



Discover

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COVER STORY

54 Time Travel Redux

BY DAVID H. FREEDMAN

All right, so there are a few practical details still to be worked out. But a couple of new theories say you can begin to plan your next trip.

FEATURES

38 Forbidden Planets

BY TIM FOLGER

Astronomers seem to be finding planets in the least likely of places.

44 Kids, Creoles, and the Coconuts

BY DAVID BERREBY

Are humans born knowing the elements of language? Derek Bickerton plans to isolate little kids to find out.

62 The Transplanted Self

BY MARK CALDWELL

By changing a body's sense of itself, Suzanne Ildstad is able to trick it into accepting transplanted organs.

70 Reversal of Fortune

BY JARED DIAMOND

In some animal species the female doesn't stand by her man—she surrounds herself with a harem of them.

76 Wired in Space

BY PETER ELKIND

A cardiologist rockets into space for the experiment of his life, a catheter laced through his veins to his heart.

82 A Reasonable Sleep

BY MEREDITH F. SMALL

Taking a cue from monkeys, an anthropologist suggests that SIDS might be avoided if we sleep with our babies.



DEPARTMENTS

4 From the Editor

6 Contributors

8 Action and Reaction

32 Commentary
By Frank von Hippel
Bombs away.

36 Vital Signs
By Elisabeth Rosenthal
A piercing tale.

89 Night Watchman
By Bob Berman
An evening dip.

90 Science Classics
By Larry Gonick
It's prime time.

92 Light Elements
By David Berreby
Lost in space.

96 Further Reading
100 Brain Bogglers
By Thomas Chastain
Murder on cue.



IN THE NEWS

12 Breakthroughs
Mapping the seafloor around Antarctica, dangerous mugs, streaking pulsar, shuttle glow, squealing fish, deep-sixing the fifth, guilty lichens, and more.

18 Animal Watch
Talking rhinos.

20 Technology Watch
Birdlike flight.

22 Genetics Watch
Thieving mites.

24 Star Watch
Making a new aurora.

26 Biology Watch
The marvelous roach.

28 Environment Watch
Water under the Sahara.

30 Personal Tech
Smart speakers.

LEFT TO RIGHT: Geoff Spear; Davies and Starr; Michael Witte

The Rhino's Silent Call

BY YVONNE BASKIN

Just because an animal seems quiet doesn't mean it isn't making noise. Rhinoceroses make infrasounds—frequencies too low for us to hear.

ONE DAY LAST YEAR AT the San Diego Zoo, a female Sumatran rhinoceros named Barakas was singing a mournful, whale-like song punctuated with grunts and moans. Through a window in her indoor enclosure she occasionally rubbed noses with Ipuh, a newly arrived male from Indonesia. Ipuh was munching abstractedly on ficus leaves and looking bored. But animal behaviorist Elizabeth von Muggenthaler, crouching among buckets and hay bales in an adjoining storeroom, was not deceived. She watched the fluttering needle on her tape recorder, which was hooked up to a microphone in Ipuh's stall, and she suspected the rhino was rumbling—but in a basso so profundo as to be below the hearing range of human eavesdroppers.

The most acute human ear can perceive frequencies as low as 20 hertz. Frequencies lower than that are called infrasound. Unbeknownst to us, the physical world throbs with infrasonic noise, a symphony of deep booms produced by thunder, air turbulence, jet engines, volcanoes, earthquakes, crashing ocean waves, and even shuddering buildings. (Of course, these phenomena produce audible frequencies too.)

In the biological world, however, the ability to produce or perceive infrasound has been considered a rarity. Until Von Muggenthaler, an undergraduate at Old Dominion University in Norfolk, taped her first rhino in 1990, only blue whales, elephants, and alligators were known to produce infrasonic calls. Indeed, Von Muggenthaler was at the Virginia Zoological Park trying to tape an African elephant named Monica when she lucked onto her infravocal rhino. Analyzing the recording, she found that the frequency pattern was unusual for an elephant. The infrasound turned out to be coming from Monica's neigh-

bor, a male white rhino named Rufus.

With the help of her adviser, reproductive biologist Joseph C. Daniel Jr., Von Muggenthaler has since recorded more than two dozen rhinos of four different species (blacks, whites, Sumatrans, and Indians) at zoos around the nation. She picked up sounds in the 5 to 75 hertz range from all of them. (A human bass, in contrast, rarely dips below 100 hertz.) Some of the sounds appeared to be dialogues between the animals; at the very least, judging from their nonrandom patterns, the sounds were more than mere breathing

sound, as opposed to merely sounding off. For instance, female rhinos may use infrasound to indicate when they are receptive to male advances; unlike some other animals, rhinos don't send obvious (to us) signals when they're in heat. "I recorded one female white rhino," Von Muggenthaler recalls, "and when I looked at the graph of spectral activity I thought, 'Wow, what she must be going through!' All that noise and yet you couldn't hear anything. That's what's fascinating."

The advantage of infrasound for communicating is that it travels long distances. Low-frequency sounds have long wavelengths, and long waves are less prone than short ones to being scattered by trees and hills. Astonishingly, elephants appear to communicate by infrasound over distances of several miles—at least, that's one hypothesis to explain why widely separated herds seem to synchronize



IPUH (THE HAIRY MALE AT LEFT) GETS DOWN WITH BARAKAS.

noises or stomach rumblings.

During one of the rhino recording sessions, Von Muggenthaler caught an excited hippopotamus cutting loose in infrasound, too. More recently she has added okapis, zebra-size relatives of the giraffe, to the list of infrasound vocalists. Von Muggenthaler suspects that other animals may also have the ability, and she is trying to pin down the skull characteristics that are required to send and receive infrasound.

She also hopes to find out whether rhinos actually communicate in infra-

their maneuvers. Wildlife ecologist Kes Hillman Smith of Garamba National Park in Zaire has observed similar coordinated movements among female white rhinos, and she now thinks infrasound communication may account for it. Von Muggenthaler hopes to take her recording equipment to Africa to find out.

Her long-term dream is to show that the animals she studies have something akin to human language. Von Muggenthaler's interest in the issue is more than academic. "It's an important question because we humans equate language with intelligence, and we value intelligence," she says. "I think people will value animals more and do more to save them if they consider them intelligent." □