



A team member stands next to the ancient wine press.

From Tanning to Tannins

In the same cave complex in southern Armenia where researchers uncovered the world's oldest leather shoe last year (*Science*, 18 June 2010, p. 1461), archaeologists have found evidence for the world's oldest winery.

University of California, Los Angeles, archaeologists Hans Barnard and Gregory Areshian, who was part of the leather shoe team, found the ancient vintner's supplies during a 2007 National Geographic Society expedition. The stash included grape seeds from *Vitis vinifera* (the species still used in winemaking today), desiccated grape vines, a wine press, a clay fermentation vat, and earthen drinkware. Chemical analysis of a gray rime clinging to potsherds revealed the plant pigment malvidin, which in the region is only found in grapes and pomegranates. As the site contained no pomegranate remains, the pigment pointed to grape juice. And because fresh grape juice didn't last very long before the advent of mechanical

refrigeration some 5700 years later, the cave dwellers likely fermented it into wine, the researchers reported online last week in the *Journal of Archaeological Science*.

The site dates to approximately 4100 B.C.E., making it the oldest known winemaking facility, although traces of wine itself have been found in sites 4000 years older. Little is known about who used this cave system, but its numerous gravesites indicate that the caves may have played a ceremonial funerary role. The proximity to graves fits with many traditions of imbibing wine during burial rituals, says Patrick McGovern, a biomolecular archaeologist at the University of Pennsylvania Museum of Archaeology and Anthropology who has studied ancient Egyptian beer and wine. The finding shows how advanced winemaking was in these early stages of human civilization, he says. "I just hope they took their leather shoes off before they trod on the grapes."



A clay fermentation vat.

The World on a Screen

You can read your e-mail on your phone, but how do you check on forest fires in Bolivia or the cloud cover over Nepal at a moment's notice?

Well, now there's an app for that. On 23 December, Columbia University's Lamont-Doherty Earth Observatory in Palisades, New York, released EarthObserver, an application for the iPhone, iPad, and iPod touch. Beginning with a finely detailed relief map of landmasses and the sea floor, users can overlay maps displaying human-interest data such as the relative number of underweight children under age 5, geophysical features such as tectonic plates, or even the color of ocean sediments. The data sets are updated daily, weekly, or monthly and include explanations and source information.

Local values of variables are often available at the tap of a finger. This tactile form of querying a map is "a richer educational experience, instead of just looking at a paper map with numbers written on the corners," says Lamont-Doherty oceanographer William Ryan, the app's inventor. Ryan, who has spent much of his life mapping the sea floor, prepared the data sets while recent Rochester Institute of Technology graduate Justin Copeland did the coding. So far, EarthObserver has logged

30,000 downloads, starting with "a huge spike on Christmas Day," Ryan says.

"I see all the young folks at the mall, standing around, and they all have their little phones in their hands," says Ryan. "I thought, 'What if they're exploring the planet while waiting for their friends or between tweets?'"

Driving the Locals Crazy

Skiing and snowshoeing may be a great way to decompress, but in the German and Swiss Alps, those sports are stressing out local endangered bird populations. A study recently published online in the journal *Ibis* reported higher levels of stress hormones in droppings of capercaillies the closer they



were found to winter recreation areas. The birds, a type of grouse famous for their mating displays and distinctive calls, may be particularly sensitive during the winter, when they subsist on hard-to-digest and low-nutrient conifer needles, says lead author Dominik Thiel of the Swiss Ornitho-

THEY SAID IT

"The crossing of this threshold transcends mere symbolism and should be profoundly disturbing to all Californians."

—University of California (UC) President Mark Yudof. In an open letter to California residents released last week, he lamented Governor Jerry Brown's proposed budget, which would slash the state's contribution to the UC system by 16.4%, making it less than student fees for the first time. Yudof said he would try to absorb the \$500 million budget shortfall without raising tuition or reducing financial aid.

logical Institute in Sempach. The researchers don't yet know how the additional stress affects the birds' reproductive success, Thiel says, but what's clear is that the species is in trouble in the region. Between 1970 and 2000, the population fell by half, and it has disappeared in much of its former range. Thiel and his colleagues recommend keeping core capercaillie wintering areas off-limits to winter revelers.