

Chinese Pottery Yields Leftovers of Stone Age Happy Hour

By JOHN NOBLE WILFORD

Imagine the long centuries of the Stone Age, when life was, by definition, hard and there was not a tittle to be had.

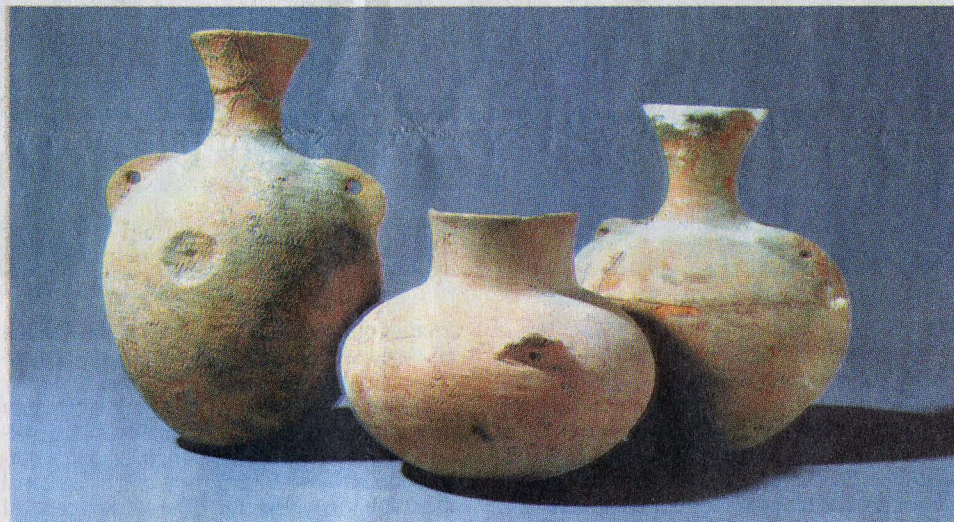
People in the Middle East came to find a pleasing remedy in the marvel of fermentation that turned the grape to wine and barley to beer. About the same time, it seems, the Chinese took a similar step with a cocktail of fermented rice, honey and fruit.

Archaeologists have discovered the dregs of Chinese happy hours in pottery jars up to 9,000 years old, in the later stages of the Stone Age known as the Neolithic period. A chemical analysis of the residue, they reported yesterday, had traces that matched herbs, acids, beeswax and modern rice wine — ingredients of a heady drink.

Dr. Patrick E. McGovern, an archaeochemist at the University of Pennsylvania, said the samples were the first direct chemical evidence for early fermented beverages in China, not long after rice was domesticated.

Dr. McGovern, who specializes in investigating the libations of ancient cultures, and a team of Chinese, British, German and other American researchers described their findings in the current issue of *The Proceedings of the National Academy of Sciences*.

“The most straightforward interpretation of these data,” the scientists wrote, is that



Zhiqing Zhang/Institute of Cultural Relics and Archaeology of Henan Province

Archaeologists analyzed shards from jars like these and found a fermented beverage.

the jars “contained a consistently processed beverage made from rice, honey and a fruit,” probably the Chinese hawthorn.

Chinese archaeologists uncovered the pottery from Jiahu, a Neolithic village in Henan Province, near the Yellow River. Previous excavations had yielded other artifacts from antiquity, the earliest playable musical instruments in China, the earliest

domesticated rice in northern China and, possibly, the earliest Chinese writing.

Shards from the bottoms of the jars had a reddish coating, inviting deeper examination to identify fingerprint compounds, or biomarkers, from the liquid that the vessels once held. But the coating was too degraded to be a reliable clue. Dr. McGovern said in a telephone interview that the very pores of

the vessels were more revealing than the surface samples. The pores absorbed and preserved chemical traces of the liquid, and these were analyzed at Penn’s University Museum of Archaeology and Anthropology.

Through several lines of chemical analysis, the scientists said, rice “is strongly suggested” as the principal grain in the beverage. Other extracted compounds pointed to beeswax, a clear biomarker of honey.

The substantial amount of tartaric acid in the samples could point to grapes as another ingredient. But the grape commonly used in wine was not introduced to China from Central Asia until several millennia later. So the acid is more likely to be from the Chinese hawthorn fruit, the researchers concluded. It has a high sugar content, meaning it could harbor the yeast for fermentation.

In a related discovery, the researchers reported finding sealed bronze vessels more than 3,000 years old that held scented beverages from the Shang Dynasty. They were rice and millet wines flavored with herbs, flowers and tree resins. By this time in China, the consumption of fermented drinks marked most of life’s events and rituals from birth to death.

What kind of kick did the 9,000-year-old Jiahu drink have? “We don’t know,” said Dr. McGovern, who could just about taste the next step in the research. “We will have to have an experiment to find out.”