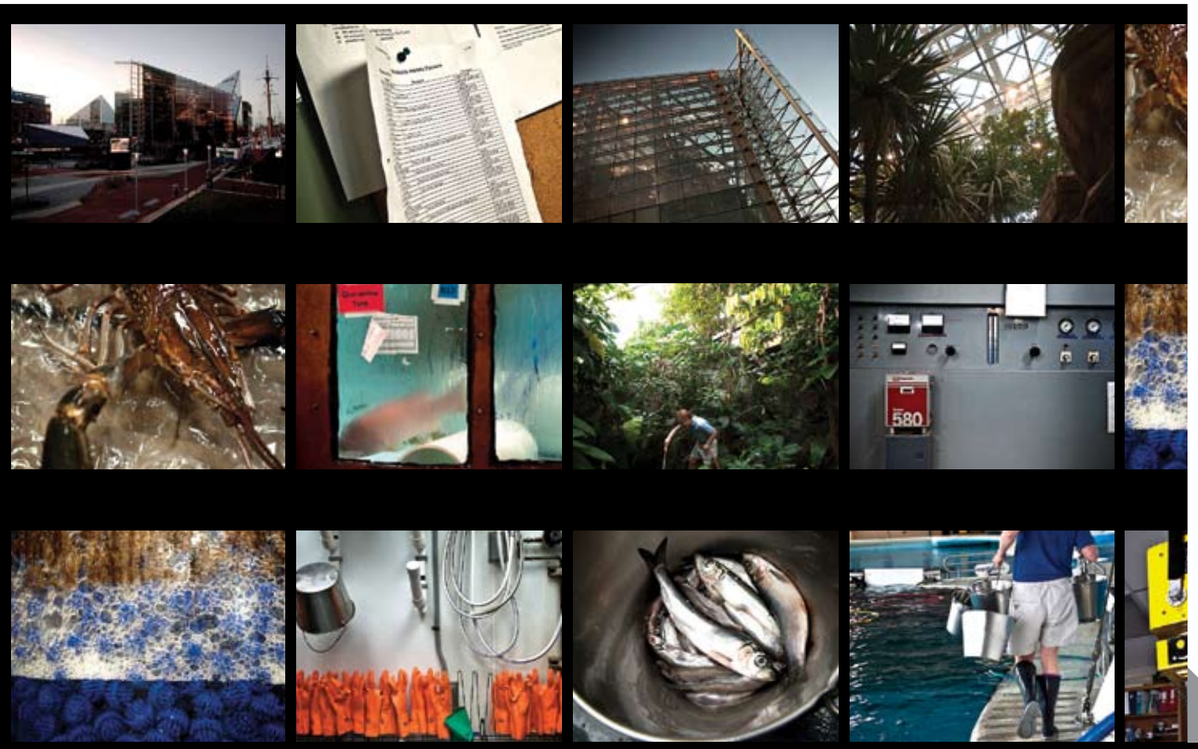


THE LIFE AQUATIC

AT THE AQUARIUM, ***THINGS REALLY START HOPPING*** *(AND CRAWLING AND SWIMMING) AFTER VISITING HOURS.* ***SEE WHAT HAPPENS BEHIND CLOSED DOORS.*** *BY JOHN LEWIS. PHOTOGRAPHY BY DAVID COLWELL.*

Have you ever wondered what goes on at the National Aquarium after closing time? Or been tempted to open doors marked "Personnel Only" to see what actually happens behind the scenes? I know I have. And my curiosity really piqued after hearing a few Aquarium staffers mention during a breakfast meeting that it's more of a 24/7 operation than anyone would imagine. So I asked them to show me around, after all the visitors were gone and the doors were locked. I figured it would be an eye-opener, but I had no idea. ¶ Unlike certain museums in the movies, the Aquarium's exhibits don't magically come to life after-hours, because they're already alive. And hundreds of people go to great lengths to keep them alive and maintain the facility. During my first visit, for instance, vets performed an ultrasound on a stingray, and I saw a dove get a dressing changed on an injured foot as a half-dozen giant bats watched. I was hooked and went back nine times to see what went on in different areas. ¶ With various curators and keepers as my guides, I navigated a labyrinth of hidden hallways, stairwells, labs, and offices. I held a dolphin by its pectoral fins—they're a lot harder than you'd think—and rubbed its belly—which is softer than you'd think. I also fed a stingray, spotted a baby sloth clinging to its mother, and stood atop the rocky gorge in the Australia exhibit and marveled at the view of the harbor. I also learned that, on any given day, Aquarium workers may be mixing seed for exotic birds, examining a quarantined puffin, scrubbing algae in a tank, removing a cancerous tumor on a monkey, transporting a rescued sea turtle to the Animal Care Center—housed in an old Fells Point warehouse—testing life support and security systems, scaling a rock face to water plants, baiting mousetraps—the Aquarium deals with pests, too—unpacking jars of mosquitoes, counting lizards, breeding rare frogs, or mixing up seawater. ¶ Their world feels private and mysterious; their work is loaded with unique, sometimes dangerous, possibilities. It's something few outsiders get to see. What follows is a glimpse into that world.

