

The clean fuel we keep ignoring

Why risk billions on Hibernia, one critic asks, when carbon-free ammonia is available now?

New Democrat MP Simon de Jong said a crazy thing in the House of Commons this week, in the sense that it's probably crazy to expect any government to really put the environment and the survival of the human race ahead of jobs and votes.

When the House was chatting up the Hibernia undersea oil field project, and all the billions of tax dollars that are to be risked on it, de Jong stood up and said we really should stop all subsidies to the oil industry. Hibernia, the Alberta tar sands, everything.

The problem with oil, he pointed out, is that its central component is carbon. If you use oil as a fuel, or make it into gasoline to use as a fuel, it produces carbon dioxide when it's burned. And increasing carbon dioxide in the air, coming mainly from machines that burn oil and gasoline, is the main booster of the greenhouse effect that we fear will roast us all right off this planet.

One thing this old world really could use right now is a fuel that would drive all our cars and trains just as well as gasoline does but not produce any carbon dioxide because it would not have any carbon in it. That would not end all our environment worries, but it would probably be the biggest single leap forward we could take.

De Jong went on to propose we establish a new tax (a dangerous way to talk, given today's furor over the GST) on all fuels that contain carbon. As he later explained to The Star, the tax would be graduated: "The fuels that pollute most would be taxed most; those that pollute less would be taxed less (per litre). That way, the tax on a litre of gasoline would be more than the tax on a litre of propane or liquid natural gas."

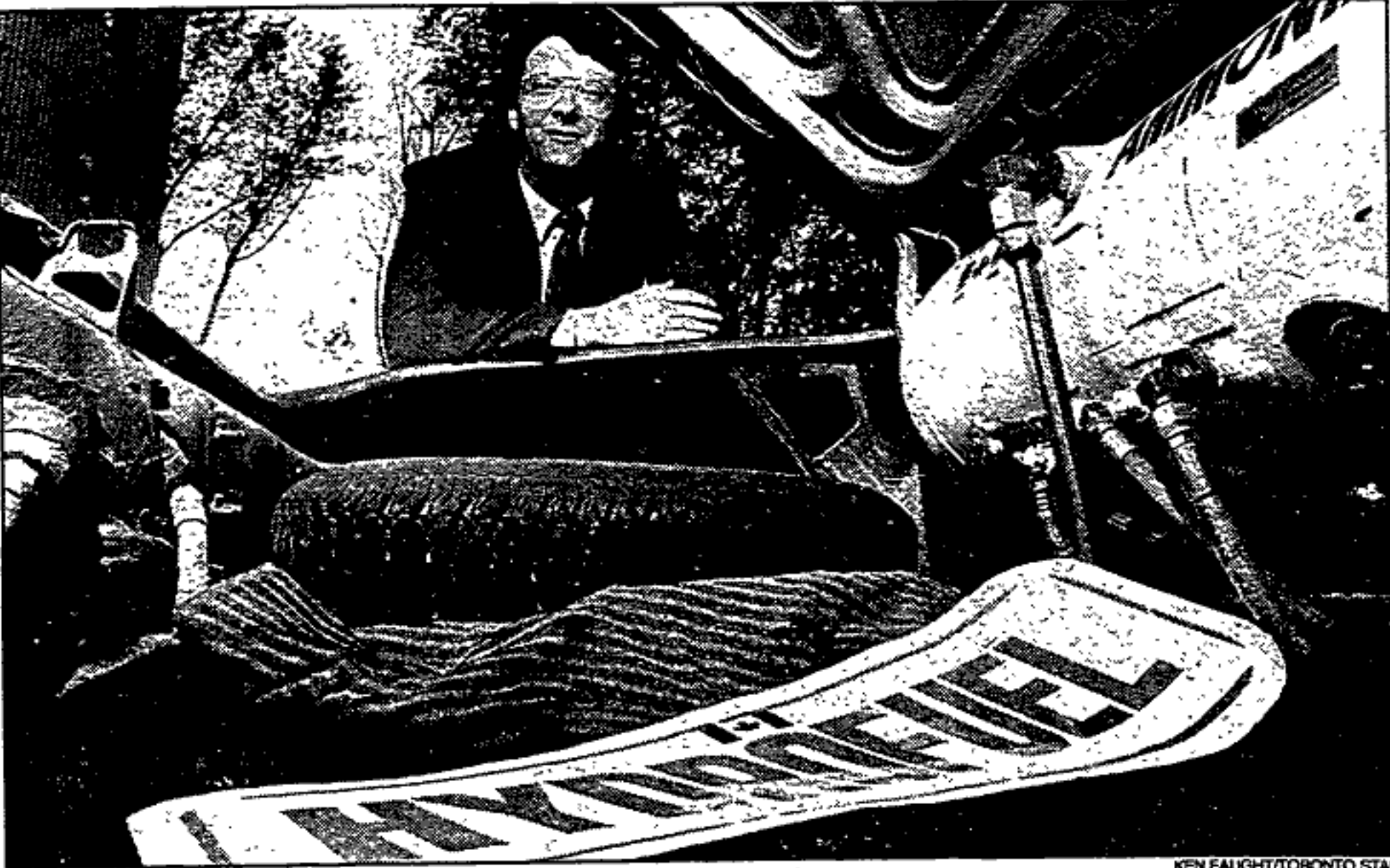
The idea would be to induce people to switch to less-polluting fuels, or even non-polluting fuels. "Fuels with no carbon in them would not be taxed at all," he said.

