OMNI

NOVEMBER 1994

PROJECT OPEN BOOK

OMNI'S SEARCH FOR THE REAL UFOS

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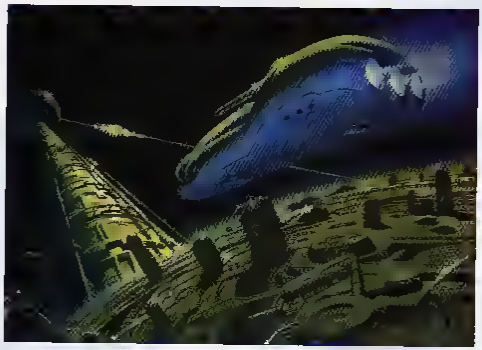

Omni's call for verifiable evidence of UFOs has generated a flood of letters to assist us as we focus an objective eye on an elusive subject. Project Open Book is now officially open. Cover art by Scott Morgan (Additional art and photo credits, page 97)

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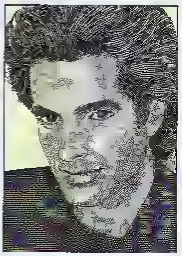
FIRST WORD

A DELICATE SLEIGHT OF HAND.
Magic and the history of illusion

By David Copperfield

For David Copperfield, magic is more than just the art of illusion; it is a way to celebrate awe, mystery, and wonder.

On that Neanderthal day when cold rain ruined the hunt and kept the clan inside the shelter of the cave, who was that man who first picked up a pebble and through shaggy sleight of hand made it disappear to the grunts and squeals of an otherwise wearied audience? And perhaps, a week later, he discovered the joy of making the pebble reappear by snatching it out of a neighbor's ear. We owe that man a debt for he was the first magician, the first to create wonder both intimate and real.



He was the father of the oldest of all the performing arts, practiced in an unbroken succession from the priests of the apemen to the Hindu Jadoo-Wallahs from the Algerian marabouts to the Indian shamans, and from Houdini to Uncle Charley with his card tricks. Magic has captured the passion of curious minds everywhere from Charles Dickens to Orson Welles, from Muhammad Ali and Norman Schwarzkopf to Princes Philip and Charles, from Dick Cavett and Johnny Carson to John Dickson Carr.

Magic caters to a spirit of reverence and mystery and it is the magician, above all other theatrical and performing artists, who must carry the torch of wonder. His art speaks to a primordial emotion inside us all.

A fictional Merlin took magic from the cave to the court; a very real Austrian, Johann Nepomuk Hofzinser took it from the street, playground of the mountebank, to the drawing rooms of Viennese aristocracy; and Jean Robert Houdin, a French conjurer, brought it from the fairground's bustle to the theater's glory. But no matter the stage and no matter the trick, from the vanishing pebble to the disappearing Statue of Liberty, magicians through the ages have instilled in wide eyed children and even their jaded elders—generations who saw men walk on the moon and dinosaurs run across cinema screens—an almost lost childhood sense of discovery.

Whether it was a Dunninger reading minds or a Geller bending spoons, a Chung Ling Soo catching bullets between his teeth, a Kellar or Thurston levitating a woman, or a Dante sawing a lady in half, the magician's feats have been limited only by one criterion. The exploit must be impossible.

And of all the performers on stage, no one courts disaster, no one flirts with failure as much as the magician. The juggler may drop a bowling pin, the singer may forget a lyric, the actor may fluff a line, and all will be forgiven, but no magician is allowed to miss a trick and escape that moment when applause turns to derision. Some have missed a trick, of course. Sometimes, Uncle Charley can't find the selected card, and one unlucky night Chung Ling Soo failed to stop the bullet.

But the art pressed on. Today, an estimated 30,000 Americans have embraced magic as a hobby. There have been more books written on card magic alone than on any other performing art. Magic has invaded Broadway, network television, the performing arts center, the rock concert, and the urban sidewalk. It is the Golden Age of Conjuring.

Some of the finest minds to have ever existed, for the most part unsung outside the confines of the brotherhood, have devoted their lives to creating new illusions, to perfecting an arcane sleight with the pasteboards, to developing a minute refinement on an existing piece of conjuring. Gifted with intelligence, curiosity, and imagination, one can only wonder how the world might have changed had these conjurers chosen the fields of science or medicine in which to pour their genius.

And all of them, from Uncle Charley to the stage illusionist, share a common trait—they keep their secrets, hoarding them with the fervor of a miser, not because they represent wealth or personal prestige, but because divulging them to the uninitiated breaks the spell, ruins the fun, and tells the child inside us all not to dream.

With mysteries intact, the magic lives on. But even conjurers share one conundrum—the curious fact that of all the performing arts, magic is the only one that is male-dominated. Women, for the most part, have been on the receiving end of the indignities. They have been sawed in half and had skewers thrust through their bodies. Is it because most magicians enter the field at a young age, when little boys like to show off to little girls? Or is it a mystery that even magic cannot explain?

Or as Albert Einstein once wrote, "The fairest thing we can experience is the mysterious. It is the fundamental emotion which stands at the cradle of true art and true science. He who knows it not and can no longer feel amazement is as good as dead, a snuffed-out candle." OMNI

David Copperfield has established the International Museum and Library of the Conjuring Arts, which houses one of the world's foremost collections of historical documentation and artifacts.

COMMUNICATIONS

READERS' WRITES.

The face that should launch a ship, storytelling at its best, and NASA goes off Broadway

About Face

I think your article [Mars Face, August 1994] was especially courageous. I'm sure you knew you would incur displeasure from important people. I suspect your article is the first word that a majority of your readers have heard on alleged alien artifacts in the solar system, a topic which has been the focus of furious America Online debates. Thanks for allowing your readers a chance to judge for themselves.

Lan Fleming
Houston, TX
AOL Compewter

The most important issue regarding the Mars "face" is that NASA et al refuse to deal with and debate the idea on a scientific basis. It is the business of science to gather data, form hypotheses, and test them, rather than to accept or reject beliefs. Michael Malin's explanation that there would have to be visible signs of "... roads or large areas that have been excavated ..." to prove to him that something intelligent designed and built the structures on Mars leaves me with this question: Could it be possible that other life forms may not build nor transport themselves as Mr. Malin would like? Does this mean that we have to show a picture of a 1920 Chevy or a steam shovel to prove to Mr. Malin that someone was actually there at some point in time?

Robert Loveridge
North Hollywood, CA

Amazing Stories

Thank you for a fascinating and insightful interview with Story Musgrave [August 1994]. This is a wonderful glimpse into the mind of a man who has not lost the gift of being able to look at the entirety of creation through the eyes of a child and become fully electrified by the awesome mystery and limitless possibilities of it. It was refreshing to read the views of a true naturalist whose academic experience and scientific training have not made him cynical. This interview is a welcome ray of light in a world ever darkened by high-tech hucksters and corporate con men.

Ben Jezierski
Dickson City, PA

Every piece of fiction you print surpasses the last. "Why Did?" [April 1994] is brilliant. It's of the quality one expects to find in a contemporary literature magazine. There is no better place than *Omni* to turn in search of fresh science fiction, fantasy, psychological, political, and futuristic topics, all well-researched, intriguingly presented, and endlessly fascinating.

Eva Marie Auker
Lititz, PA

Curtain Call for NASA?

I agree wholeheartedly with Mr. Cypher [First Word, July 1994] that another remake of "War of the Worlds" is not what will bring the audience back to the theater. Our new script should be one which appeals to the largest demographic possible—the entire "home planet." NASA's recent reviews have been lackluster at best. Whatever direction it chooses (or is forced) to take, it had better act fast. Or else it will have to bring down the curtain after a disappointing last act.

Cathy Anderson
Houston, TX

The Nature of the Beast

Again we are led to think that chimpanzees are better than humans [Beauty and the Beast, August 1994] because "chimps never put a human in a cage and humans are the ones with bullets." Chimps don't need the bullets. They'll beat their enemy dead with a stick and eat his brains for dessert. They'll run off another male and kill his progeny so the female may focus on raising the new male's offspring. Does such demeanor demonstrate a superior intelligence to humans?

