

# Expert says sinkholes tell of huge comet that hit Yucatan

By Joel Simon  
COPLEY NEWS SERVICE

MERIDA, Mexico — For hundreds of years, the inhabitants of Mexico's Yucatan peninsula have pondered a geological riddle: why do thousands of sinkholes cover the region?

The ancient Mayas believed they were gateways to the underworld; their descendants called them the "veins of the Earth."

Now Yucatan-born geologist Alfredo Camara stands on the edge of a sinkhole, which the locals call a "cenote," and offers another explanation.

"Sixty-five million years ago an enormous comet hit the Earth, causing devastation which wiped out the dinosaurs," Camara explains. "What we call the 'ring of cenotes' marks the limits of the crater."

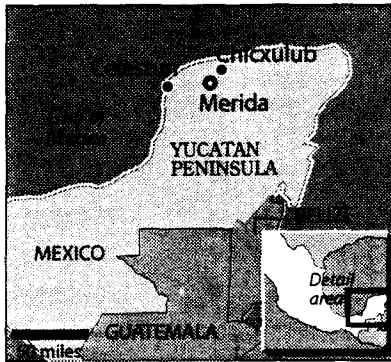
What Camara has that the ancients lacked is a satellite photograph showing that the cenotes are arrayed in a perfect semicircle. Indeed, the theory is based not on folklore but years of scientific study involving magnetic and gravity field anomalies, analysis of geological structures and, more recently, seismic research.

Camara, a professor of hydrology at the local university, spent this last summer working with Alan Hildebrand, a research scientist with the Geological Survey of Canada in Ottawa who, along with co-workers, indicated that an enormous crater was buried under the Yucatan.

Camara and a colleague trekked through the Yucatan taking gravity measurements to determine the crater's exact limits.

The existence of the crater — and whether the impact was in fact the cause of the extinction of the dinosaurs — has been much debated in scientific circles for years.

But Yucatecans have readily embraced it.



KNIGHT-RIDDER

search carried out last summer may help clarify the exact size of the crater.

He predicted that in about a year, when the data collected last summer are published, "a good deal of the debate about the size of the crater will go away."

The theory that a comet or asteroid was responsible for the demise of the dinosaurs was put forth in 1980 by Walter Alvarez, a geologist at the University of California Berkeley.

Alvarez published a paper in which he noted a uniform layer of a mineral called iridium deposited around the globe 65 million years ago at the end of the Cretaceous period when the dinosaurs died out.

Iridium is extremely rare on Earth, but is commonly found in meteorites and comets.

Scientists were slow to accept Alvarez's theory. Many believed that the extinctions were caused by a massive volcanic eruption. They argued that no physical evidence of an enormous comet or asteroid had been found.

Like many young geologists, Hildebrand was excited by the challenge of locating the crater. After observing geologic evidence that Haiti had been showered with debris from the potential impact, Hildebrand decided the crater must be nearby.

In 1952, petroleum engineers in the Yucatan had drilled a deep hole near the town of Chicxulub that turned up igneous rocks, highly unusual in a region formed by marine sedimentation. Scientists initially dismissed the find as evidence of ancient vulcanism.

## Gigantic crater

Using the geological evidence from the drill hole, combined with magnetic and gravity measurements, Hildebrand postulated that a comet had struck the area, leaving a crater 112 miles in diameter buried under the Yucatan peninsula.

(Sixty five million years ago, the Yucatan was covered by the ocean, and half of the remains of the crater today extend out in the Gulf of Mexico).

In a 1993 paper, Hildebrand described what a comet of that magni-



Crater's edge?: Geologist peninsula mark the limit

tude would have done to the First, the enormous energy released by the impact would charred anything in the vicinity. Dust thrown into the air would block out all sunlight around the world for months; cold, followed by acid rain, and later a greenhouse type warming would have wreaked havoc with the Earth's environment.