People might use them then, not just to get a good feeling but also because they wouldn't cost any more. They might even be cheaper. And the tax money could help clean up the mess being made by those of us who went on doing things the old way. "You didn't know there are non-carbon fuels that could replace gasoline? Read on."

Hydrogen is the ideal fuel. When you burn it, it combines with oxygen, producing harmless water vapor as its only exhaust. Hydrogen is the fuel NASA uses for its main shuttle engines, because it's so good.

But as NASA has been learning lately, with all its shuttle delays because of fuel leaks, hydrogen is tough to handle.

Much easier to handle is ammonia. That's ammonia as in cleaning fluids and smelling salts and fertilizers. It's made of hydrogen and nitrogen. No carbon.



MAN OF AMMONIA: Gregory Vezina shows off the ammonia fuel tank in the 1981 Chev he drove across Canada seven years ago to prove fuel's efficiency. Despite promises, Ottawa has done little to develop such alternatives.

All our internal combustion engines draw in air to supply the oxygen to burn their fuels. Air is one-fifth oxygen and four-fifths nitrogen. Much of the exhaust from a normal car engine is inert nitrogen, just passing through.

If you burn ammonia in a well-designed engine, the hydrogen in it combines with oxygen from the air to make water vapor. That's the burning part, the action that produces power. If the engine is built right, the nitrogen in the fuel just passes through, with the nitrogen from the incoming air.

In World War II, Belgium converted its entire public transit system to run on ammonia, almost overnight, after the conquering Nazis took over their diesel fuel supplies for their war machine.

Seven years ago in North Bay, I drove a 1981 Chevrolet V-8 that ran on ammonia. It had been converted, using simple equipment in a family-farm barn, by a young idealist named Gregory Vezina. He drove that car across Canada and got lots of shallow praise from politicians who did nothing to help develop the idea. The car ran just fine: smooth, peppy, reliable.

This was not a high-cost high-tech conversion. You could catch a whiff of ammonia here and there. The drive kept my sinuses clear. But a big developer with real research money should solve that easily enough, just

as Detroit has controlled the enormous dangers of handling gasoline for today's engines.

Vezina still chases seemingly impossible causes. He went as far as to run as a Conservative in the Ontario election last month (and lost, of course). He runs the old Chevy on propane these days, which is at least cleaner than the gasoline it was built for.

But he still has his dreams — and his fans. Simon de Jong is one of them. Liberal MP Dennis Mills is another. "I have enormous respect for him," says Mills. He is looking for a big manufacturer willing to make the effort to develop a genuine (rather than converted) ammonia engine, to give us a real choice under our hoods.

At the National Research Council in Ottawa, veteran chemist Bryan Taylor agrees. He says a commitment to develop an ammonia engine, an effort comparable to what's been done to make gasoline engines run well, would at least match gasoline performance and almost certainly exceed it in efficiency.

Ammonia, you see, already is made in enormous volume, mainly for use in farm fertilizers. We wouldn't be starting from scratch in production and handling.