Bill Giersberg
Woodstock, GA

Got something to say but no time to write? Call **(900) 285-5483**. Your comments will be recorded and may appear in an upcoming issue of *Omni*. The cost for the call is 95 cents per minute. You must be age 18 or older. Touch-tone phones only. Sponsored by Pure Entertainment, 505 South Beverly Drive, Suite 977, Beverly Hills, CA 90212.

FORUM

DR. DAMASIO'S ACHIEVEMENT:
A new book distills a lifetime of research and insight

By Keith Ferrell

What is the relationship between thinking and feeling? Is the mind separate from the body or an inevitable part *of* it?

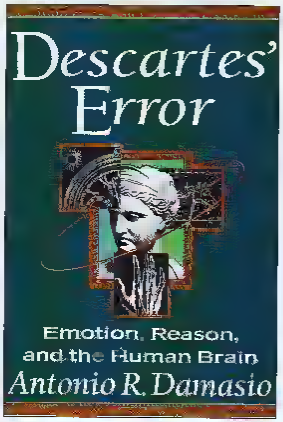
Great scientific achievement is often accompanied by great literary ambition. Almost as often, unfortunately that literary ambition exceeds accomplishment.

Occasionally, though, a great scientist writes a book that works as literature as well as autobiography or reporting. I'd like to tell you about such a book. It's just been published, and if I were you I'd get hold of a copy immediately. It's *that* good.

The book is called *Descartes' Error: Emotion, Reason, and the Human Brain* (Grosset/Putnam, $24.95). Its author is Antonio R. Damasio, one of the key neurological scientists of our time. In *Descartes' Error*, Dr. Damasio sets out to explore the nature of our minds, and to distill his insights, research, and theories into a volume written for the serious student of human nature. This is a serious popular book in the best sense of both of those words. It is accessible, graceful, and provocative.

Damasio's approach to his material is one that succeeds on nearly every count, offering us a window into not only the workings of a scientific mind of the first order, but also into the history of the science to which Damasio's life has been devoted.

Devotion is a strong word, but an appropriate one. Damasio's story has the elements of a quest, a lifelong adventure in pursuit of answers to questions that are in some way or another ultimate. What are the roots of consciousness? What is the fundament of reason? And most central to his work, what is the relationship of the mind and the body? One can go too far in extending a metaphor—although Damasio does not, not once, in this book—but there is a sense to him of a knight on a quest.



faced with great challenge and obstacle, but convinced that right will ultimately triumph.

In Damasio's case, right means scientific inquiry and investigation. It does not mean, as it does with some scientists, *his* particular point of view or the precepts from which he works. Certainly he holds those closely and is committed to them, to his research and findings. He believes that he has arrived at certain truths, and that is what he shares with us in his book. But throughout the book he also presents, fairly and respectfully, opposing points of view and avenues of research. He may disagree with these, and is eloquent in his counterpoint, but he is never dismissive or contemptuous. That's unique enough in scientific literature to be commendable for its own sake.

That open-mindedness and sense of the ongoing scientific dialogue is more than natural in the context of the book's structure. One does not expect a scientist to be a shrewd literary tactician, but Damasio is. *Descartes' Error* is written as a conversation with an imaginary friend. Not a dialogue, and absolutely not a lecture, but a conversation. As with any conversation, there are eddies and flows, strong central currents and sidestreams. As with *great* conversation, the central current is always there, guiding the rest.

What is that central current? What *is* Descartes' error? Quite simply, the error is the separation of mind from body, of emotion from reason. *Je pense donc je suis*, Descartes wrote in 1637. Seven years later he offered as Latinate reiteration. *Cogito ergo sum*. I think therefore I am. As Damasio points out, the insight is literally true. But it's also literally false, first in separating thinking and being, and second in the causative relation Descartes sought to build. We are thinking beings, is more accurate. Feeling and thinking are part of our being, is more accurate still.

Damasio begins his journey with a re-telling of a familiar story: the fate of poor Phineas Gage, whose personality was radically altered as the result of a neurological injury. I do not think the story has ever been told better, nor can I imagine anyone reading Damasio's account being able to stop reading anytime soon thereafter. His narrative drive, his clarity of expression, and his complete command of his material all see to that. Damasio has won scientific prizes. I will be surprised if he does not, now, win literary ones.

I hope to meet with Dr. Damasio in the near future and talk about the research he and his equally talented wife, Hanna, are undertaking. When I do, I'll tell you about it in these pages.

Until then, get a copy of *Descartes' Error*. You will not, I feel *and* I think, regret it one single bit.

STARS

A STAR IS BORN

A new satellite will shed light on one of the universe's deepest secrets

By Steve Nadis

How do stars form? Astronomers think they know, and the Submillimeter Wave Astronomy Satellite will either confirm or disprove their theory.

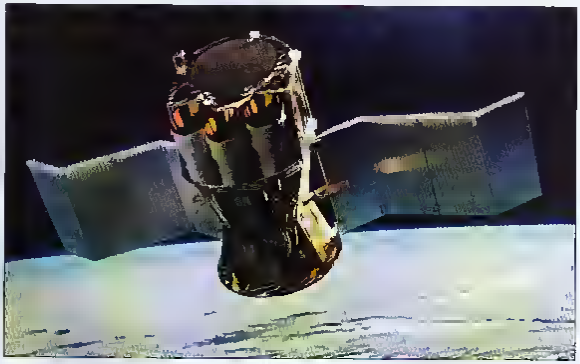
Cosmologists can describe the birth of the universe in astonishing detail starting just a tiny fraction of a second after the Big Bang. Their theories attempt to explain the genesis of galaxies and larger structures spanning hundreds of millions of light-years. Yet the birth of individual stars remains almost a complete mystery.

The Submillimeter Wave Astronomy Satellite (SWAS) should help decipher that mystery. Scheduled for launch in mid 1995 as part of NASA's Small Explorer Program, SWAS will spend two or more years observing thousands of clouds in the Milky Way and other nearby galaxies—sites considered spawning grounds for stars and planetary systems. The mission will afford the first detailed look by a spacecraft at the submillimeter sky, the portion of the electromagnetic spectrum lying between radio and infrared bands. This spectral region represents "one of astronomy's last frontiers," according to physicist Giovanni Fazio of the Harvard-Smithsonian Center for Astrophysics (CFA), a co-investigator on the project.

Scientists here on Earth trying to make submillimeter observations run up against our atmosphere, which absorbs much of the incoming radiation at these wavelengths. "It's like looking through a picket fence," explains the CFA's Gary Melnick. Astronomers can obtain unobstructed views only from space, above the atmosphere's thick veil.

And that's where SWAS will go, peering into the giant clouds of gas and dust whence stars emerge. The mission designers hope to shed light on a long-standing paradox. As these clouds collapse under the pull of gravity (the beginning of the star-formation process), the gas heats up, which makes it want to expand. Yet a star cannot possibly form unless this expansive tendency is held in check. The gas must find some means of cooling itself before the collapse—and the star's birth—can proceed. "The way we think nature solves the problem is through collisions within the clouds, which result in the excitation of molecules and atoms to higher energy levels," Melnick says.

If a collision knocks an atom hard enough, its electron will make it to the next energy level. The electron stays at this elevated perch for a short while and then "decays" to the ground state, emitting a light particle, or photon. That's how the gas rids itself of energy—by giving off this radiation.



Melnick and his colleagues have tuned SWAS to detect photons resulting from electron transitions in five chemical "species" believed to be involved in cloud cooling: water, molecular oxygen, molecular carbon, isotopic carbon monoxide, and isotopic water. Each of these transitions occurs at a characteristic frequency within the submillimeter band. SWAS will simply aim its antenna at a target cloud for a day or two to pick up any signals at these frequencies.

Although the experiment will provide valuable information, its clearly limited in scope. SWAS can't tell us anything, for instance, about how gas clouds form within galaxies or what triggers their collapse into stars. Such limitations are inevitable with any "Small Explorer"–class mission. To meet requirements for low cost (on the order of $30 million to $40 million) and low weight (about 600 pounds), the spacecraft simply can't carry tons of exotic equipment.

