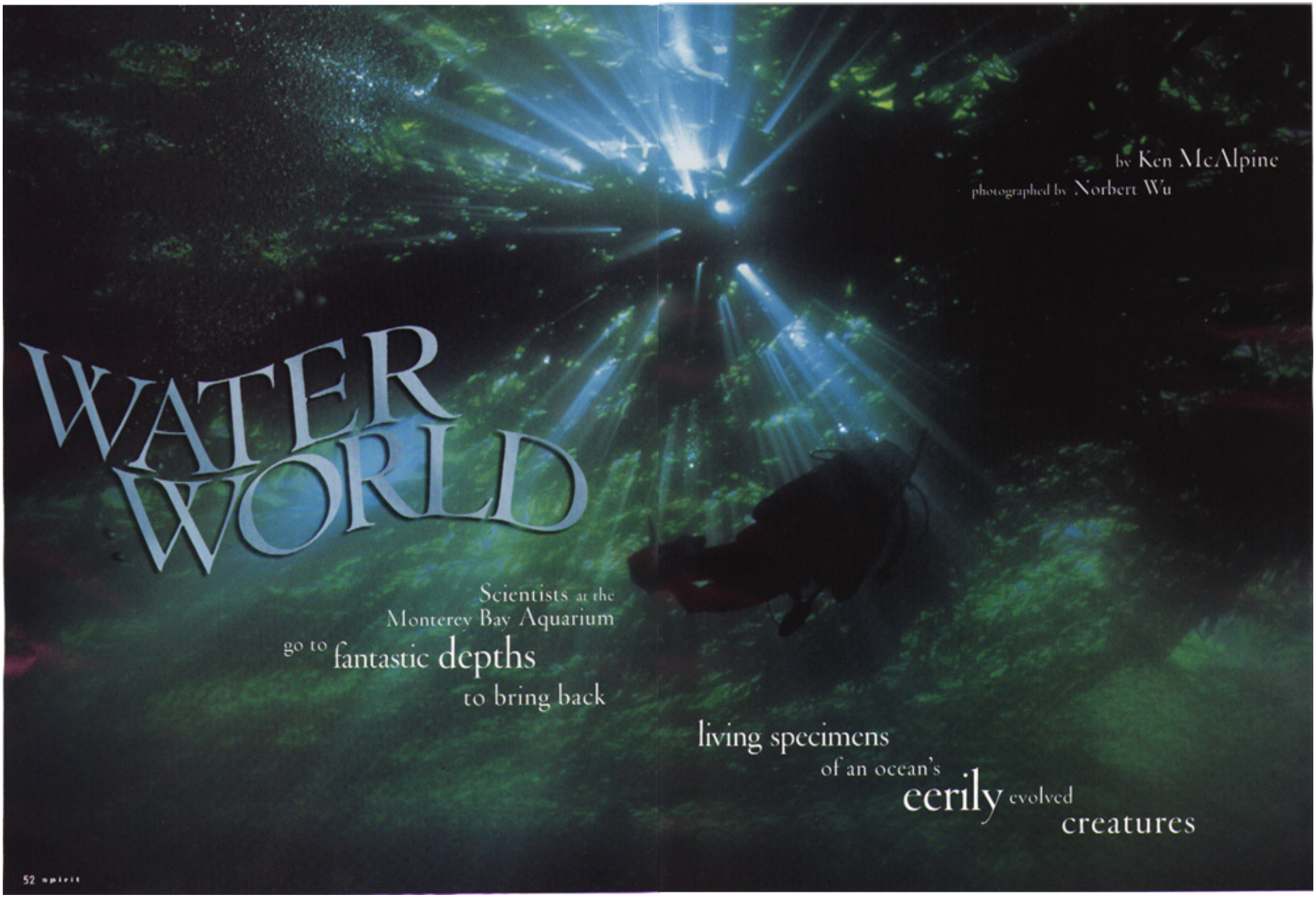
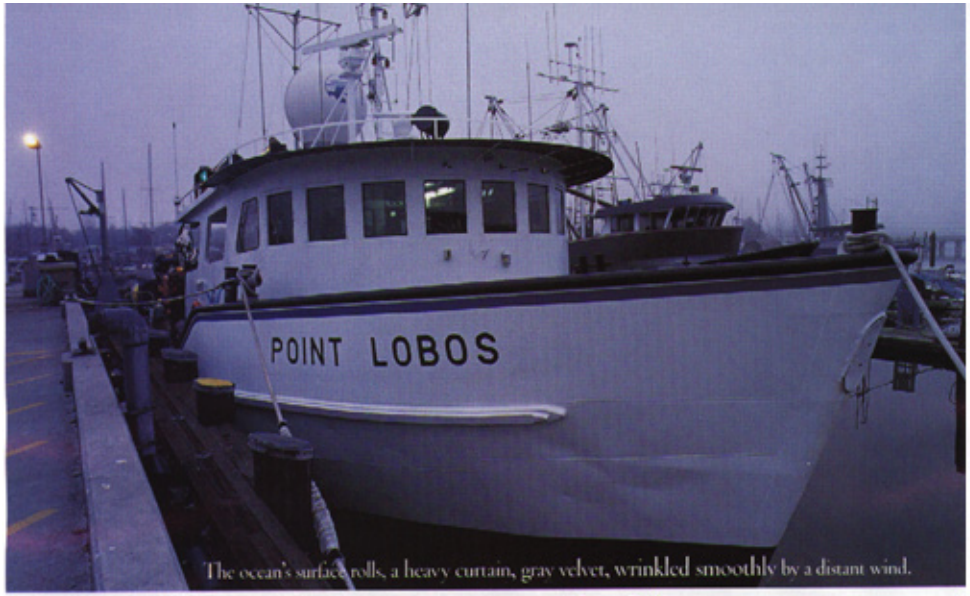