After divers herd a southern stingray into a large stretcher, staffers use a lift to hoist the animal out of the water.

DOLPHIN TANK : MARCH 10, 10:30 P.M.

IT'S A GIRL

Stepping off the elevator near the Pier 3 security desk, Leigh Clayton and Kat Hadfield (both vets in the Animal Care Department) and Brent Whitaker (deputy director for biological programs) look elated. They're coming from the Marine Mammal Pavilion, where a dolphin calf was born just 90 minutes ago. "Mother and baby are doing well," says Clayton.

The trio exudes a sort of familial glow. Hadfield beams, her eyes twinkling, and Whitaker flashes a smile. "So far, so good," he says, and the group heads out into the night.

Upstairs, the lights are dimmed and all is quiet and calm at the dolphin pool. Dolphin trainer Deirdre Weadock and Sue Hunter, the Aquarium's director of animal programs, watch the water, looking for the three-foot long newborn—still wrinkled from the birth, its dorsal fin flopped to one side—swimming alongside its mother, Jade.

When the female calf comes up for a breath and makes a small splash, Weadock makes note of it on a Palm Pilot. Another trainer, in an observation area below the water's surface, logs behaviors such as nursing and disciplining. "It's going really well, just about textbook," says Hunter, who's been doing this for 17 years. "The calf is swimming strongly and taking clear breaths, which are encouraging signs."

The trainers seem more reserved than the vets—which may be due to marathon workdays and round-the-clock observations that were initiated weeks ago, as the birth neared. Or it may be due to the realization that dolphin calves have a high mortality rate. One-in-three doesn't make it past the first year. "That's the reality," says Hunter, "but this one looks great. Someone even referred to it as 'super-calf.'"

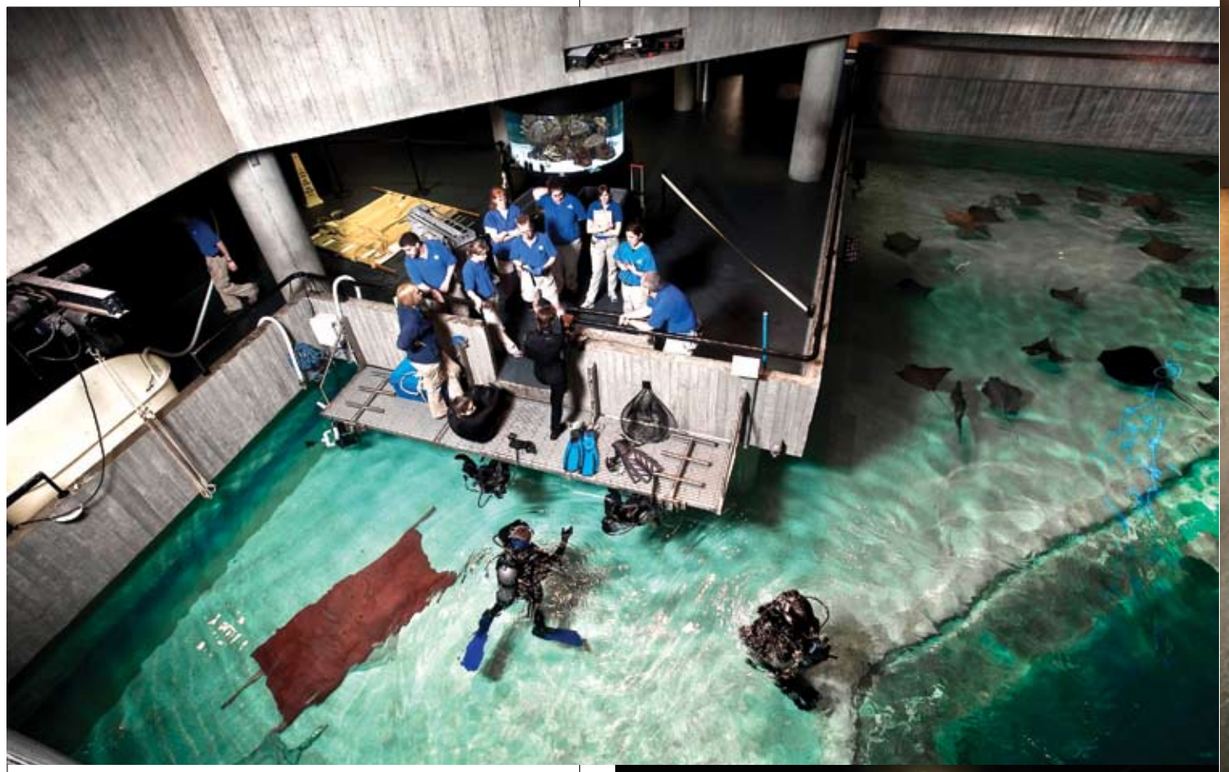
Weadock nods, and she and Hunter return to watching the pool in zen-like silence.

