment of sex for a variety of reasons, including cases where the penis was considered too small (less than 2.5 centimeters), became standard medical practice. Diamond kept digging. In 1994 he contacted British Columbia psychiatrist Keith

Continued on page 16



UH road remedies offer drivers some relief

Tweaking Traffic with Technology

by Neal Iwamoto

In his 21 years as an O'ahu taxi driver, John Parker has endured his share of traffic jams. Particularly frustrating has been transporting passengers who need to be at the airport 10 minutes ago. But that was before Parker discovered a cooperative government Web site that lets him navigate O'ahu's crowded roadways. With a Sony laptop in his 1987 Chevrolet Caprice station wagon, Parker uses his wireless internet connection to access a traffic camera site that allows him to view real-time traffic conditions on all of O'ahu's major roadways.

“If there is a jam I can see it ahead of time and not blindly go onto the freeway and become part of the problem,” Parker says. “I can view the alternatives and choose the route that ultimately makes a difference for a person who has got to catch a flight.”

The site has helped thousands of island drivers like Parker since it was developed more than five years ago by UH Professor of Civil Engineering C. S. Papacostas. It's one of the ways that UH Mānoa professors are using today's technology in the battle for better traffic flow.

Traffic on Hawai'i roadways began a century ago when the first car was brought to the islands by Henry Baldwin in 1899. Fifteen years later, the first comprehensive traffic ordinance was passed by the territorial Legislature.

Like spot surgery, small adjustments can give considerable benefit

“Congestion has been around for a long while and will continue to be around,” Papacostas asserts. His goal is to stop it from getting much worse. His Web site doesn't provide a cure-all to traffic problems—it won't clear gridlock caused by a multiple-car accident or watermain break—but it does give people, at the very least, the power of information.

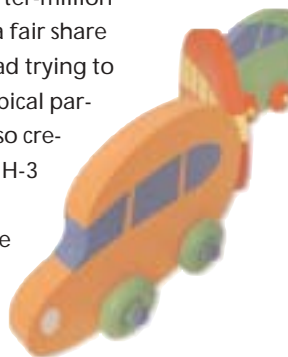
“Psychologically, people believe that they are gaining control,” Papacostas notes. “If people know that they will be heading into traffic

they'll take it easier than if they were surprised.”

The City and County of Honolulu put up cameras six years ago to identify traffic incidents and to monitor signals. It was Papacostas who suggested giving the information directly to the public. Since he launched his site in 1996, the number of cameras has grown from 8 to nearly 100. The site receives about a quarter-million hits per week, although a fair share comes from visitors abroad trying to get a glimpse of the “tropical paradise.” Papacostas has also created a similar site for the H-3 freeway.

The U.S. Postal Service and commercial bus companies have relied on the site to keep things running on schedule. Downtown workers log on to help plan their commute home. Visitors also monitor weather conditions; the site is a handy tool for mo-

Above: Quiet road warriors in the traffic battle, UH civil engineers Panos Prevedouros, left, and C. S. Papacostas work to keep congestion from getting worse





Simulation programs predict the effectiveness of road changes. Automated counters extract accurate data from traffic cameras.

Automated signage shows an express bus' progress. Web sites show current traffic conditions and track TheBus.

torcycle enthusiasts who want to rev up their bikes for a weekend ride.

Papacostas maintains a traffic information page on the Web, <http://traffcam.hawaii.edu>, which links to the city's cameras and traffic cams operated by the state Department of Transportation (DOT) along H-3. His latest project is another Web site that tells city bus patrons when their ride is coming. Via a Global Positioning System and modem, his new site, <http://cityexpress.hawaii.edu>, tracks the city bus throughout its entire route. His Transit AVL (automatic vehicle location) system is being tested with the Route B city express bus that runs between Middle Street and Waikiki.

Colleague Panos Prevedouros also uses traffic cams and the latest computer technology in a search for ways to alleviate traffic, particularly on H-1. The associate professor of civil engineering enters hours of footage from traffic cams along the freeway into Autoscope, a vision device that measures the volume and speed of cars. Gone are the days of manually counting cars in the field. With Autoscope, Prevedouros and his researchers can accurately identify the bottlenecks on H-1 during peak traffic hours.