WATER WORLD

by Ken McAlpine

photographed by Norbert Wu

Scientists at the Monterey Bay Aquarium go to fantastic depths to bring back living specimens of an ocean's eerily evolved creatures



The ocean's surface rolls, a heavy curtain, gray velvet, wrinkled smoothly by a distant wind.

On the deck of the research vessel *Point Lobos*, technicians move about the *Ventana*, preparing the boxy, orange $1.2 million remote-operated vehicle (ROV) for its plunge beneath the veil.

One hundred years ago, scientists explored the deep sea mostly by dragging nets through the waters and across the bottom, a method of sampling and discovery akin to probing the Amazon blindfolded with tweezers. Ah, look here, they said, upon hauling up nets containing pressure-obliterated fish and unrecognizable goo. There is little life in the depths. Of course, this isn't so. But despite monumental advances in technology — the *Ventana* can descend to roughly 6,000 feet and, with it's *Lost in Space* arms, scoop up a marble — scientists still aren't sure what's down there. About 250,000 species have been identified in the ocean. Scientists estimate that the deep ocean is home to as many as ten million more.

The technicians throw switches. The *Ventana*'s video cameras swing slowly, polished lenses taking in their surroundings, mostly a gray pall of morning fog that squats here nine miles off the Monterey, California, coast. The biggest of the lenses — a fat cylinder jutting out dead center — is straddled by a small green alien, one of those malleable Gumby things, its legs cinched down with a plastic tie. His black mouth is agape. Someone has bent his arms up over his head in a look of "What the hell is that!" surprise. This subliminal optimism has some basis.