Eventually, a cell phone rings, and Hunter answers—it's the vets checking on the newborn.

VETS : FEBRUARY 17, 8 A.M.

STINGRAY ULTRASOUND

A half-dozen veterinarians and vet techs from the Animal Health Department convene in Rob Adamski's office. Amid the typical clutter of computer equipment and stacks of paper, books such as *Fish Medicine* and *Avian Physiology* line the shelves. The department, according to Clayton, "takes



care of things that get sick and does preventative health." Today, it's dealing with, among other things, a sick stingray.

After discussing items on the day's agenda—deworming of frogs, nail trims for birds, and turtle x-rays—and applauding hospital manager Christine Steinert's 17-year service anniversary, the group turns its attention to a southern stingray with a possible uterine infection. The ray is scheduled for an ultrasound at 8:30.

Hadfield, the primary vet on the case, notes that this is the third exam for this particular ray, and the procedure involves hoisting the animal out of the "Wings in the Water" exhibit, lowering it into a plastic tub containing 200 gallons of water, and performing the ultrasound. "That way, we can determine how much fluid is in the uterus," she explains, "and see if there is any fluid in the body. If we need to do a uterine flush, we'll put in a small catheter."

The group disperses to check e-mails and firm up the day's schedule, before reconvening at the "ray tray," where a team of divers and a half-dozen additional Aquarium staffers—dressed in requisite blue polo shirt and khakis—await. After Hadfield outlines the procedure and everyone's clear who's responsible for what, four divers slip into the water and herd the six-feet-wide ray into what looks like a large stretcher. The stretcher is then chained to a lift that extends over the water. (A permanent fixture, the lift is painted black, like the ceiling, and is barely noticeable to visitors.)

Once secure, the stretcher is pulled aloft, and when it breaks

the water's surface, the ray furiously whips its wings against the canvas and splashes water out the sides. The flapping ray is hoisted up and over the cement wall—a section of the railing has been removed to help with clearance—and slid onto the laps of two staffers in wetsuits sitting in the plastic tub. The ray thrashes, spilling waves of water over the sides of the tub, as the staffers hold it down—its stinger, or barb, has been trimmed to minimize any risk—and Adamski administers a shot of antibiotics into its dark brown skin.

Then, staffers flip the ray, so its white underbelly is exposed. The flipping, for reasons that aren't completely understood, induces a state of near-hypnosis. "They kind of go to sleep," says Clayton, as the ray becomes completely docile.

Hadfield moves the ultrasound scanner over its belly, and images appear on a nearby monitor. The ray's beating heart is visible, and Hadfield checks the esophagus, liver, kidney, gall bladder, and uterus. "It looks better than it did the last time," says Clayton.