Prevedouros then transfers the data into a computer simulation pro-

gram. "We can look at all types of solutions—cheap solutions, expensive solutions—without going out and building anything at all," Prevedouros says. "We can see it all from the computer played in real time."

He likens his work to spot surgery, "adding a short lane here or an auxiliary stretch there. These are small treatments but they have the potential to give considerable benefit."

For the last five years, Prevedouros has been studying freeway traffic flow between Koko Head Avenue and Middle Street under a DOT contract. His simulations analyze the potential effects of ramp closures, identifying which closures yield benefits to freeway flow without being detrimental to the flow on adjacent streets.

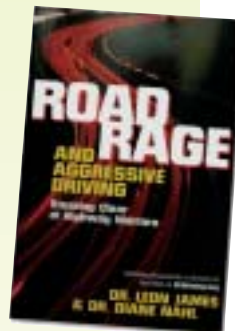
A full-scale, two-week ramp closure was tested in the fall of 1997,

Avoiding traffic trauma

UH Professor of Psychology Leon James has testified before Congress and provided expert comment in more than 900 national and international media reports on the cultural phenomenon called road rage. He recently co-authored the book *Road Rage and Aggressive Driving: Steering Clear of Highway Warfare* with UH Associate Professor of Information Science Diane Nahl. In his surveys, close to 90 percent of drivers admit to driving with rage. Aggressive driving habits may be ingrained, but James says attitudes and habits can be altered. Here are his suggestions—

- * Leave early. The difference between regular traffic and congested traffic is small—about 20 percent. Leaving 6 ½ minutes earlier could make all the difference in an average 32-minute commute.
- * Be a supportive driver. Viewing driving as teamwork instead of a competition makes everyone move faster.
- * Create quality driving circles—small, informal citizen groups that meet regularly in congested neighborhoods.
- * Change new driver education, as California has, to teach emotional intelligence and how to behave as passengers, deal with hostility and sustain a positive driving philosophy.
- * Form CARR, Children Against Road Rage. Remind parents that emotional reactions influence children in the back seat.

For more information, visit www.aloha.net/~dyc



when the west-bound Lunalilo Street on-ramp was closed for a few hours during the morning peak period. The closure benefited commuters, Prevedouros found. While the state has yet to implement any regular closures, traffic laws were recently passed paving the way for it in the future.

Ultimately, Prevedouros searches for simple, efficient solutions. "Some say traffic congestion is a self-limiting problem," Prevedouros says. "When congestion gets very bad people find a way around it. However, I believe that once you have a freeway system you have to learn how to operate and manage it."

The growing population in Central and West O'ahu will call for special measures, including adding a lane near the downtown areas, he says. He is also concerned with current management of roads, paying close attention to accident conditions when lane closures turn traffic into a virtual standstill. "The street level of service is quite poor for our population size. That has a lot to do with our management of roads."

Prevedouros is studying the suitability of installing traffic detectors along Hawai'i freeways, rural highways and arterial streets, an effort to improve road management funded by DOT and the Federal Highway

Administration. Such detectors would provide data necessary for both long-term planning and real-time management of roadway traffic. Inexpensive acoustic, infrared, magnetic, radar, ultrasonic and video detectors can be used to automate collection of information, such as 15-minute averages of volume, speed and classification of vehicles. Prevedouros and his team select a handful of devices for field testing out of the more than 100 available. Based on actual performance in Hawai'i, they'll identify the

most suitable and cost-effective detector devices for different traffic conditions here.

"Ultimately, our effort will help DOT join the progressive group of transportation departments across the country that provide a multitude of traffic data over the Internet," Prevedouros says. "These data can be accessed by state and county engineers and planners as well as private consultants and the public at large."

Neal Iwamoto (BA '98 Manoa) works in UH sports media relations.

Training keeps Hawai'i moving

UH students are on the road, in the air and on the sea—learning to operate and maintain the vehicles that transport everyone, everyday.