"It's a source of pride

New Year's  
Free Fabric  
Save up to

# tell of ucatan

tists were slow to accept  
s theory. Many believed  
extinctions were caused by  
ve volcanic eruption. They  
that no physical evidence of  
mous comet or asteroid had  
nd.

many young geologists, Hil-  
was excited by the chal-  
f locating the crater. After  
g geologic evidence that  
d been showered with de-  
m the potential impact, Hil-  
decided the crater must be

52, petroleum engineers in  
atan had drilled a deep hole  
e town of Chicxulub that  
p igneous rocks, highly un-  
a region formed by marine  
atation. Scientists initially  
ed the find as evidence of  
vulcanism.

## ic crater

g the geological evidence  
e drill hole, combined with  
ic and gravity measure-  
Hildebrand postulated that a  
had struck the area, leaving  
112 miles in diameter bur-  
er the Yucatan peninsula.

y five million years ago, the  
was covered by the ocean,  
of the remains of the crater  
extend out in the Gulf of

.  
1993 paper, Hildebrand de-  
what a comet of that magni-



JOEL SIMON / Copley News Service

**Crater's edge?:** Geologist Alfredo Camara says thousands of sinkholes around the Yucatan peninsula mark the limits of a huge crater created by a meteorite 65 million years ago.

tude would have done to the Earth. First, the enormous energy released by the impact would have charred anything in the vicinity. Dust thrown into the air would have blocked out all sunlight around the world for months; cold, followed by acid rain, and later a greenhouse-type warming would have wreaked havoc with the Earth's environ-

ment.

As Hildebrand put it: "The dinosaurs didn't have a chance."

Other scientists, while agreeing to the existence of the crater, disagree with Hildebrand's theory about the demise of the dinosaurs.

Of course, the scientific details are of little interest to the residents

of the Yucatan. They seem satisfied knowing only that they live at the epicenter of an ancient crater.

Even Alfredo Camara diplomatically declines to take a position. "I'm on the fence," he said. "I believe the theory, but I think we need more research before we can be 100 percent certain about what happened."

# New Year's Sale

# Fabric Upgrades\*

## Save up to \$300!

new style

**"It's a source of pride for Yucatecans that this is where the comet that wiped out the dinosaurs landed."**

**A LOCAL HOTEL MANAGER**

Perhaps it is because they are descendants of the star-gazing Mayas, who tracked the movements of the heavens 1,300 years ago. Perhaps it is because they live in a region where many believe in myth and magic.

For Yucatecans, the theory that a comet or an asteroid hit the Earth strikes most as no more improbable than the sacred talking cross, which is one of the most important shrines in the region.

Last summer's research on the crater was conducted by a team of 30 scientists led by Hildebrand, geologist Dick Buffler of the University of Texas at Austin, and Mike Warner and Joanna Morgan from Imperial College in London.

David Bacab, a tour guide who leads bird-watching expeditions near the fishing village of Celestun, matter-of-factly explains to his clients that the wetlands ringing the coast were created by a comet.

Says a local hotel manager: "It's a source of pride for Yucatecans that this is where the comet that wiped out the dinosaurs landed."

The crater also provides an intriguing answer to the *cenote* mystery, which so obsessed the ancient Mayas that they regularly sacrificed humans by drowning them in the sinkholes.

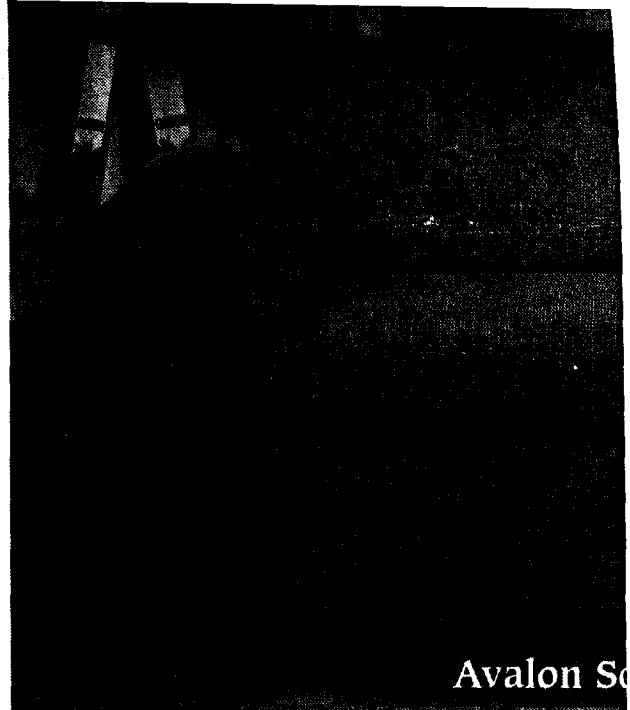
Few Yucatecans are familiar with the scientific hypothesis that the rocks in the crater sink more rapidly than the surrounding sediments, causing sinkholes along the perimeter of the ancient crater.