"It's much better," Hadfield confirms. "There's a lot less fluid."

Satisfied with what she sees, Hadfield wraps up the exam, and, in short order, the ray is weighed (190 pounds) and returned to the exhibit, where it retreats to a far corner of the pool. The entire procedure takes 20 minutes.

As Hadfield gives an assessment to her assembled colleagues—"everything looks okay, and we're seeing significant improvement"—water is squeegeed off the floor, plastic hoses are coiled, the section of railing is replaced, and the large tub is wheeled away.

In minutes, there is no evidence that a stingray exam ever took place. And Clayton, Hadfield, and their colleagues hustle to their next round of exams.

AUSTRALIA EXHIBIT : FEBRUARY 24, 6:45 A.M.

PYTHON FEEDING

John Seyjagat walks purposefully through the Australia exhibit, which replicates a river gorge in Australia's rugged northern territory. Right away, something catches his eye; something isn't quite right in a small tank in the hallway. "See that particle that's dropping?" he says, pointing to a barely visible speck descending inside the tank. "That shouldn't drop. It means there is no water movement in this tank. If there is no water movement, it means the pump is shut down, so we need to check it."

As curator, he's responsible for the exhibit's "total management and problem solving," including issues relating to its life support system, mechanical facilities, and animal collection. "The minute I get off the elevator," says Seyjagat, "my job starts."

***Clockwise from lower left*: A vet performs an ultrasound on the ray; more than a dozen staffers assist with the ray procedure; python feeding; jars of mosquitoes; refrigerator shelf in food prep area.**

Seyjagat takes out a ring of keys, and inserts one of them into the fabricated rock below the tank. He twists the key clockwise and removes a section of the rock face, revealing a pump housing tucked behind it. It's empty. "Good," says Seyjagat. "Somebody already got to this."

He replaces the section of rock and moves on, lingering for a moment on the walkway overlooking the harbor. "I stop here and look out over the plaza for signs that the bird migration has started," he says.

He's looking for dead or injured birds. "The lights from the buildings in this area attract birds migrating south in the fall and north in the spring," he explains, "and the birds crash into these buildings."

That's why Seyjagat has customized the Aquarium's lighting. "I use green-colored lights, because birds can see green," he says. "Now, they're less likely to crash into our building, which makes sense because we're a conservation agency."

Seyjagat then checks the flow of the waterfall behind him, eyeballs water levels in various tanks housing turtles and crocodiles, and scans the towering, simulated river gorge. "I try to look at our animals to make sure everybody's fine," he says. "I want to see that everybody's looking good, no one needs emergency attention, and nobody's stuck."

After a brief meeting with half a dozen staff members, Seyjagat and his team ready the exhibit for visitors. *Animal Planet Australia: Wild Extremes* (named "Best Exhibit" by the Association of Zoos and Aquariums in 2008) is the first stop on the Aquarium's tour route, and the doors open in about two hours. By then, over 2,000 animals—including exotic birds, large turtles and lizards, crocodiles, pythons, bats, and lots of fish—need to be fed, plants watered, tanks cleaned, and floors scrubbed.

The food prep area looks like most restaurant kitchens, with its gleaming stainless steel sinks and counters and large refrigerator. But a sign on the refrigerator distinguishes it from any restaurant; it reads, "Snakebite Antivenom Type B Stored in Bottom Right." A peek inside reveals a bounty of high-quality produce such as blueberries, melons, and grapes, alongside plastic containers of mice and the antivenom. Varieties of birdseed sit on a nearby shelf, along with a container labeled "monkey biscuit." While prepping trays of seed, senior aviculturist Kim Mann notes that there aren't any monkeys in this particular exhibit, and the biscuits are actually fed to the bats. "It has everything they need, nutritionally," she says.

Down the hall, herpetologist Courtney Russo is feeding the whiptail rays. First, she runs downstairs to turn off the waterfall, and, when she enters the exhibit through a camouflaged door cut into the back wall, the rays sit at the water's edge waiting for her. "They know that when the waterfall goes off, they're about to get fed," she says. "And they've been trained to come to these specific spots."