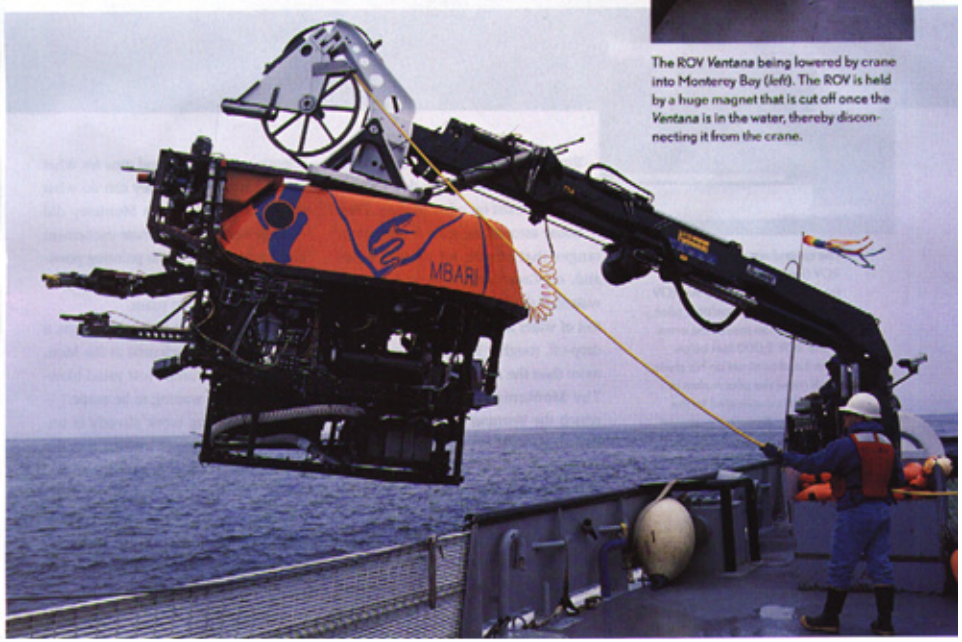
Gil Van Dykhuizen watches the proceedings. A research biologist at the Monterey Bay Aquarium, Van Dykhuizen is the man of the moment. He is here to pluck creatures from a cold, black world for a deep-sea exhibit that will, for the first time, raise in unrivaled numbers the beautiful, the bizarre, and the eerily evolved, and display them, alive and going about their business, to a gawking public. On this August morning, the *Mysteries of the Deep* exhibit, which opens March 20, 1999, is still months away. But already scientists have come to Monterey, padding excitedly through the aquarium's backstage bowels, pushing past doors marked "research and development," pushing past Van Dykhuizen, too, to sit and stare into tanks that house the very creatures they have spent a lifetime studying and have never seen alive.

As a scientist, Van Dykhuizen is highly respected in his field. But spend any time with him and you quickly realize he's just a ten-year-old collecting frogs, only now he's six-feet-four and can apply more torque to the jar.

He nods out at the poker face of Monterey Bay and beams an infectious grin. "Every time you go down there, there's this incredible feeling of anticipation," he says. "You don't know what you're going to see. To me it's like being a kid in a candy store. What kind of candy am I going to see today?"

For many, the deep oceans are simply this remote place populated by weird lantern-slung, fang-toothed, bulbous-eyed creatures that would have scared Timothy Leary straight. Well, they are, but, as scientists are learning — these days at a frenetic pace — the ocean deeps are far more remarkable than that. They house mineral wealth of numbing dimension. They have revealed the impossible to be possible: clams, tube worms, mussels, and other organisms living in black, super-heated water beside hydrothermal vents and

Point Lobos in its berth at Moss Landing Harbor (opposite). Monterey Bay Aquarium research biologist Gil Van Dykhuizen examines the contents of the robot vehicle *Ventana*'s "drawer." Specimens from the deep-sea floor are gathered by the arm on the remote-operated vehicle (ROV) and loaded into the drawer for examination later (below).



The ROV *Ventana* being lowered by crane into Monterey Bay (left). The ROV is held by a huge magnet that is cut off once the *Ventana* is in the water, thereby disconnecting it from the crane.

The control room of the ROV (top). Pilot T. Craig Dawe (*seated at right*) guides the ROV itself. After it is in position, pilot Stuart Stratton moves the arms of the ROV 3,000 feet below from hand controls on his chair. Each move the pilot makes in the chair is duplicated by the robot arm. A computer screen (above), shows a sonar map of the Monterey Bay Canyon.

thriving on toxic nourishment, suggesting that life, as we don't know it, could exist on other planets. They house astounding scale — mountain ranges that stretch for 46,000 miles and, off Greenland, a giant undersea waterfall that pours 177 million cubic feet of water a second down a two-mile drop-off, roughly 170 million cubic feet more than the Amazon River's outflow. The Monterey Canyon, an edge of which the *Ventana* will be probing today, could swallow the Grand Canyon.