Within a month or so after SWAS is launched, astronomers should find out whether they've guessed right—or wrong—about the cooling mechanism used in gas clouds. If SWAS fails to detect any radiation at those five spectral lines, it would indicate that current models describing the chemistry of gas clouds are totally off base. "One assumes that all the theorists could not have blown it so badly," says astronomer John Stauffer, another member of the SWAS team. "But we won't know for sure until we go out there and look."

ANIMALS

WHEN THE TABLES ARE TURNED:
Look who is the killing machine now

By Jane Bosveld

When it comes to sympathy for endangered species, the shark is at the bottom of the list. This poster child for terror rarely inspires goodwill. Yet many of the 400 known species of sharks are now endangered, including the infamous great white, the hammerhead, the tiger and the lemon shark. It isn't hard to guess the greatest threat to these ancient predators that should be able to take care of themselves. The answer, of course, is us.

Human beings slaughter millions of sharks each year. Fishing boats net thousands of them by accident and, rather than release them, the crews kill them first, then toss their bodies back to the sea to rot. Equally devastating to shark populations is "finning," a practice in which sharks are caught, their fins cut off, and their dying bodies thrown back into the sea. The fins are then dried and sold for use in shark-fin soup and tonics. And to make matters even worse, there is the sheer vanity of sport fishing which adds to the massacre.

Scientists who study sharks have been alarmed for years over the effects such exploitations have on shark populations. They warn of the possible effect depleted shark populations may have on ocean life. Decrease the number of sharks, whose feeding habits help to keep populations of other fish in check, and you offset the balance of aquatic life. "Sharks help control disease in fish populations," explains shark expert Samuel Gruber of the University of Miami. "They play an important role in the evolution of prey species, taking the sick and unhealthy fish, leaving the more fit to breed."

Outside of Saddam Hussein and Hitler, sharks probably have the worst image problem around—one that is rapidly endangering many of the over 400 extant species.

Gruber compares the fate of sharkless oceans to that of the Great Plains after two of its top predators—wolves and mountain lions—were virtually exterminated earlier this century. "The plains stopped being a place where the deer and the antelope played," Gruber explains, "and became a place where the deer and the antelope became sick and overgrazed and destroyed their own habitat. The same thing can happen in the sea."

The difficult task Gruber and other shark experts face is getting the public to care about the fate of creatures they love to hate, or as Gruber puts it, to care about "the death fish from hell." He and scientists have gotten the word out to the U.S. government, but legislation is slow in coming, primarily because there's not enough pressure from the public. The way to get public support, Gruber is convinced, is through education. Once people understand the valuable role sharks play in ocean ecology, he believes, they will realize how important it is to preserve shark populations. Moreover, learning about sharks will put their dastardly deeds in perspective. "More deaths occur each year from elephant attacks, bee stings, crocodiles, and lightning than from shark attacks," Gruber explains. "And that's not to mention car accidents."

But will education be enough? Perhaps what sharks need is their own *Born Free*, an Elsa the Lioness in shark skin. The popularity of Elsa, the pet lioness turned back to the wild, helped to transform the image of lions. No longer could people think of lions as simple ferocious beasts without feeling or memory. The post–*Born Free* view was of intelligent creatures possessed with at least a few humanlike qualities. Gruber believes the same can be done for sharks. He hopes that his collaboration on a BBC documentary about the placental births of one family of sharks may help.

Sympathetic or not, sharks, like all the earth's living creatures, are anything but dispensable. As conservationists and animal-rights advocates work to change the prejudicial nature of the human mind, other animals—perhaps even the sharks—are sure to benefit.

SOUNDS

THE QUIET CRISIS:
How far would *you* go for a little peace and quiet?

By Steve Nadis

On April 1, 1994, Gordon Hempton set out on foot from San Francisco to Yosemite National Park. Hempton completed the 255-mile hike in two weeks, retracing the steps of the naturalist, John Muir, who embarked on a similar journey on April 1, 1868. Muir, founder of the Sierra Club, played a key role in establishing the National Park System. He also helped Yosemite—arguably his favorite spot on Earth—earn its place as a national park. Muir was an astute observer of nature with a particularly keen ear and his writings on wilderness sounds make up what Hempton calls "some of our earliest sound recordings." That was, in fact, the motivation behind Hempton's trek—to immerse himself in Muir's world. He wanted to hear the music of running water," the "grand anthem" of the land. And he wanted to get it all down on tape.

Ah, beauty as far as the eye can see—but what about the ears? Ambient noise is on the rise and is muffling nature's soundscape.

You see, Hempton is the "Sound Tracker." From his base in Port Angeles, Washington, he travels the world with state-of-the-art digital recording equipment trying to record "wilderness soundscapes." Though he's one of the best in the business, his job is becoming increasingly difficult as human-generated noise—from planes, trains, buzz saws, and automobiles—drowns out the fleeting sounds of nature. In most of North America, by Hempton's reckoning, it's hard to find a noise-free interval exceeding three to four minutes. "When you think you have a noise-free interval, you probably have a noise-induced hearing loss," he says. But even if you manage to steal a quiet moment here and there, you probably won't have time to fully appreciate the "music of the earth." Three to four minutes is the length of a pop tune, Hempton points out. "But nature is not a pop tune. It's symphonic."

Paul Matzner, chairman of the Nature Sounds Society based at the Oakland Museum, agrees that there is indeed a "quiet crisis. Quiet places, where the sounds of nature can be heard uninterrupted by the sounds of human beings or their technology, are some of our most endangered habitats." The problem affects not only humans and their quest for peace and quiet, but wildlife, too. According to Dave Cornman, a biologist with the society, human-induced noise pollution can cause hearing loss in animals and otherwise drown out their communications. Elevated stress levels in animals have also been reported.

The U.S. government has not been oblivious to the degradation of the soundscape. Congress authorized a study of the impact of aircraft overflights—by far the biggest contributor to noise pollution. Published in July 1992, the Forest Service report concluded, "aircraft noise intrusions did not appreciably impair surveyed wilderness users' overall enjoyment." A Park Service official privately called the report a "whitewash," promising that "we're not going to sweep this issue under the rug." Government action may be slow in coming, however, since the Park Service won't even release its findings until the end of 1994.

In the meantime, Gordon Hempton has already submitted his proposal, "One Square Inch for Peace and Quiet." The idea is quite simple. In every National Park and Wilderness Area, one square inch of land should be designated a "National Historic Soundmark" that remains free of noise at all times. Achieving "zero noise tolerance" within that square inch would affect (and restrict) activities in the air and on the land within a 40-mile radius.

The issues become complicated, of course, when one tries to weigh the interests of aircraft operators, sightseers, and park concessionaires against those seeking the pure backcountry experience. However if we fail to curb the rising tide of background noise, our so-called wilderness areas will continue to lose their appeal. Yosemite, which hosts some four million visitors a year, is a case in point. With gas stations, parking lots, banks, ATMs, post offices, and overnight mail drop boxes, "the land is starting to look more like a theme park than a preserve of nature," Hempton says. "If John Muir were around today, Yosemite wouldn't have become a national park. He would have just walked on by."

WHEELS

REINVENTING THE WHEEL
The bicycle jumps 100 years into the present

By Denny Atkin

This is not your father's Schwinn. In 1870, English machinists James Kemp Starley and William Hillman patented the bicycle as we know it. After more than a century of only small, incremental improvements to the basic chain-driven, wire-spoked, tension-wheel design, Connecticut-based Spinergy is poised to redefine the bicycle.

Spinergy's first product is the *rev X*, a high-technology wheel that's fast becoming a favorite of competition bicycle riders. The sleek, black wheel with only four pairs of inline spokes conveys a feeling of speed even at rest.

Until the *rev X* hit the market, competition cyclists were faced with two wheel choices, each of which forced a compromise. Wire-spoked wheels offer a comfortable ride because they are tensioned, allowing the spokes to absorb some road shock. "A traditional spoked wheel has a problem aerodynamically," explains Spinergy's Ted Kutrumbos. "It's like an eggbeater—the spokes create turbulence, or what's called dirty air."