Several programs help keep traffic flowing. The Leeward CC Office of Continuing Education and Training (OCET) certifies, evaluates and re-evaluates **drivers** for commercial vehicles including trucks and busses. Among the offerings are state-mandated evaluation and training for people who operate commercial vehicles over 1,000 pounds. (OCET also offers classes in forklift, backhoe and loader operation.)



Learn to build and repair boats at Honolulu CC

Continued on next page

Leeward also coordinates **motorcycle** training. The popular classes are held at the Leeward campus or Coast Guard Base Sand Island. Training is also available on Maui and the Big Island.

Hawai'i, Maui, Kaua'i and Honolulu Community Colleges teach the people who keep Hawai'i's cars running. **Automotive** technology degrees and certifications vary by campus; instruction covers engine repair, electrical systems, suspension and steering, automatic transmission, manual transmission, heating and air conditioning and brakes. Hawai'i CC also offers **diesel** mechanics.

Want to learn how to fly? Honolulu CC has courses for those interested in pursuing a career as



Learn to fly or maintain planes at Honolulu CC

a professional **pilot**, as well as continuing education opportunities and flight instructor training. The campus also offers certificate and associate degree programs in **aviation** maintenance and a transfer option

for a four-year degree in airway science. The certificate prepares students to take the Federal Aviation Administration written examination on their way to federal certification as aviation maintenance technicians.

A two-year Honolulu program certifies students to build, repair and modify composite **boats** as well as maintain a variety of marine electrical and mechanical systems. The majority of the hands-on instruction takes place at the Marine Education and Training Center on Sand Island.

Log onto these sites for more information

www.hcc.hawaii.edu/tech/transportation.html—for links to commercial aviation, aeronautic mechanics technology, boat maintenance and repair and automotive mechanics technology

www.lcc.hawaii.edu/ocet—for motorcycle training and commercial driving training

www.mauicc.hawaii.edu/catalog/programs/amt.html—for automotive technology on Maui

www.kauaicc.hawaii.edu/ocet/noncredit/ase.htm—for automotive technology on Kaua'i

<http://web.hawcc.hawaii.edu/hawcc/tradeindustry>—for auto and diesel mechanics on Hawai'i.

—by Heidi Sakuma, a UH Mānoa journalism and English major

Courage *continued from page 12*

Sigmundson, in charge of John/Joan's treatment under Money's direction. Sigmundson knew the sex conversion hadn't worked. Unaware of her history, Joan had refused to wear dresses, hated make-up and fought like a boy. She was banned from the girl's restroom for standing to urinate. At 14, she decided to live as a male. Sigmundson hadn't challenged Johns Hopkins. "He thought that if it wasn't working, it was his fault," Diamond says.

Sigmundson put Diamond in touch with John/Joan, by then a married man struggling with psychological scars. In 1997 they presented their evidence in an article on implications of sex reassignment in the *Archives of Pediatrics and Adolescent Medicine*. This time the medical establishment listened. Diamond addressed the American Academy of Pediatrics. "I expected them to throw rocks at me because I was basically telling them that what they'd been doing for the past 40 years was wrong," he says. Instead, 30 seconds of stunned silence gave way to applause.

"If you change someone's gender as an infant, you're doing something fundamental to them. As they grow up they're living with incongruities that don't make any sense to them, and they have no way of dealing with their feelings." Many contemplate suicide. Diamond says as many as 200 pediatric sex reassignments were taking place annually in the

United States due to damaged or ambiguous genitals. About 1 child in every 2,000 is born with enough ambiguity that it's externally noticeable. One in every 100 has hidden ambiguity—XXY or other sets of chromosomes or combinations of ovaries and testes.