Many find it quite easy, however, to accept the notion that the *cenotes* were created by a comet.

In recognition of the Mayan influence in the region, Canada's Hildebrand named the crater after a nearby town called Chicxulub, even though the scientists complained that it was unpronounceable. (It's pronounced Check-shoo-lube).

The word also means "sign of the horns" in Mayan.

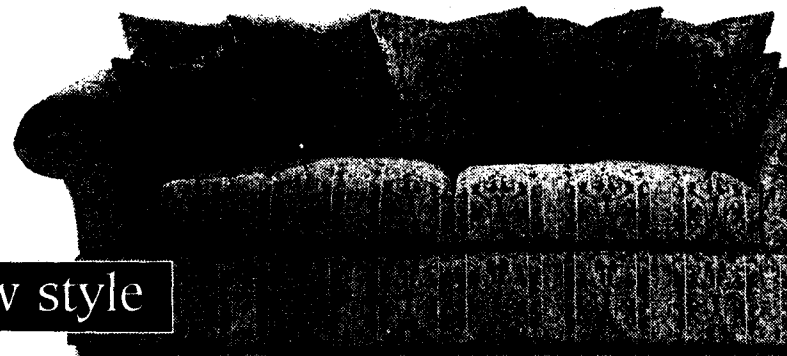
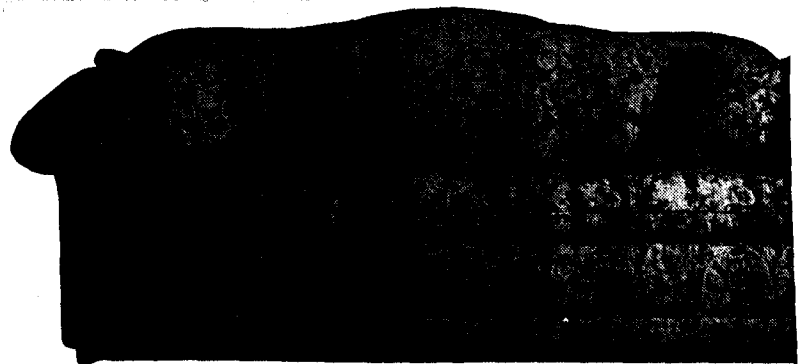
The scientific community has largely come around to Hildebrand's view that the Yucatan is the site where the ancient comet hit, and the debate is generally over the size of the comet and the angle at



**Avalon So**

**Special Introductory Price.** Our new Avalon sofa combines plush comfort with h

**Enjoy great savings on including our new select gorgeous fabrics, and ne**



**new style**

**Every Krause's sofa is backed**

\*Free Fabric Upgrade offer excludes leather. Offer not good on prior orders or in combination with other discounts. An additional charge may apply to some styles. Fabric must be in stock at time of order for 30-day delivery. †See showroom for Lifetime Guarantee details. \*\*Six months' Same-As-Cash. No finance charge when paid in full according to terms. If not paid in full in six months, finance charges will be assessed from the date of purchase.

**no monthly payments**

**La Mesa: 5310  
Mira Mesa: 7550 Miramar Road (In th  
San Diego: 1205 West Morena Boulevard  
San Marcos: 11**