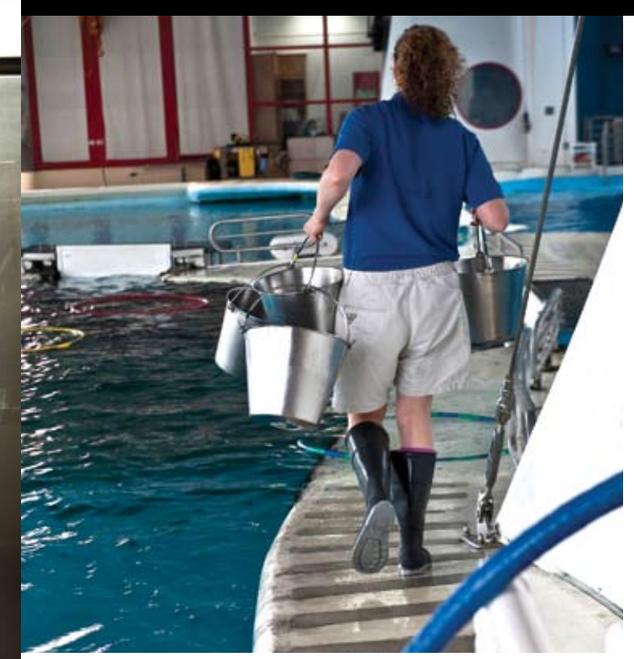
She puts on a latex glove, reaches into the plastic container she's holding, and extracts a small fish. She bends down and holds the fish below the water's surface in the vicinity of the ray's mouth. The ray sort of hunches around her hand and swallows the fish. Each ray gulps down about 20.

The crocodiles are fed on Sundays, Tuesdays, and Fridays; pythons are fed on Thursdays. The largest python eats in a back hallway, where it's served a once-frozen rabbit that's been thawed and warmed to its original body temperature. If its food isn't properly warmed, the cold-blooded python's metabolism will drop, making digestion difficult. Russo always observes the feeding "to make sure she gets the rabbit down okay. It's rare, but snakes can choke."

And how do you aid a choking python? "You have to scare it," she says. She's being serious.

"You just pick her up and play with her mouth a little bit," she explains, more casually than one might expect. "Because the mouth is her main defense, handling her will cause some stress, and she'll spit up the rabbit."

That said, Russo heads down the hallway to feed fish in an exhibit that is also home to a couple crocodiles. She runs into Seyjagat, who volunteers to spot her (a requirement for this type of feeding) and reaches for a 4'x2' fiberglass shield. "If you should need [the shield], the trick is keeping it between you and the crocodile," says Seyjagat. "The other trick is keeping your wits about you, which helps with a lot of the things we do here."



Clockwise from lower left: Refrigerator with antivenom; feeding in Australia exhibit; frog breeding area; dolphin food prep area; trainer carrying buckets of fish.

DOLPHIN TANK : FEBRUARY 19, 8:30 A.M.

BREAKFAST TIME

It's breakfast time for the dolphins. Four trainers grab buckets of herring and capelin, scatter around the perimeter of the dolphin pool, and step—in unison, so all the dolphins are fed at the same time—to the deck's edge. Through a wall of red-framed windows behind them, the harbor glimmers in the distance; before them, the dolphins congregate, waiting expectantly.

Foster looks up at Allison Ginsburg, his primary trainer. At two-and-a-half years old, Foster is still considered a calf, although he's four-and-a-half feet long and weighs about 150 pounds. Ginsburg tosses him a fish, which he snags in the air and swallows quickly. "You're the cutest little boy in all the world," she says, adopting a high-pitched voice that sounds like she's talking to a golden retriever. "You're such a good boy."

Foster responds with spirited chirps that sound as if he agrees. He makes the sounds by forcing air through his blowhole, as dolphins don't have vocal cords. Ginsburg likens it to letting air out of a balloon. "You know how you can stretch a balloon opening to make different sounds?" she says. "A dolphin's blowhole cover is a very thick muscle, which they can manipulate to produce different types of vocalizations."

As if to demonstrate, Foster lets loose with a flurry of crackles and squeals. Ginsburg tosses him a fish.