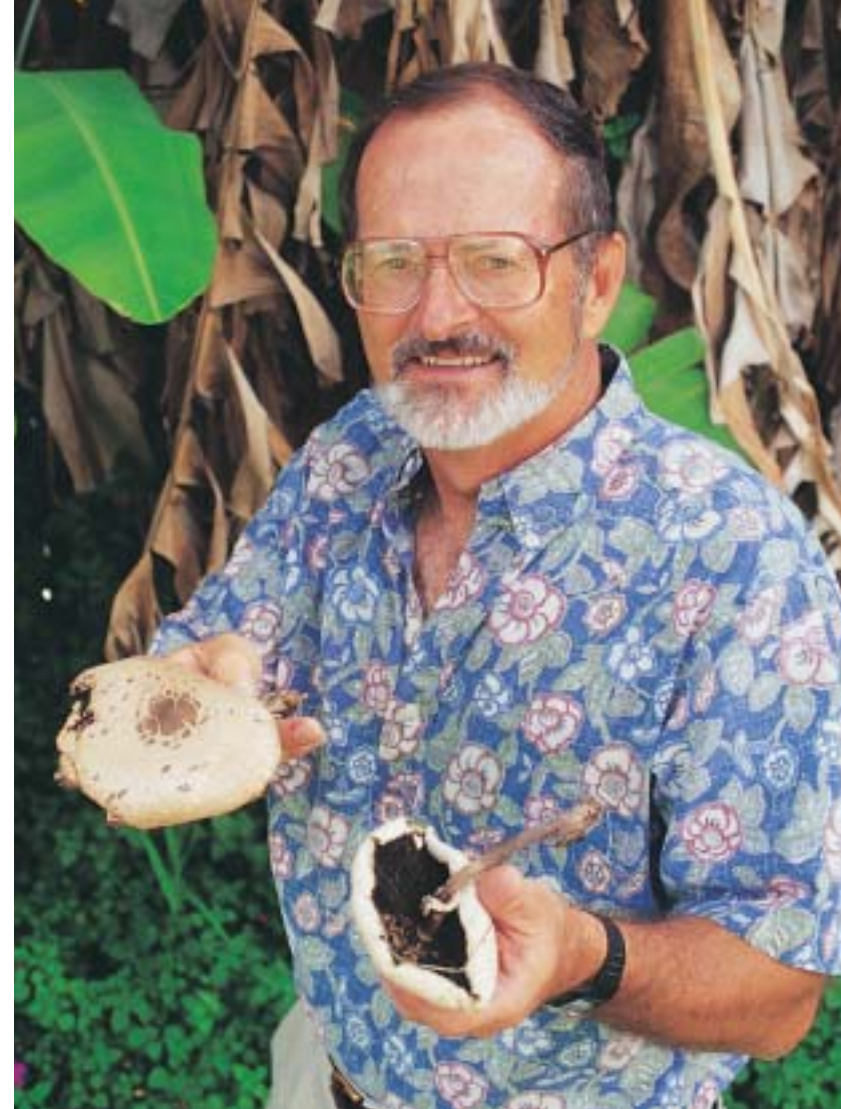
"Gonads produce hormones that affect the brain, and it's our brains that tell us whether we're male or female," he says. "In most cases, there's a physical reason why individuals might be unsure about their sex."

Yet doctors must classify a child's gender at birth. Diamond offers three guidelines—don't do surgery based only on genital appearance; do follow-up studies on the success of sex-reassignment; eliminate secrecy. "Yes, it's disturbing for someone to find out they have male chromosomes along with a vagina, but keeping them in the dark is disturbing, too. People could deal with the truth if told in the proper way and provided with counseling."

Since exposing the failure of the John/Joan case, Diamond has received numerous international honors and been interviewed on national TV. He served as president of the International Academy of Sex Research, which encompasses physicians, psychologists, sociologists and other scientists. "You work for 40 years then you're an overnight success," he quips. ☺

Jennifer Crites (AA '90 Windward, BA '92 UHWO) is a freelance writer in Honolulu

1 in 100 children are born with sexual ambiguity



A Hilo professor's passion for fungi could spark a new agriculture industry on the Big Island

Don Hemmes distinctly remembers when the late Lani Stemmerman took him to a kīpuka, or opening in the forest, along the Saddle Road on the Big Island more than a dozen years ago. The noted Hawaiian naturalist directed Hemmes's attention to small mushrooms, telling him, "you should study these." Hemmes took the advice, and both his reputation as an authority on Hawai'i fungi and his dream for a new island agricultural industry have, well, mushroomed.