Developments in the area of composites have allowed manufacturers to create wheels made from carbon fiber. The high strength and light weight of this material means wheels can be made as a solid disc, or with only a few, airfoil-shaped spokes. "These designs cut through the air," explains Kutrumbos, "but the road shock goes right through you because the wheel is in compression, or solid." Because of these compromises, competitive riders are often forced to change wheels during stage races. They use carbon-fiber wheels for short sprints where every bit of speed is important, then switch to traditional wire-spoked wheels for longer distances where a comfortable ride is more important.

The *rev X* is touted by Spinergy as a "no-compromise" solution for cyclists. Constructed of a carbon fiber and Kevlar composite, the *rev X* spokes are twice as strong as 32 heavy-duty steel spokes, but the wheel weighs in at less than 720 grams. The four pre-stressed sets of opposing carbon fiber and Kevlar spokes join at the hub to form a resilient triangular configuration. This patented design, called Tri-Tension Technology, lets Spinergy create a wheel that has the shock-absorbing qualities of a traditional wire-spoked wheel without the "eggbeater" drag penalty.

With a price of about $500 per wheel, the *rev X* will appeal primarily to competition cyclists and serious biking enthusiasts. Although bikes from companies such as Cannondale and Trek that come equipped with the *rev X* sell for $2,000 to $3,000, Kutrumbos doesn't think it will be long before economies of scale, automation, and new designs will allow Spinergy to offer similar wheels on $400 bicycles.

The *rev.X* wheel's advanced composite construction and aerodynamic design work together to give cyclists a comfortable, low-drag ride.

A more dramatic advance will come in 1995 when Spinergy releases its belt-driven system to replace the traditional chain-driven transmission, which Kutrumbos says hasn't changed in 50 years. "It's more of an advance than the wheel," he claims. The transmission system requires only two ounces of effort to change gears. The light touch means gear changes can now be accomplished using buttons, a knob, a motorcycle-style grip shift, or, most interestingly, electronics. Using an electronic control, a cyclist could set the bicycle to automatically shift ratios to maintain a certain speed, pedaling cadence, or heart rate. Such a system could interface with a home computer as part of a sophisticated training program.

Current chain/derailleur transmission systems have unevenly spaced ratios that make for jarring shifts between some gears. Spinergy's transmission will offer 17 evenly stepped gear ratios. "It's very smooth because the pulley sections move within a disc, up and down, so you're not jumping a chain sideways from sprocket to sprocket," Kutrumbos says. Best of all, the belt-driven system is completely enclosed and uses no lubrication, making it maintenance-free.

Like the *rev X* wheel, the transmission will initially appear on higher priced racing and enthusiast bicycles. Eventually bicycles equipped with both technologies will drop into consumer price ranges, carrying one of the world's most popular modes of transportation firmly into the twenty-first century.

MIND

MENTAL TELEPATHY IN THE LAB
Tests show psychic abilities among actors and musicians

By Lorrin Harvey

Marcella, a 20-year-old Juilliard student lying in a darkened room, can hear nothing but the sound of static as she describes scenes she imagines to a man in a lab coat. "A tunnel of smog or smoke, the color red. Ah, suddenly the sun . . . a cartoon sun with pointy spikes . . . a lizard with a big head." In another room a sender concentrates on a scene from the film, *Altered States*, depicting a psychedelic experience in which everything is tinted red, there are people in agony in the midst of fire and smoke, and there is a large sun with a corona. At the end of the clip, a lizard head appears. In an experiment investigating ESP, Marcella's description demonstrates how accurately some people can receive psychic imagery.

Parapsychologists believe there is a link between artistic ability and telepathy. Are artists less likely to suppress and more likely to report unusual imagery?

In January 1994, the *Psychological Bulletin* published a review of mental telepathy research spanning 20 years. The research not only shows significant proof that telepathy exists, but also reveals surprising connections between artists and psychic abilities. Daryl J. Bem, professor of psychology at Cornell University, co-authored the article with the late University of Edinburgh parapsychologist Charles Honorton. Honorton, who died in November 1992, conducted most of the experiments. "Taken with earlier studies, the probability that the results could have occurred by chance is less than one in a billion," says Bem, who was deeply impressed with Honorton's safeguards against flaws and cheating.

The studies used the ganzfeld (German for *total field*) technique that works to block noise and other distractions from the senses. During a ganzfeld session, a receiver lies on a reclining chair in a soundproof room with translucent Ping-Pong ball halves taped over his eyes while white noise plays over a headset. In a separate room a sender concentrates on a particular image selected by a computer as the target. Each session lasts about 30 minutes, while the receiver tells the experimenter what he is imagining or feeling.

Afterward, the receiver chooses the best image out of four that most closely matches his experience during the session. Until the computer records the receiver's choice, only the sender knows the image chosen.

The ganzfeld studies, conducted at Honorton's Psychophysical Research Lab in Princeton, New Jersey, consisted of 11 experiments, with 240 receivers tested in 354 sessions. By chance, a receiver would choose the correct target 25 percent of the time. Overall, subjects scored correct hits 33 percent of the time, and 37 percent when film clips were used. Most strikingly, 20 students from Juilliard scored hits 50 percent of the time, some of the highest scores reported.

Six out of eight music students judged targets successfully, although their reported imagery was not as detailed as the drama students'. Four out of ten drama students correctly identified their target, describing the imagery so vividly anyone could choose the correct target.

Honorton and his colleague Marilyn Schlitz considered various reasons for the results. Most musicians make better judges, they thought, because musicians are generally more methodical and attentive to details than drama students, who concentrate on verbal skills and are more comfortable revealing personal things. The Juilliard students, about 17 years younger than the other participants, were more skeptical of ESP.

The studies are "not so impressive when one considers only twenty students were involved," rebuts Ray Hyman, professor of psychology at the University of Oregon. Bem agrees, but adds, "When the students were being tested, there was an enormous amount of enthusiasm. An experimenter who believes in telepathy may positively influence the attitude of the subjects. Parapsychologists also find that people who meditate, or practice skills requiring mental focus, achieve positive results. At Cornell, Bem is now investigating meditators' telepathic capabilities.

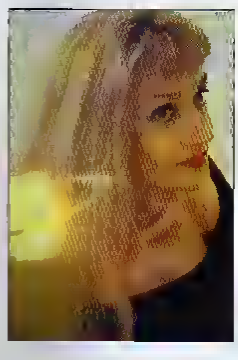
ARTS

ODE FOR A SOUNDLESS UNIVERSE

Uncovering the celebrated music of the spheres

By Denise Meola

Are the planets radiating tones across the void to each other? Fiorella Terenzi listens in on a reticent universe.



The future belongs to those who can hear it coming. Our environment surrounds us with sound. We are able to recognize a telephone ringing, a motorcycle, the music of Beethoven, birds singing, or a jet flying overhead. Radio telescopes are in place on Earth like enormous ears collecting electromagnetic vibrations emitting from the cosmos.

Astrophysicist and experimental musician Dr. Fiorella Terenzi has now transformed these radio waves into sound, allowing a once reticent universe to be heard.

Terenzi holds a doctorate in physics from the University of Milan, with a specialization in astrophysics. While doing her doctoral research at the Computer Audio Research Laboratory at the University of California in San Diego, the idea of "listening to the sky" came to her. "I thought there must be a way to connect the two universes of radio waves and sound," says Terenzi. By combining radio astronomy and computer-music technology, Terenzi began a series of experiments exploring the possibility of the use of sound for astronomical investigation—a technique she calls "Acoustic Astronomy."

Choosing for her celestial experiment UGC 6697, a galaxy 180 million light-years from Earth (just under the handle of the Big Dipper), Terenzi turned to the Very Large Array radio telescopes in Socorro, New Mexico, which collected the radio waves UGC 6697 emits and translated them into a series of numbers for storage in a mainframe computer. The frequency of galactic radiation is high—about 1 billion hertz—and must be mathematically reduced into something we can recognize as sound. A computer sound synthesis program, *Cmusic*, was used to bring it within the sphere of human hearing.

Terenzi spent one year translating signals from UGC 6697, processing thousands of combinations of cosmic sounds, and choosing the most violent, active emissions from this galaxy to listen in on. With her background in music composition and theory, opera and piano, Terenzi listened to the complex galactic pulse with a musician's ear. "There is an intensity and frequency in galactic radiation which is similar to that of musical notes," explains Terenzi. "It is a cosmic harmony which seems to be attuned to B-flat and D-minor."