Actually, this is more than a feeding. The 8:30 "session," though it always involves food, can take a variety of forms. It's up to each trainer. "We can choose to play with the animals," says Ginsburg, nodding toward a variety of toys—plastic balls, floats, sinkers, and hoops—lining the back wall. "We can do an enrichment session, where we give them a few toys and just let them do as they please, which encourages natural behaviors such as foraging and looking for food. Or we can train show behaviors, such as aerials, lots of jumping, swimming fast—high energy stuff."

Those behaviors, and the routines reinforcing them, are vital, because the dolphins perform, on average, three times a day. So when the blizzards hit in February and the Aquarium closed for nearly a week, the trainers staged mock shows, in an empty theater, to keep the group on-point.

This morning, Ginsburg gives Foster a physical exam. "Dolphins can't tell us if they're not feeling good," says Ginsburg, "so we've trained them to present their bodies to us, so we can look them over."

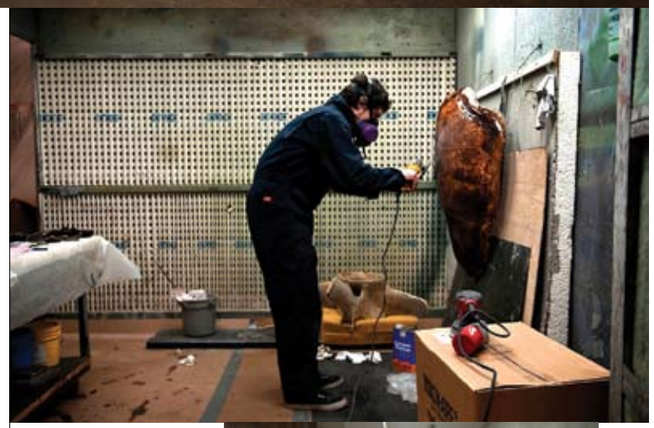
Ginsburg kneels at the water's edge, and Foster bobs in front of her. She extends her hand—palm away, fingers straight—and motions to the right. Foster turns in that direction and positions his body so it's parallel to the deck. Ginsburg reaches for his dorsal fin and examines it. After a few seconds, she releases it, and Foster inches forward, so she can look at his tail. When she gives the tail two quick pats, Foster turns around, and she tosses him a fish.

Then, Ginsburg extends her arm and rotates her hand counterclockwise, and Foster flips over on his back. She holds his pectoral fins, looks at his belly, checks the underside of his tail, gives him a quick pat, and he swims away. He returns, and she tosses him a fish. Ginsburg cycles through a few similar maneuvers, assessing body tone and looking for cuts and scrapes along the way. "Everything looks good," she says.

Ginsburg and the other trainers wrap up their sessions and continue prepping for the day. She retreats to a poolside office to work on scheduling and go over diets.

Her colleagues return pails to the food prep area and start scrubbing the deck with long-handled brushes.

Except for the scrubbing and the occasional splash, it's completely silent. A scrim gets lowered from the ceiling and raised. Spotlights are tested, on and off. A dolphin with a yellow and black float toy in its mouth rises to the surface and tosses the toy clear out of the pool. It's almost showtime.



***Counterclockwise from top*: Tanks at Animal Care Center in Fells Point; prepping shell for exhibit; flood gates in Pier 4 pavilion; ozone tanks; watering rainforest plants.**

LIFE SUPPORT STAFF : FEBRUARY 26, 7 A.M.

WATER MAIN BREAK

Water gushes up through the brick walkway in front of the Hard Rock Café, creating something of a three-sided waterfall streaming over the Hard Rock's deck into the harbor. A main has burst, and, shortly, the water will be turned off on Pier 4. That's bad news for Andy Aiken, director of the Aquarium's life support department.

"Having no water presents a few problems for us, as you can well imagine," says Aiken, sitting in his office, which is accessed, oddly enough, through the dolphin gift shop. With glasses perched on his head and a disarming chuckle, Aiken seems like a cross between a straight-laced engineer and a mad scientist. "We are responsible for making sure the environment in these tanks is suitable for keeping the animals alive," he says, "and that always presents challenges."

Right now, he's hoping to avoid a domino effect in a complex system that processes over a million gallons of water an hour. The life support system adjacent to the dolphin tank is his main concern. From his computer, he monitors temperatures, flow rates, water levels and pressure—hundreds of bits of data—in the tanks.