There are other clean-fuel options. Better batteries, for electric cars, are one. Hydrogen-burning fuel cells (like those used in some manned

space ships) to produce current for electric cars are another. But those are further from the low-cost mass production stage yet, so with them, we almost would be starting from scratch.

Ammonia is available now. The Belgians switched to it during a war because they had to. We don't really try with it now because we don't have to. We talk nicely about wanting to clean up the air and fight global warming but we're not quite gasping or sweating yet, so we don't.

In 1988, Brian Mulroney welcomed 300 worried experts from around the globe to a World Conference on the Changing Atmosphere in Toronto. His government, he said, would set an example by doing all it could to help develop ways to resuscitate the air we all breathe.

Since then, his government has done almost nothing to develop alternative fuels that could help that happen. It actually cancelled the few pennies that had been available to encourage converting engines to not-quite-so-dirty fuels.

And this week, his government proposed to spend billions to develop an oil field that would create clouds of carbon dioxide to make the atmosphere worse. And they called it a great thing.

"The economic deck is stacked against alternative (clean) fuels," de Jong said. Remember him? The crazy one?

Legendary moated city unearthed in Japan

By Eugene Moosa
REUTERS NEWS AGENCY

YOSHINOAGARI, Japan. — When archeologists unearthed the remains of a third-century city at Yoshinogari last year, they discovered a legendary community described in an ancient Chinese history book.

Now historians are rewriting Japanese history after the discovery of the moats, dwelling areas and burial mounds at this site in western Japan, the largest and most spectacular third-century community excavated in the country.

What most surprised archeologists was the scale and scope of the moats and fortifications, never before discovered in Japan.

"Before, historians thought that third-century Japan was a peaceful period of tiny, isolated, rice-growing communities," said Ryosuke Yamada, chairman of the Yoshinogari Preservation Committee.

The city, which was surrounded by triple moats, 40-foot-high watch towers and earthen walls, tells a different story.

Most dramatic for the ordinary visitor is the headless skeleton of a young adult male, possibly a warrior beheaded in battle and perhaps an early samurai.

Another skeleton had a dozen arrowheads embedded in it.

TIME OF WARS

"It was obviously a time of wars," said Tadaaki Shichida, director of the Yoshinogari excavation.

"The watch towers, granaries and extensive moats here correspond to the Wei Chronicle account as no discovery has ever done before."

Yoshinogari is the first city to be excavated that fits descriptions given in the only over-all account of early Japan, the Wei Chronicle, compiled by a court historian of the Wei Dynasty (220-265 A.D.), whose capital was in Loyang, central China.

It speaks of Japanese cities surrounded by walls and watch towers protecting numerous granaries and houses.

Until Yoshinogari, no such city had been found, and historians had dismissed parts of the Wei account as hyperbole.

The city is to be preserved as a national historic site and is a magnet for visitors intrigued by the Wei Chronicle.

The central character in the Wei Chronicle is shaman-queen Himiko of the dominant state of Yamatai, the ruler of the first Japanese dynasty. She paid tribute to the Wei king and received a golden stamp.

Although Yamatai was not ruled by the Wei, it was part of a system of tributary relations which the Chinese established with "outer barbarians," such as Mongolians, Koreans and Japanese. These peoples paid tribute and received imperial gifts in return.

THE UNIVERSE

Journal explores UFO abductions

By Terence Dickinson
SPECIAL TO THE STAR

During the annual meeting of the American Association for the Advancement of Science a few years ago, news reporters covering the meeting were asked to fill out a questionnaire. One of the questions was, "What, in your opinion, would be the biggest science story of all time?"

The overwhelming majority said the discovery of extraterrestrials would be the headline of the millennium.

The discovery of another intelligence will forever change our perception of humanity's place in the universe. But, so far, there is not a shred of solid evidence that anybody else is out there.

Yet, we continue to hear accounts of incredible encounters with UFOs and their alien occupants. There are more than 120 cases in which people claim to have been taken, against their will, into alien spaceships, examined and released.

Many of these "abductees" say that their recollections of the encounter are just vague memories, but nightmares about the unsettling experience prompt them to seek help. The full story is usually revealed through hypnosis.