Her experiments resulted in her 1991 debut recording "Music from the Galaxies" (Island Records) containing the unaltered sound of galaxy UGC 6697. The circular galactic sound is ethereal and sensual, transporting the listener into a hypnotic state. Her next recording, expected late this year, will feature the sounds of UGC 6697 and the rings of Saturn, cosmic drumming of pulsars, and her lyric soprano voice singing in harmony with the universe.

By digitally sampling the universe into a synthesizer, she can re-create celestial sounds on her keyboard during live performance. Combining this with scientific lectures, laser effects, and music, Terenzi simultaneously entertains and educates her audience in planetariums, raves, and concert halls in Europe, Japan, and the United States.

In the interactive realm, Terenzi has created a CD-ROM for the Voyager Company titled "The Invisible Universe" to be released in 1994–1995, designed as an educational tool for kids of all ages. Blending music, poetry, and history with images of the invisible universe in x-ray, gamma ray, infrared, and ultraviolet light, Terenzi demonstrates that our vision is a limited instrument. She is also discussing a 12-part high-tech public television extravaganza for 1994 and 1995 where she'll teach astronomy, engineering, mathematics, and physics in a cybernetic environment. Terenzi, who developed the series, will interact with her audience via computer, fax, and telephone, and will be transformed into a virtual scientist within a virtual world. "a Barbarella-like character" admits the sultry scientist.

What do the stars hold in Fiorella Terenzi's future? To continue her research with Acoustic Astronomy as an alternative way to classify celestial objects. "I would like to experiment with beats generated by a frequency collision that occurs when two stars orbit around one another in what is called a binary star system," Terenzi says. "If these sounds can be identified on the acoustic representation of their data, eventually every star could be recognized by its individual sound. "The universe is sending out a message every second," Terenzi adds, "and all the messages are lost if we do not record them."

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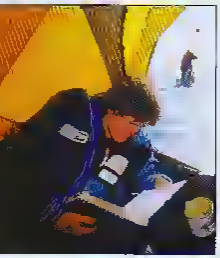
TRAVEL

CYBER-SLEDDING
Riding the Internet to the Arctic

By Anthony Liversidge

As Will Steger tells it, trouble arrives quickly in the Arctic. "One night a 100-mile-per-hour storm blew up. We were sleeping in a tent tied to my canoe sled. All of a sudden, I saw a shadow. The canoe came down right on my head, and the tent just exploded—poof! I grabbed onto it, holding it down. Loose socks and underwear were sucked out, the pressure was so great. Eventually we pushed it down and collected our stuff."

The harrowing Arctic escape was "all part of our learning experience," says Steger. A wiry and weatherbeaten 49, Steger is an explorer and a teacher. The Minnesotan yearns to wake up the world to rising threats to the Arctic environment, and he has found a unique way to do it. In the International Arctic Project, Steger is linking cyberspace with the risks and concerns of polar adventure virtually in real time.



When Will Steger leaves on his Arctic expedition he'll be bringing along hundreds of thousands of children.

Steger led the first confirmed North Pole dogsled expedition without resupply in 1986, and he co-led a crossing of Antarctica in brutal weather in 1989–1990. Now he will cap his career with a feat that's historic in two ways. He will make the first dogsled Arctic crossing from Russia to Canada in one season. And accompanying his crack international team (three men, two women and 33 energetic dogs) will be hundreds of thousands of children from around the world.

The children will share the thrills of the trip using the Internet. In a trial run of the Arctic trip earlier this year, children in more than 200 schools from 12 countries as far away as Japan eagerly participated. Each day after camp was staked, a member of the team wrote up a diary entry on a laptop computer and radioed the report to base. Edited, this was fed into the Internet by the Center for Excellence in Education at Indiana University. Questions were relayed back to the team. As Steger's exploration party traveled up from Yellowknife to the polar ice and then back to Canada over a period of two and one-half months, they shared hundreds of pages of stories and expert commentary with the schools.

Topics discussed included how to run a dog team, preserving the Inuit culture, an Arctic gold mine, and the Northern Lights—the eery yellow-green curtains which hang in the winter night sky. The children learned that the mystical phenomenon is caused by streams of electrons from the sun.

The single-season Arctic traversal will begin March 7, 1995 from an island on the Arctic coast of Russia. Steger and his team will dogsled to reach the North Pole on April 22, the twenty-fifth anniversary of Earth Day, and then head south. If the ice becomes too treacherous when it begins to break up, they will part with the dogs, which will be airlifted home before continuing with canoe sleds (canoes with runners).

To Steger, it's all worth it to warn of the growing threats to the pristine Arctic. As in the South Pole, the thinning ozone layer is a problem. Empty fuel drums litter the abandoned Distant Early Warning sites along the Arctic coast. The Northwest Territories diamond-mining rush is harming the wildlife of the Arctic Circle.

But the key threat is transboundary pollution—contaminants brought to the Arctic by wind and water currents from thousands of miles away. The polar sea ice, only 12 feet thick, floats on a huge rapidly moving current circling around what amounts to a 15,000-foot-deep cereal bowl. The ice is so mobile that a yellow canister Steger left at the pole in 1986 was found by a carpenter on the north shore of Ireland three years later. The churning flow of water and air imports pollutants including pesticides and heavy metals.

Says Steger, "I feel I have to do something, and the most effective way is to connect the educational system for the children are the ones whose world this will be tomorrow."

Schools and individuals can plug in to the expedition by sending their Internet E-mail address to World School for Adventure Learning's mailbox, *worldsch@ucs.indiana.edu*, along with a request to join the IAPADV listserv. The service is operated by Indiana University (612-962-5640).

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ELECTRONIC UNIVERSE

INTERTAINMENT

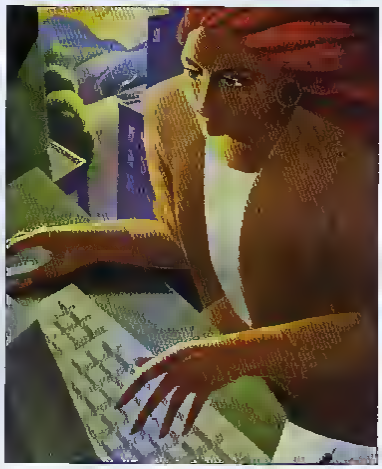
Finding fun and laughs on the Internet

By Gregg Keizer

Visit the world's first virtual comedy club, the internet. Whether you like your laughs weird, wacky, or irreverent, you'll find them online.

The real reason to go electronic is to have fun, especially on the Internet. There's enough information on this global tangle of computers to sate the biggest data thirst, but there's also an incredible number of grins on the Internet. And some of those laughs feel right at home in *Omni*.

There are games on the Internet, but you'll have more fun playing solo or two-on-two at your PC, Mac, or videogame box. If you have an irresistible itch to play online, check out something snappier, like The Imagination Network, an all-game online service. Still, if you play *Doom*, the hyperactive, hyperviolent shareware game from id software, check out the Usenet newsgroup *alt.games.Doom*, where crowds of Doomheads pass around player-created levels and talk endlessly about how cool it is to blow chunks of body parts off aliens.



In fact, the Usenet newsgroups are the fountainhead of fun on the Internet. Essentially collections of E-mail messages, Usenet newsgroups focus on *very* specific topics. Unlike the Internet's mailing lists, which drop their entire contents in your mailbox every day, newsgroups can be subscribed to, then browsed when you feel up to it. I call it Internet's radio, with each newsgroup a different station on the dial. And because you can read newsgroups through America Online, you don't need to be a nethead to tune in.

One newsgroup worth reading is *rec.humor.funny*. It's *moderated*, which means that someone decides which messages get posted. (Most newsgroups are unmoderated and are anything-goes, electronic free-for-alls.) Though you may have already heard some of the gags posted here, the majority rate somewhere between a giggle and a scream. Other newsgroups are unwittingly funny. People, after all, say the wackiest things. One recent message on *alt.paranet.abduct*, a newsgroup on alien abductions, for instance, apologized for a misplaced message. "Sorry for posting this here. My eyes must be going as I thought it said *alt.parents.abduct*."