He surveys the pump room, as well. A sprawling mass of metal pipes, plastic tubing, webs of circuitry, droning engines, and massive holding tanks, it roars with mechanized purpose. "It's an outrageous amount of equipment," says Aiken, "but it's what's required to keep a very large amount of sea water in good enough shape to keep the dolphins happy."

Aiken heads for the ozone generator. Because chlorine can irritate the dolphins' skin, ozone is used to disinfect their tanks. This piece of equipment—fairly unremarkable, painted battleship gray and not very large compared to other items in the room—splits oxygen atoms to make ozone, which requires an enormous amount of electricity. Fresh water usually cools the generator, so it doesn't overheat and burn up. But with the water shut off, Aiken has switched to an alternative coolant to keep things running. Everything's working now, but if the ozone generator can't do its job, "we can't disinfect," says Aiken. "Then, we have a coliform problem, in very short order, in the dolphin tank. The USDA regulations state that we can't have more than a certain amount of coliform in the water, and if we exceed it, we need to fix it."

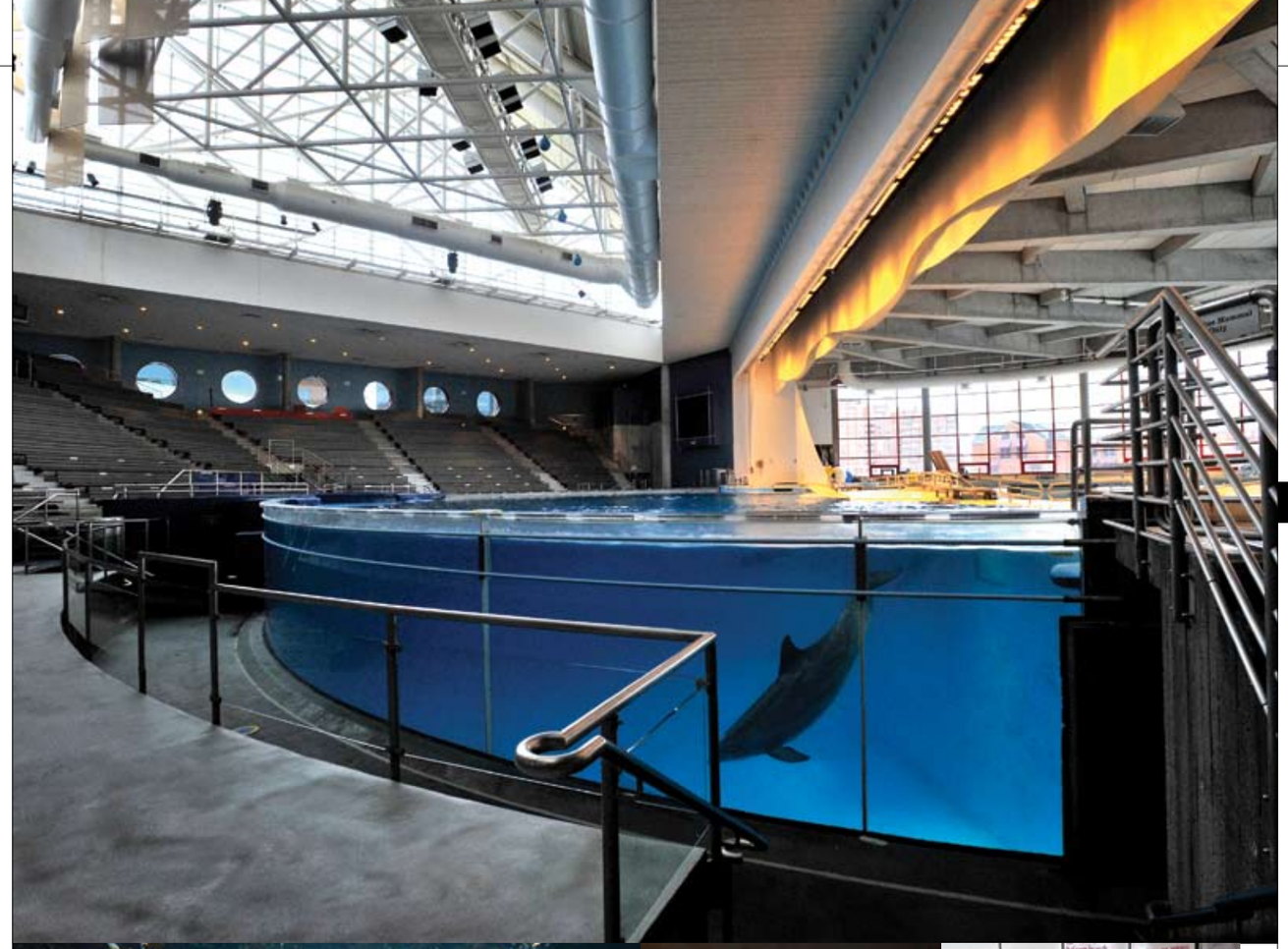
Without ozone, that would mean using chlorine to bring down the level. And if the coliform level remains high, the USDA can actually order that the dolphins be moved. "I'm not going to have that on my watch," says Aiken, who seems remarkably calm. "I have total confidence in my guys and in their troubleshooting abilities."