Very few researchers have seriously examined these bizarre stories and the seemingly credible people who report them. Trying to find out what the investigators have learned isn't easy. The few books on the subject are inevitably biased by the opinions of a single author. Reputable magazines and newspapers steer clear, while the supermarket tabloids announce alien invasions.

The best source I have seen that offers a spectrum of informed opinion on the controversy of UFO abductions is the first issue of the new *Journal of UFO Studies*, published by the J. Allen Hynek Centre for UFO Studies. (Available for \$18 (U.S.) from CUPOS, 2457 W. Peterson Ave., Chicago IL 60659.)

The 174-page publication contains 20 articles by 11 experts. One of these researchers, Hilary Evans, states flatly that "abduction stories are a dead end for the UFO researcher." Another investigator, Robert Baker of the University of Kentucky, writes, "There is no concrete evidence that alien spaceships have landed on Earth, or have established any kind of contact."

However, other contributors are not so sure. Psychologist Jean Mundy, who has treated some abductees, notes an uncomfortable consistency to their stories. Says Mundy: "They beg me to come up with an alternative explanation."

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EARTHWEEK: A DIARY OF THE PLANET

By Steve Newman

New Zealand Volcano

A volcano erupted near New Zealand's White Island in the Bay of Plenty that sent an ash cloud 3,050 metres (10,000 feet) into the air. It followed a major eruption in June which doubled the volcano's main crater.

Puerto Rico Quake

A Richter-magnitude 4.5 earthquake rocked Puerto Rico on Monday, but there were no reports of injuries or damage. The earthquake was centered near the coastal city of Humacao, southeast of San Juan.

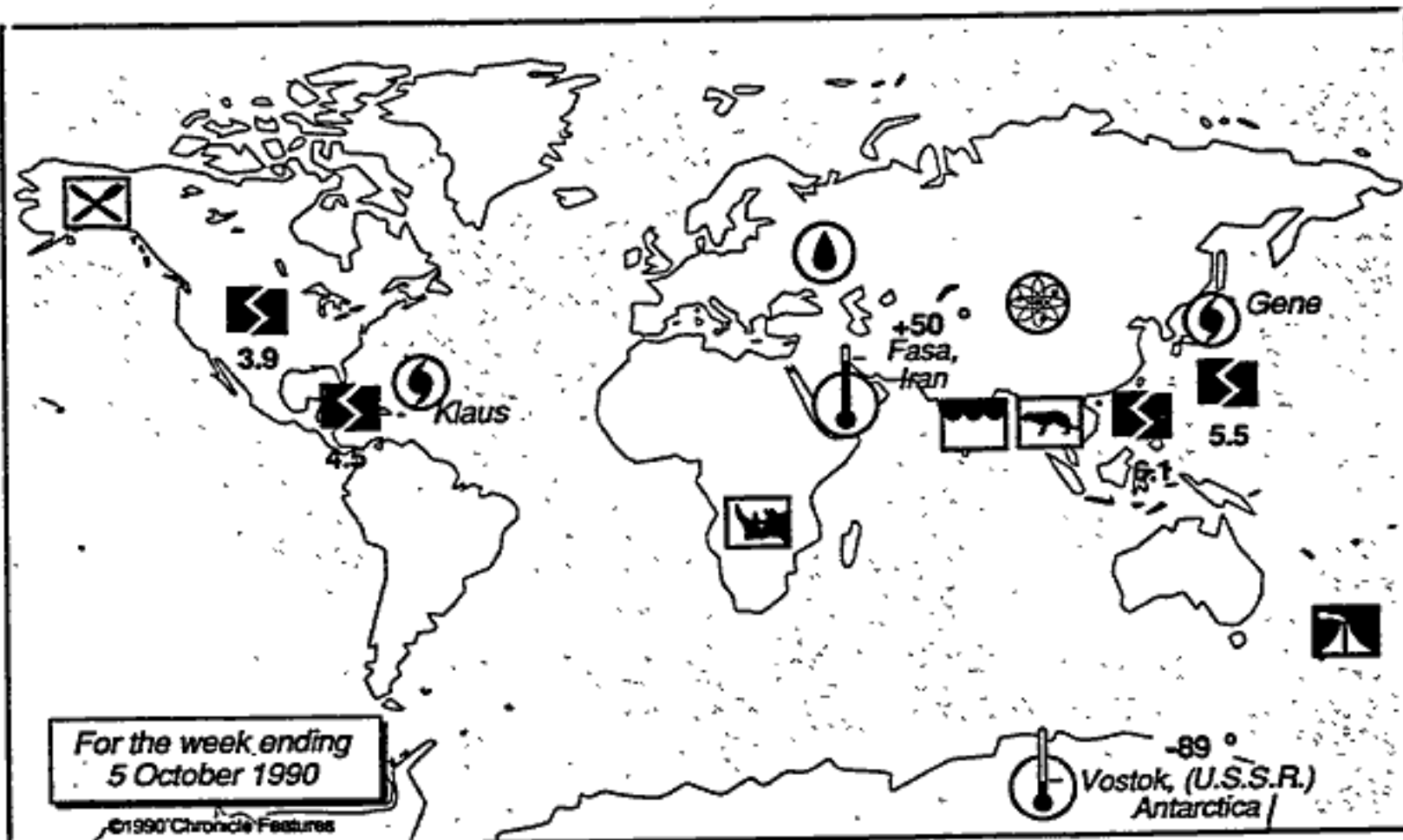
Other earth movements were felt in western Japan, east-central Idaho and in the East China Sea between Japan and Taiwan.