Some newsgroups take themselves so seriously that they can't help but be a hoot. Like *alt.paranet.ufo*, a group that sticks to discussions about UFOs. When I've tuned in, I've seen messages chatting about Venus and its connection with UFO sightings, conversations about Jimmy Carter's UFO experience, and calls to join Operation Right to Know (QRTK), a group that says governments are hiding it all from us. Delusion runs more than skin deep on *alt.paranet.ufo*, though. For one correspondent swore he saw a face of clustered stars in a Hubble image he downloaded from the net.

An even better newsgroup is *alt.alien.visitors*, which includes a healthy dose of skepticism. The topics are wider-ranging than *alt.paranet.ufo*, too—from time travel and aliens posing as U.S. Senators (how can you tell?) to animal mutilations. Other Internet locales worth checking out include *sci.skeptic* (where disbelief in the paranormal runs deep) and *alt.paranet.paranormal* (believers, believe me).

If you're not into UFOs, tarot cards, and medical experiments by Martians, you can still head into space by tuning in to newsgroups like *rec.arts.startrek.tech* and *rec.arts.startrek.info*. The former is flush with technical treatises on everything from cloaked ships to the Enterprise's replicators. Why can't they just mass produce Data by running him through the food processor? The answer is here. Meanwhile, *rec.arts.startrek.info* is a good place to dig up the occasional insider news on the *Trek* shows and films.

Even stranger—and I mean strange—is *alt.sex.fetish.startrek*, an off-color, offbeat discussion of the one thing *Star Trek*'s always been shy about: sex. Where else can you read about fantasies involving Q, Data, and the delectable Dr. Crusher? *Engage!* indeed.

In fact, if there's an opinion, there's conversation about it on the Internet. Often goofy, always irresistible, the Internet is more than just an information highway. It's the comedy club—intentional or not—of the Nineties. DO

WAVES

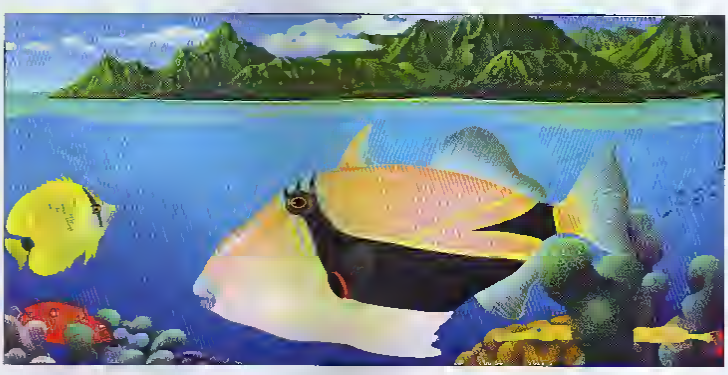
SEAWATCH
Tracking the ocean from Norway to Thailand

By Janet Stites

The 6 5-meter buoy bobbing vertically in the water looks like some kind of NASA space probe Only this probe has been designed and employed to explore a different final frontier—the vast and restless waters of our oceans

As part of Project Seawatch, an international coalition founded in 1987, the buoys use sophisticated methods to track and survey the world's oceans Above water are the meteorological sensors the buoy position sensor, and satellite communications equipment At the water line a round container, not much larger than a bowling ball, acts as a "wavender" and holds a GENI processing unit as well as the electronics for the buoy Below the surface, sensors measure temperature salinity, currents, algae, oxygen, nutrients, and radioactivity At any time, researchers can log into a buoy and get near real-time information on the immediate environment of the buoy

seaQuest DSV, the TV marine adventure series may be fantasy, but there are plenty of real high-tech happenings on the high seas, such as smart buoys monitoring everything from oil spills to fish counts.



"There is increasing concern about the marine environment," says Seawatch department manager Svein Hansen from the Oceanor offices in Trondheim, Norway "Not only natural physical conditions such as climate changes in temperature, wind and air pressure but also with respect to pollution " Currently, the company operates 16 Seawatch buoys ten in European waters and six off the coast of Thailand The buoys continuously collect data, monitoring 26 environmental and climatic parameters The information is sent via two-way satellite to processing stations and then to the headquarters in Trondheim

There, scientists from a number of disciplines including meteorology, oceanography, mathematics, computer programming and, of course, marine biology, work together to interpret the information With their findings they caution fish farmers and commercial fishermen of poison algae or oil slicks, alert oil companies of storms approaching their platforms, and advise public authorities of the presence of high radioactivity and other pollutants They also provide data for research institutes, the navy and coast guards, and tourism industries

The first Seawatch buoys were deployed in 1990 The project gained immediate international attention Norway, Germany, Great Britain, the Netherlands and Sweden all participate in Seawatch Europe, and the program has been accepted as a project by Eureka a cooperation among European countries for technology development Most recently Seawatch has been presented as a system for UNESCO's Global Ocean Observation System (GOOS), whose agenda includes monitoring and forecasting environmental and climatic changes in the world's oceans "It is important to have an intelligence system to monitor changes in the marine environment," Hansen says, "as you might have to monitor an arms agreement between countries It should be some sort of uniform system so there will not be any arguing about the quality of the data "

While the largest concentration of Seawatch buoys remains in the North Atlantic, Oceanor implemented Seawatch Thailand in 1990 at the behest of the Thai government 'With the pollutants from ship traffic and oil production in the same area as the tourism industry, fisheries, and fish farming," explains Hansen "it's important to document the quality of water particularly for the fish-farming industry and fisheries The system may also reduce the risk involved with oil production and ship traffic "

Not far from their offices, Oceanor's experimental buoy sits in the fjord's cold water testing two new devices—an echo-sounder that counts fish and a heavy metal sensor that documents the metals from pollutants There is yet much work to be done and data to be collected The smart buoys operated by companies like Oceanor are only the first generation of a whole new way of thinking about the sea Thankfully, it looks like they will not be the last

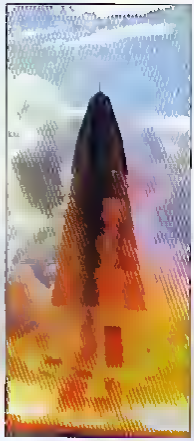
ARTIFICIAL INTELLIGENCE

SOFTWARE BY COMPUTER

The DC-X lifts off with the help of automatically generated code

By Caleb John Clark

The unmanned 42-foot-tall Delta Clipper Experimental (DC-X) rocket, the obelisk-shaped launch vehicle built by McDonnell Douglas, is notable for many reasons. It was built in just 18 months; it takes only a three-person crew to fly it; it's completely reusable; and most obviously, it both takes off and lands *vertically*. Add one more accomplishment to the DC-X's impressive résumé: It's the first and only launch vehicle to fly using software code generated automatically, meaning that a computer translated the concepts designed by human programmers into flight software.



Landing feet first: After completing a flight test last summer using its automatically generated flight software, the Delta Clipper Experimental descends to the ground.

"It's a paradigm shift in the way software is developed," says Matt Maras, a software manager at McDonnell Douglas Aerospace-West who worked on the DC-X project.

Usually, human programmers design, write, and test the computer source code manually, a lengthy, expensive, and inherently error-prone process. The McDonnell Douglas team used MATRIXx, a software toolkit from Integrated Systems, that automates part of that work, to support its design for the DC-X software. Instead of laboriously writing, for example, 100 lines of code that direct the flight computer to perform a certain task, the designer implements the task description graphically. After verifying that the task has been implemented correctly, MATRIXx then produces source code that maps the task into executable instructions for the computer. Due at least in part to the process developed around MATRIXx's capabilities, McDonnell Douglas finished the flight software five months before the hardware was ready, a first in launch vehicle development. As an added bonus, the process has reduced software development costs by about 50 percent over the conventional, hand-coded approach, without compromising quality.

Before generating the code, however, the McDonnell Douglas team constructed a computer simulation of the entire DC-X system from the rocket's design plans and refined it until it ran smoothly. Then the team generated the software and immediately set about testing it with the simulated DC-X, saving additional time and money.

