

U.S. Cuba Policy Faulted

The Organization of American States criticized a United States law that punishes foreign businesses in Cuba and voted to review whether it violates international law. Page A6.

Behind Clinton's Tax Plan

In proposing a \$1,500 tax credit for college tuition, President Clinton cited as his inspiration a Georgia scholarship program that is financed by a state lottery. Page A20.

Vintage 5000 B.C.

Archeologists, studying residue in a pottery jar found in Iran, say they have found the earliest known evidence of wine making. Page B11.



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THE NEW YORK TIMES NATIONAL THURSDAY, JUNE 6, 1996

In the Annals of Winemaking, 5000 B.C. Was Quite a Year

By JOHN NOBLE WILFORD

Oenophiles might toast it as the first step toward civilization.

Neolithic farmers in what is now Iran had just settled down to village life, cultivating fields of barley and tending herds of goats and cattle. At about this time, around 5400 to 5000 B.C., they also learned to make good use of wild grapes growing in their midst, and so became the earliest known vintners.

Archeologists have found the evidence for this in a yellowish residue left in the bottom of a pottery jar from the mud-brick ruins of a Neolithic village at Hajji Firuz Tepe, in the northern Zagros Mountains near the modern town of Urmia. The residue contains the earliest chemical evidence of wine, a team of archeologists said in a report being published today in the journal *Nature*.

And since the jar was produced 7,000 to 7,400 years ago, the researchers noted, the discovery has given wine-drinking an extra 1,500 to 2,000 years of history. Until now, the earliest evidence for wine came from similar residues examined at Godin Tepe, which had been a Sumerian trading post around 5,500 years ago and is some 400 miles south of Hajji Firuz. Traders at Godin could also order beer.

The ceramic jar was excavated

some two decades ago by Dr. Mary M. Voigt, who is now an anthropologist at the College of William and Mary in Williamsburg, Va. She found the jar in what appeared to be the kitchen of a square mud-brick building at Hajji Firuz. Only recently was it retrieved from storage at the University of Pennsylvania and the residue analyzed by infrared spectrometry and related chemical tests. This analysis was conducted by Dr. Patrick E. McGovern, an archeological chemist, and colleagues at the University of Pennsylvania Museum.

The researchers detected two telltale chemical traces. The residue contained the calcium salt of tartaric acid, which occurs naturally in large quantities only in grapes. It also contained resin from a widely distributed evergreen tree in the Middle East, *Pistacia atlantica*. This resin was widely used in antiquity as an additive to inhibit the growth of bacteria and thus prevent the wine from quickly turning to vinegar.

So the Neolithic tippers must have drunk a wine similar to the Greek retsina of today. But Dr. McGovern said the chemical tests could not determine whether the wine had been red or white, or from wild or domesticated grapes.

In their journal report, the researchers noted that pollen in sediments revealed that wild grapes



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Traces of wine were found at Hajji Firuz Tepe site in Iran.

were plentiful in the region, but said that "the wine in the jar might well have been produced from a precursor of the highly successful domesticated type still used to make most modern wine." In any event, they said, the new evidence shows that wine was being made at the time people were establishing their first permanent settlements, based on domesticated plants and animals.

Dr. McGovern said in an interview that the fact that the farmers at Hajji Firuz had learned to preserve their wine with resin indicated they had already had many years of wine-making experience. But 7,000 or 7,400 years ago, he said, "is about as far back as we're going to be able to establish the origin of wine."

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The Jug of Wine Just Got Older

In the land of Omar Khayyam, celebrator of the loaf of bread and jug of wine, people seem to have acquired a taste for the grape early on. As soon as they settled down to farming and village life, they began making and drinking wine. After a hard day in the fields of barley, a cup of cheer may have relieved the stress of living in an increasingly complex society.

That was some 7,400 years ago, and archeologists examining residues in an old clay jar from the Zagros Mountains of present-day Iran have found chemical traces of this Neolithic vintage. It is the earliest known evidence for wine-making, giving wine an extra 1,500 to 2,000 years of history. Tests at the University of Pennsylvania, reported last week, revealed chemicals considered proof that the vessel contained wine, and traces of resin as a preservative. This means the ancient vintage probably tasted like the Greek retsina of today. It also indicates that these farmers had developed a certain sophistication in winemaking long before anyone could ride a horse, make a wheel or write.

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