Tropical Storms

Remnants of Tropical Storm Gene swept through western and central Japan, killing at least four people and injuring 13 others. Heavy winds forced the cancellation of 96 high-speed bullet trains on the rail line between Tokyo and Osaka. One hundred flights were canceled at Tokyo's Haneda airport because of high winds and rain. In the Atlantic Ocean, tropical storm Klaus forced the governments of France, Curacao and Antigua to issue tropical storm warnings for the northeastern Caribbean islands on Thursday.

Ecological Disaster

Officials in Soviet Kazakhstan demanded that the Kremlin declare a state of ecological disaster following a Sept. 12 explosion at a nuclear fuel plant. Toxic gases from burning beryllium filled the streets in some parts of Ust-Kamenogorsk, and several people were injured. The president of the Kazakhstan republic said local officials had already declared the region an ecological disaster zone. The plant is one of the largest producers of fuel for nuclear power



plants in the Soviet Union and is located near the border with China and Mongolia.

Wet Harvest

Cold and rainy weather in the Soviet Union have raised fears that much of the potato harvest might be lost. Soviet Prime Minister Nikolai Ryzhkov went on television and told the Soviet people, "We have two or three weeks to save the crop." The situation is so desperate that the Soviet Foreign Ministry sent its staff members to the countryside to help save the crop. Moscow must stockpile 550,000 tonnes of potatoes for winter, but supplies so far have only reached 38,000 tonnes.

Tiger Attack

Nine people have been killed by tigers that roamed through a Bangladeshi fishing village near the Sunderban forest. The dead include two young

girls whose bodies were found by guards. Forty people have been killed by tigers this year in Bangladesh.

Bangladesh Floods

At least 16,000 people were marooned by floodwaters in northern Bangladesh as flash floods swept through dozens of villages. United News of Bangladesh said nine children drowned when the Jamuna River overflowed 105 kilometres (65 miles) northwest of Dhaka. Seventy percent of the nation's farmland is under water. The low-lying delta nation is swept by floods each year that kill hundreds of people.

Rhino Poachers

Police in Zimbabwe killed three rhino poachers in a wild shootout in the country's main game reserve. The poachers came from neighboring Zambia and were armed with AK-47 rifles as they entered the Hwange National

Park in northwestern Zimbabwe. About 100 poachers have been killed since 1985 by police who protect the 6,000 black rhinos in the park.

Beaver Botulism

Scientists in Alaska fear the eating of fermented beaver tails has triggered deadly botulism outbreaks among Alaskan native Americans. Three doctors, writing in the Western Journal of Medicine, believe the switch away from traditional fermented food preparation may have triggered the outbreak. The delicacy is popular for its taste and as a symbol of native traditions. Beaver tails have traditionally been fermented in clay pits dug in the ground. However, younger native Americans have begun to use plastic bags for the fermentation process.

Additional Sources: U. S. Climate Analysis Center, U. S. Earthquake Information Center and the World Meteorological Organization.