"While the manufacturer is out building the hardware, you're modeling it and testing it in a real-time closed loop with your flight software," explains Diane Quick, a research engineer with Integrated Systems. "This is a key on big projects with subcontractors spread across the country."

Once the hardware is built and begins flight tests, Maras points out, the software designers can use the data gathered to modify the software "in hours instead of days or weeks."

One of McDonnell Douglas's objectives in designing the DC-X was to make it easier and cheaper to operate, and the innovative flight software plays a large role in achieving that goal. In contrast to the thousand-plus people needed to get the space shuttle off the ground, the DC-X (which is a scaled-down test version of what McDonnell Douglas hopes will be a manned launcher) takes a crew of three. At the September 11, 1993, test flight at White Sands Missile Range in New Mexico, the rocket's pilot—former Apollo astronaut Pete Conrad—used a mouse and screen graphics that he helped design to select a "vertical motion state" flight mode. Translated, that means that he instructed the DC-X to take off.

Conrad then selected the "hold" mode, and the DC-X did something rockets aren't supposed to do. It stopped dead and hovered absolutely still. The rocket's software, rather than the pilot, compensated for any cross winds hitting the vehicle.

"Transition" mode triggered the DC-X to move sideways, another rather strange maneuver for a rocket. Finally, Conrad hit "landing state," and the rocket descended vertically, butt first, its landing gear telescoping out of its base like something out of a *Buck Rogers* episode. Barring a private flight test of the rocket the previous month, the occasion marked the first time that a launch vehicle had ever landed vertically. (Another first took place earlier this year, when DC-X successfully made an emergency landing after an explosion caused by hydrogen buildup on the launch pad. At press time it was undergoing repairs and was expected to finish its flight testing.)

Is the DC-X the future of space travel? Maybe. Is automatically generated code the future of software programming? Probably. Its ability to simplify complicated programming jobs, saving time and money along the way, can help to get a lot of projects besides the DC-X off the ground. ☐

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LEARNING

CROSSING A NEW ROAD
Summer school for science, not grades

By Lisa G. Casinger

Crossroads Science Institute's free summer program is to cool science what 90210 is to cool zip codes. CSI, the science arm of Crossroads School for Arts & Sciences, metamorphoses into a summer-science mecca for Los Angeles students. Their idea of summer fun ranges from building a scanning tunneling microscope to predicting the weather.

Joe Wise, science chair at Crossroads and director of CSI, often invites guest speakers to add a little zip to his physics classes. During one lecture, UCLA professor Dr. Stan Williams casually mentioned that the students themselves could build a scanning tunneling microscope (STM). STMs are used—in laymen's terms—to study the skin or surface of materials. With the microscope, kids could watch metal corrode or study how magnetic tape stores data. Wise, who derives pleasure from building anything from a motorcycle engine to a linear accelerator, asked if Williams was serious. He was.

Wise and his students may spend part of their summers on the beach, but most of the time you can find them tucked away in the science labs working on new research.

Williams and Wise acquired a grant from the Research Corporation in Arizona. Wise advertised in the local paper requesting help building the STM, and ten area students signed up. They started building the STM in the summer of 1991, and since then students have migrated to CSI for summer science fun.

A graduate student or doctoral candidate *might* have access to an STM, or $30,000 *might* buy one, but these middle- to high-school students built theirs from scratch with $12,500. Students finished the STM in 1992 and moved it to its home in CSI's surface studies laboratory. Now they are experimenting with graphite samples and are attempting to automate the STM. Wise feels that following a project like this from inception to fruition develops a sense of contribution and ownership students can't get from their textbooks.

Wise provides direction and guidance, but gives the students ultimate responsibility. He thinks being involved encourages their curiosity and gives them a reason to learn. Wise says, "In the classroom, they're used to opening a drawer and the equipment is there, or the teacher's already set it up for them." During the summer, students not only decide what they want to research, but how to get the money and equipment they'll need to follow through with it. The young scientists also try their hands at public relations by holding open houses where they explain their research, demonstrate the equipment they built, and maybe raise funds for future projects. Some funding comes from grants provided by the Research Corporation in Arizona, the Santa Monica Rotary Club, and the Santa Monica Amateur Astronomy Club. A portion of the grant money is given to students as stipends, much like grants at the doctorate level.

Wise's summer program epitomizes Crossroads' basic tenet: "Education must not be a race for the accumulation of facts, but should be an enriching end in itself. . . [and] is a joint venture among students, parents, and teachers." This venture is encouraged by instilling a sense of community involvement in the students. (Community service classes are required for graduation.) Wise hopes more clubs and businesses involve themselves with the program, ultimately forming a community science consortium and exposing more people to current science on a regular basis. Some Crossroads students may later have careers in science, but Wise says, "We're not trying to turn out scientists. We're trying to turn out people who are literate in science, math, humanities, people who are able to enjoy the fullness of life."

CSI's next step involves becoming a science *and* math institute. Instead of lifting numbers and formulae from meaningless text, math students will crunch the data generated by the science students. Young scientists and mathematicians will validate each other's work and research, and maybe learn something in the process. Planning is also underway to build a microbiology lab and to finish the radio telescope they've been working on.

Wise enthuses about future plans for CSI, but narrows his sights to what he finds *most* important. "I really think that we have to get that wide-eyed curiosity that they have in the third and fourth grades back into the kids who are in the eleventh and twelfth grades. Somehow we have to let them feel safe at being curious." And he's doing it—one summer at a time.

CONTINUUM

THE MUSEUM OF JURASSIC TECHNOLOGY:
See the unbelievable on display. Plus, satellites help farmers plant, and scientists quantify the kilogram

Even before you enter the Museum of Jurassic Technology, there is a slight aura of the surreal, for standing outside luring passersby into the tiny exquisite world within is museum director David Wilson, playing the accordion. Mind you: not in a brash, attention-grabbing way, but in a discreet, almost wistful style. It is the first hint that this is not your average museum. Or perhaps it is the second, for surely there is something not altogether orthodox about the name itself. After all, the Jurassic is not a period generally known for its "technology." And indeed from the moment you cross the threshold of this hidden Los Angeles treasure if is clear you have stepped sideways in the slipstream of perception.

Beginning with an audiovisual that introduces the museum as "an educational institution dedicated to the advancement of knowledge and the public appreciation of the Lower Jurassic," the visitor is challenged to reconsider the issue of veracity. When we enter the hallowed halls of museums, how much are we influenced by the aura of authority which surrounds the glass cases? What artifacts and stories do we accept because they are accompanied by scholarly descriptions and Latin names? What ancient or foreign cultures are we convinced of purely on the strength of relics and writings identified for us by unseen "professors." At the Museum of Jurassic Technology, the very function of museums as cultural institutions is called into question—and into play—for above all, the visitor is invited to revel in a grand game of ideas.

One of my favorite exhibits deals with the "discovery" and "capture" of a rare South American creature, the Deprong Mori or "Piercing Devil," which can fly through solid objects such as tree trunks and hut walls. In the 1950s, we are told, Professor Donald R. Griffith, author of the chelropteral classic *Echolocation in Bats and Men*, suspected the mysterious "devil" must be some kind of bat and hypothesized that it might be using x-rays instead of sound waves for echolocation. Since x-rays cannot penetrate lead, Griffith reasoned, it should be possible to capture a Mori inside a block of lead. The result of this insight and Griffith's follow-up field work is the only "Piercing Devil" in captivity—on display at the Museum of Jurassic Technology.

Another exhibit is devoted to the life and work of memory researcher Geoffrey Sonnabend, who in the 1940s put forward a highly original theory about the process of memory and forgetting. Sonnabend expounded his "theory of obliscence" in terms of a whimsical model involving the interaction of a cone and plane, which is presented in an incisive audiovisual along with a reconstruction of the great man's study. In November, the museum unveils an extensive new exhibit on superstitions from around the world. From the vast field available, Wilson has chosen many relating to health, numbers of which crop up in widely varying cultures. Take for example, "mouse cures." One I especially like concerns baked mouse on toast as a guaranteed cure for bed-wetting.