Hemmes grew up surrounded by cornfields in Iowa. A desire to see the ocean and a college professor's suggestion that he seek a fellowship at UH Mānoa drew him to the Hawai'i in 1965. He earned a master's degree in microbiology in 1967 followed by a PhD in 1970 and has taught at UH Hilo since 1973.

"As a biologist, I would see mushrooms in the wild, but when I tried to identify them I found out that there were no Hawaiian mushrooms in mainland handbooks. As an edu-

Don Hemmes, with field mushrooms from a morning's hunt, wrote *A Field guide to Mushrooms in Hawai'i* after scouring the islands from seashore to mountaintops. Photos from his book include *Hygrocybe pakelo*, left.

The Mushroom Man

by Susan Collins





The deadly *Amanita marmorata* contains liver-destroying toxin. It grows under trees imported from Australia, such as eucalyptus, bottle brush and ironwood pine.



Kaua'i's *Amanita muscaria* can have caps the size of Frisbees. Other sizeable fungi include *Calvatia gigantea* puffballs that grow larger than basketballs on Mauna Kea and table-size conks of *Ganoderma austral* in Hawai'i Volcanoes National Park.



Chlorophyllum molybdites causes the most incidents of mushroom poisoning, sending people to the emergency room with intense vomiting, stomach cramps, diarrhea, etc.



Candidates for most colorful natives include the pink *Hygrocybe noelokelani*, left, and bright yellow-orange *Hygrocybe lamalama*. For a deep red variety, look for *Hygrocybe constrictospora*.



cator, I thought I'd like to make a field guide for the general public. So I took all the photos I could and went to a mushroom conference in San Antonio to find someone to help in the identifications."

Also attending the conference was Dennis Desjardin, professor of biology and director of Thiers Herbarium at San Francisco State, the largest herbarium of mushrooms west of Mississippi. Their collaboration began on the spot. "We started on the great study of mushrooms in Hawai'i. We traveled from the mountaintops to the seashore on every island. It was a lot of serendipity, because many mushrooms are out for just a few days, and we had to catch them just when they were out," Hemmes recalls.

During seven years of National Science Foundation-funded identification adventures, Hemmes and Desjardin discovered that 90 percent of the mushrooms in the native forests are endemic, but all the species in the lowlands have been introduced. For example, guava trees, which come from South America, harbor certain introduced fungi. Other trees provide a haven for mushrooms from the South Pacific and Australia. The spores, says Hemmes, most likely hitched a ride to Hawai'i in the soil when the trees were imported. Hallucinogenic or "magic mushrooms" probably arrived with cattle brought by Captain Vancouver during the 1800s.

Hemmes and Desjardin decided to give the native species they identified Hawaiian names. They called

upon Kalena Silva, UH Hilo professor of Hawaiian studies and director of Ka Haka 'Ula O Ke'elikolani, the College of Hawaiian Language for help.

"We asked Kalena to come up with proper names for the native mushrooms," Hemmes says. "We showed him pictures and told him

about the important features, such as color or texture. Noelokelani combines noe, meaning mist or fog, and lokelani, a small pink rose, to refer to this beautiful pink mushroom that grows in the rainforest. Another is pakelo, slippery like a fish, because you can't hold onto it. Lamalama is for one that glows like

the sun. Some were named after Pele. We've given Hawaiian names to honor the Hawaiians."

This month, the painstaking identification work of these mushroom men will be published in *A Field Guide to Mushrooms in Hawai'i* (Ten Speed Press). Biologists, fungal experts, students and mushroom enthusiasts alike can use it to identify the many unique fungal species of Hawai'i.