He's obviously experienced more dire circumstances. "Hurricane Isabel was the worst," he says, back in his office. He recalls wading through waist high water to the building, "where it was totally dark inside. I'm feeling my way up a stairwell, and I see somebody up ahead wearing a headlamp, and they say, 'Welcome to hell.'"

For Aiken, it was exactly that. The pump rooms were flooded. There was no power.

His guys, who had worked through the night, were spent, and conditions were worsening for the animals. "I just started grabbing scuba tanks with regulators and taping lead weights onto them," says Aiken. "I opened the regulators a little bit and started chucking tanks into the water, one after another. They were like little air bombs, bubbling some air into the water. And when we ran out, we called an oxygen company, and they boated cylinders over to us."

Not a single animal died. Though obviously proud, Aiken stresses that he can't take credit for that. "It was everyone who was here," he says.



***Clockwise from top*: Dolphin pool and amphitheater, early morning; dolphin feeding schedules and diets, posted in food prep area; Pier 4 window overlooking harbor; diver performing tank maintenance in Australia exhibit; equipment gauges in life support pump room.**

By contrast, the current situation is a minor hiccup. But late in the afternoon, a life support staffer drops by the office to tell Aiken the busted water main hasn't been fixed. In fact, the City still hasn't found the pipe, which elicits an "Oh, my god" from Aiken.

"They have to bust through a lot of concrete to get to it," says the staffer. "I'll stick around tonight and monitor things."

"We'll be okay for a couple days," says Aiken, "unless something catastrophic happens."

He leans back in his chair and sighs: "Thanks for the heads-up. We should be all right until Monday. Let's just hope this doesn't go on any longer than that."

Water service was restored to Pier 4 on Monday morning.

PIER 4 OFFICE : MARCH 22, 1:30 P.M.

CYCLE OF LIFE

The mood in Sue Hunter's office is somber. The baby dolphin passed away yesterday morning at seven o'clock—it was just 11 days old. "The calf had been nursing well, which was a positive sign," says Hunter. "A lot of us were commenting on how strong she looked."

She lets out a sigh: "But we also knew there was a decent chance she wouldn't make it."

"These young animals are very fragile," says Brent Whitaker, "and life is tough for them early on." Whitaker speculates that an infection was the cause of death, but he won't be sure until test results come in from Johns Hopkins.

He turns philosophical. "We had a real high when it was born," he says, "and this is a real low. It's heartbreaking, but we've worked with these animals long enough to understand that this is part of the reality of the job we do."

"It's another side of what we deal with, a side that isn't usually seen," says Hunter. "It really is the worst part of the job."

"But we help each other through it," she adds. "We've been getting support from the whole Aquarium. Everybody's been writing e-mails and stopping by and sending food. It's almost like a wake. It's a very supportive atmosphere, and we'll keep going."

"It's the cycle of life," says Whitaker, "and we know we'll have more babies born in the future."

And that may be sooner, rather than later. It seems that two of the dolphins, Chinook and Spirit, have taken a shine to one another. "They've been very close, swimming everywhere, touching each other," says Hunter. "The other day, they were nose to nose, and it looked as if they were kissing. She was at the surface looking at him, and he was spinning around, like he was doing a little dance."

She cracks a slight smile: "There's no sign of pregnancy yet, but we're watching for it." B

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