It's this very scope — not to mention crushing pressures and a paucity of oxygen — that makes the deep ocean so hard to explore. Such daunting obstacles leave scientists with two options. They can go off to wherever it is that scientists go to drink and pine for what might have been. Or they can do what every scientist I met in Monterey did — forge ahead and resonate excitement like a tuning fork while painting possibilities as fantastic and free-ranging as the imagination can roam.

"There are," says Randy Kochevar, a deep-sea research scientist at the Monterey Bay Aquarium, "just mind-blowing discoveries waiting to be made."

Mind-blowing work already is underway. Scientists are looking into the possibility of reducing carbon-dioxide emissions into the atmosphere, and possibly reducing the threat of global warming, by pumping the stuff into the deep sea, where a complex inter-

(CONTINUED ON PAGE 100)

Underwater Wonders

Norbert Wu has said that he "detests boats," which I find an astonishing revelation from a guy who's world-renowned for his underwater photography. I came across this tidbit about Norbert's seasickness tendencies while reading a backgrounder on him in a Web site devoted to one of his recent assignments. According to that information, he also has been "bitten by sharks, run over by an iceberg [When are we going to wise up and equip those things with horns? Think of all the trouble it would have saved the *Titanic*.], stung nearly to death by sea wasps, and trapped in an underwater cave."

So, I'm thinking: This guy hates being seasick *worse* than he hates being stung by sea wasps?

Norbert has shot pictures for major magazines around the world and for books cataloging the wonders of the deep (one of which he wrote himself). He has photographed fourteen-foot tiger sharks in the midst of a feeding frenzy (theirs, not his) and made underwater dives in the Antarctic, where the beneath-the-ice temperature approached minus two degrees Fahrenheit. And just in case you're wondering if he might have gotten into the biz by accidentally falling off a ferry with a camera slung around his neck, Norbert also has engaged in doctoral studies in marine biology at the Scripps Institution of Oceanography.

We're very proud to have Norbert's exciting photographs in the pages of *Spirit* this month, accompanying Ken McAlpine's report on the ongoing work by scientists at the Monterey Bay Aquarium. At the time of Ken's visit last August, researchers were in the process of bringing aquatic life back from the depths as part of what promises to be a magnificent exhibit, *Mysteries of the Deep*, which is scheduled to open in March at the aquarium. Ken writes that the exhibit "will,

Deep-sea mushroom soft coral.

for the first time, raise in unrivaled numbers the beautiful, the bizarre, and the eerily evolved, and display them, alive and going about their business, to a gawking public."

As one of Norbert's amazing photographs (*above*) suggests, life from earth's final and still largely unexplored frontier can seem a bit otherworldly. See for yourself in "Water World," beginning on page fifty-two.

Also very much a part of our world is country singer Rosie Flores, although you might be learning about her for the first time right here. Some ten years ago, Flores verged on stardom, with a major-label contract and a first album full of ready-for-radio songs. It didn't happen. Thus, L.A. entertainment writer Sean Mitchell's cover story this month isn't so much a portrait of unqualified success, as so many celebrity profiles tend to be, as it is a telling portrait of perseverence. Flores emerges as a musical iconoclast whose vision has not yet broken through Nashville's denim ceiling. Yet you'll discover in Sean's "Dance Hall Diva" that Rosie's truly the real deal.

Elsewhere, there are some great reads on varied topics such as staying well when you travel, who makes the music for some of your favorite commercials, a maker of motorcycles in Texas, and author Michael J. Rosen, a champion of animals.

Discoveries features inveterate traveler Robin Fowler on Birmingham and inveterate diner Ellise Pierce on Where To Eat Pizza around the nation. Athletic Ken McAlpine's Fitness column concerns the facts and myths about burning calories, while money-wise Margaret Opsata's Personal Finance column guides you through the maze of socially conscious investing. In The Know, from the knowledgeable Lee Green, details the rapid rise of education entrepreneur Carlos Watson, while the debut of our technology column, Cutting Edge, by the wired Chris Tucker, outlines the profits or pitfalls awaiting those who conduct business on the Internet.

There's lots more, too. So, in the spirit of adventuresome cameraman Norbert Wu, dive in.

John Clark

John Clark, Editor