Island fungi hold potential as gourmet foods and sources of new medicines

Hemmes says the mushrooms of Hawai'i vary greatly. Some can kill or make people violently ill if ingested. Hemmes is on call statewide to identify mushrooms in suspected poisonings. He offers frequent public education talks. "Remember, we have deadly poisonous mushrooms in Hawai'i, so consult an expert before experimenting," he emphasizes. "If someone gets sick after eating mushrooms, bring specimens along to the emergency room for identification."

But there are good, edible mushrooms here, too. Some, Hemmes says, are excellent prospects for commercial cultivation in the diversified agriculture of a post-sugar era. Mushrooms hold potential in both gourmet food and health product industries.

"There is considerable interest in growing gourmet mushrooms, like shiitake. Hawai'i chefs want the absolute freshest, and what comes

from the mainland is two or three days old," he explains. Also, extracts from fungi for food and health product additives are potential products for the mycopharmaceuticals market. "That has great potential because we have unique mushrooms here that may have antibiotic or anti-cancer properties."

The first step is research into local substrate materials suitable for growing mushrooms commercially. The alder and oak materials favored on the mainland aren't available in Hawai'i. Hemmes is trying to secure grant money to identify readily available alternatives. "You need two buildings to begin production," he continues. "You need a microbiology lab to culture fungi (with a large autoclave to sterilize the media so that you are growing only the specific fungus you want) and a cropping building with 80 to 90 percent humidity where you grow and harvest the crop." Educational modules are also critical—both instructional programs to train fungi farmers and experimental programs so students and researchers can study growing techniques, conduct market surveys and provide other support for commercial production.

If passion breeds success, the Big Island will soon be sprouting with commercial mushrooms. "I could work the rest of my life studying Hawaiian mushrooms," Hemmes happily says. ☺

Susan Collins ('99 Hilo) is a freelance writer



Hawai'i restaurants provide a potential market for locally grown gourmet mushrooms. Chefs want fresh ingredients for dishes like this salad, created by UH Associate Professor Kusuma Cooray, of Kapi'olani CC's Culinary Institute of the Pacific.

Shiitake Mushroom Salad

Serves 4

- | | |
|--------------------------------|----------------------------------------|
| 12 medium shiitake mushrooms | ¼ teaspoon olive oil |
| 1 tablespoon minced garlic | 1 Maui onion, sliced into ¼ inch rings |
| salt and black pepper to taste | 2 cups fresh spinach leaves |

Remove the mushroom stems. Season mushrooms with garlic, salt and pepper. Heat olive oil in sauté pan and cook the mushrooms on high heat for 2–3 minutes. Remove mushrooms and cook onion rings for 1 minute. Place spinach on salad plates; arrange mushrooms and onion rings on spinach. Drizzle with dressing.

For dressing, whisk

- | | |
|---------------------------------------|--------------------------------|
| 2 tablespoons olive oil | 1 tablespoon red pepper flakes |
| 1 tablespoon chopped green onion | 2 tablespoons balsamic vinegar |
| 1 teaspoon roasted black sesame seeds | 1 tablespoon lemon juice |
| 1 tablespoon chopped red bell pepper | salt to taste |

UH Hilo Botanical Gardens are living laboratories

Carved out of a once overgrown gulch along UH Hilo residence halls, inviting paths meander through conifer trees in a garden established for students who had never seen a live pine. Planted nearby are close to a hundred species of cycads from as far away as Africa, China, North and Central America and Australia. Some are sharp and spiky, others, soft and feathery. "They look like palms, with names like sago or king palm, but they are in no way related to palms," instructs Don Hemmes. The real palms can be found in another section of the garden, which includes a nearly complete collection of Hawaiian loulu palms.

UH Hilo Botanical Gardens represent the biology professor's three decades of collecting and deep love of teaching. "To an educator, gardens are living laboratories, and these are my botany laboratories. More than 10,000 students have toured the gardens and learned about the interesting plants found right on our campus," he says. A \$10,000 grant from the James and Abigail Campbell Foundation is being used to create gardens throughout campus featuring Hawai'i's native and ethnobotanical plants. Hemmes's goal is simple: "I want our UH Hilo Botanical Gardens to be the most spectacular scientific gardens on the island."



The sago cycad is not really a palm