Among the museum's long-term interests is a commitment to "exhibiting engineering and artistry on the microscopic scale." Several months ago, the museum featured an exhibit of microminiature machines etched out of silicon chips. These state-of-the-art pieces were donated by institutions at the forefront of nanotechnology, including Caltech, Case Western Reserve University, and UCLA. Early in 1995, the museum will also hold an exhibit of miniature sculptures carved out of individual human hairs—works by the late Armenian artist Hagop Sandaldjian, who literally had to ply his craft between heartbeats so that pumping blood would not interfere with the steadiness of his hand. What drew Wilson to both subjects, he says, is that "these objects are all on the very outskirts of perception, and also on the outskirts of believability."

That could be a summary of the entire museum. The fascination of the Deprong Mori is precisely that it hovers on the "outskirts of believability." But no less so, one must admit, than baked mouse on toast or theories of obliscence. In the chimerical atmosphere of the Museum of Jurassic Technology, it is far from clear where fact ends and fiction begins—or vice versa. Indeed, here one is forced to realize that fact often is stranger than fiction and that the line between the two is often blurred beyond distinction. —*MARGARET WERTHEIM*

The museum is open on Thursday, 2:00 p.m. to 8:00 p.m., and Friday through Sunday, 12:00 noon to 6:00 p.m.

CONTINUUM

Lead-based paint on bridges may be removed using a heat gun and a mixture similar to the coating on microwave cooking trays

ZAP THAT PAINT

Lead-based paint was banned in 1978 when researchers discovered that even low-level lead poisoning could cause retardation and lowered intelligence in children who ate peeling bits of paint chips But it stubbornly remains on some 300,000 bridges and an estimated 57 million American homes, so far resisting development of a cost effective way to remove it without creating even more of a health hazard in the form of lead dust

Ashok Kumar, a metallurgist with the Army Corps of Engineers' Construction Engineering Research Laboratories in Champaign, Illinois, appears to have done just that In lab tests he discovered that microwave heat can do the job while causing far fewer problems than conventional sandblasting or chemicals

In Kumar's process the lead-painted surface is sprayed with a slurry or mixture of powdered glass and a microwave enhancer like iron oxide or carbon He uses a sort of microwave heat gun to heat the paint to over 2,000 degrees Fahrenheit which causes the lead ions to migrate from the paint to the slurry's glass particles where they are permanently and harmlessly trapped by vitrification while the now-innocuous paint simply burns off

The wood below the paint will be as safe as the food in your microwave tray, explains Kumar, who says, "You just burn the paint, you don't burn the wood. There's no risk of fire." The amount of spray applied controls the amount of heat generated

The same thermal spray technology on a grander scale can be used to remove peeling lead-based paint from bridges, a costly problem which few communities can now afford to correct because the entire bridge must be covered to contain the dangerous dust

—George Nobbe

I'VE GOT SUNSHINE ON A CLOUDY DAY

Using the power of the sun to heat an enclosed space is an idea as old as humankind Equally as old are the problems that go along with it Cloudy weather makes for chilly conditions while a surfeit of sunlight creates too much heat An Albuquerque, New Mexico–based company, however may have solved this age-old problem with a new device called a Weather Panel

Suntek, founded in 1974 by Day Chahroudi, first burst upon the solar scene with Low-e, a transparent insulation for windows that prevents heat loss

Now Suntek has created a second material called Cloud Gel, a clear polymer that when heated to a certain temperature turns opaque and blocks sunlight "A lot of atriums and sun spaces just become solar ovens," Day Chahroudi explains "It's as if Cloud Gel makes sure the weather stays temperate so a building can't overheat or be overbright."

The company's new Weather Panel, designed to be installed under a clear roof, consists of layers of Low-e and Cloud Gel, working in combination to let in "cloud light"—weak light that penetrates winter clouds—for heating and lighting and to reflect excess sunlight Tested at the Belgium Building Research Institute, the Weather Panel can be used on almost any building and will cost no more than the average roof.

"The panel can provide one-sixth of the world's energy without pollution or war" Chahroudi claims

Having sunk $5 million into developing Cloud Gel, the company plans to license it and its Weather Panel knowhow worldwide Chahroudi expects the device to reach the commercial market this year

—Deborah Seabrooke

MILK MEDICINE

Milk might do your body more good than you thought—by offering the cure to some of today's most deadly intestinal illnesses. Scientists have found that antibodies taken from milk target bacteria that bovines and some humans have in common cryptosporidiosis, an often-fatal diarrhea that afflicts many AIDS patients' gastrointestinal-tract infections like those suffered by chemotherapy patients, and H. pylori, the most common form of peptic ulcer.

Biomune Systems, a Utah-based biogenics firm, has developed and patented a process to extract these antibodies from whey, a milk byproduct. The company uses them to synthesize a highly potent form of colostrum, the milk secreted by a mother during the first few days after giving birth that will deliver a superstrong dosage of antibodies to failing immune systems.

Biomune's drug, called Immuno-C, would offer an alternative to antibiotics, which indiscriminately attack all the bacteria inside the body. "Antibiotics not only eradicate the disease, they kill the intestinal flora that help you digest food and fight off diseases," explains David G. Derrick, president of Biomune. The antibodies in Immuno-C kill only the harmful bacteria, sparing the good stuff, he claims.

Antibodies found in bovine milk might do a body good

Because of its proposed use with AIDS, Immuno-C has been placed on the Food and Drug Administration's accelerated-approval list as an investigative new drug. As a result, Biomune will soon begin conducting the three phases of human testing—toxicity, efficacy, and optimal dosage—simultaneously, rather than consecutively, as the FDA's procedures normally require.

According to Derrick, Immuno-C has many other potential uses, including treatment of such common afflictions as acne and traveler's diarrhea. In December 1993, the Vanderbilt University School of Medicine in Tennessee selected the drug for testing as part of its research into prevention and treatment for prostate cancer.

—Lloyd Chrein

A NEWBORN KANGAROO WEIGHS ABOUT 0.03 OUNCES AND CAN FIT INTO A TEASPOON.

BRASS, BOWS, AND VIOLINS

Most people know that a good violin costs some serious money, even if it's not a Stradivarius. But few realize that a professional-quality bow can carry a hefty price tag as well—into the thousands of dollars. Recently, a University of South Florida violin professor tinkered in his garage with parts from a local hardware store and invented an alternative bow that produces high-quality sound at a bargain-basement price.

After five years of teaching at USF, William Hayden, an associate professor in the school of music, wanted to offer his students something besides the low-budget, high-maintenance bows the school had in inventory. "Young students are generally given material in the form of cane or very cheap wood for the bow, and these are not very efficient in conducting nice vibration patterns," Hayden says.

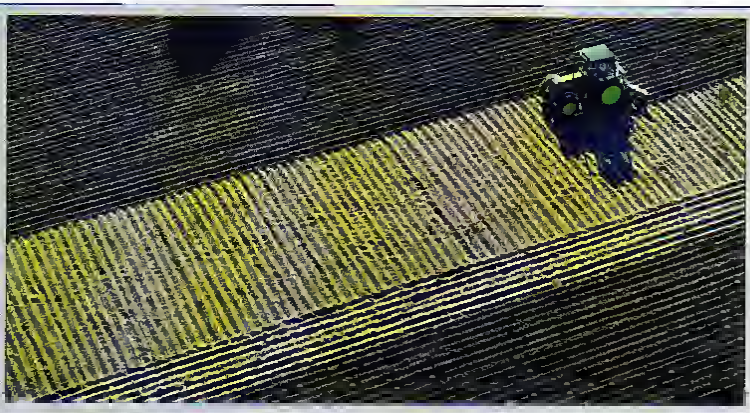
After just a week's work, Hayden came up with the first version of the bow about two years ago. He shaped the hollow shaft out of tubular metal and used nylon fasteners to hold the bow's sturdy synthetic hair in place. The molecular structure of a metal bow allows overtones to express themselves better, Hayden says.

Since crafting the prototype, he's solicited suggestions for improvement from colleagues and students who have tried out the bow, perfecting his invention with their help. The bow's retail price is expected to be between $90 and $150.

"I've used it myself and can testify the feeling of it is very solid on the strings," says USF professor of music Armin Watkins, who rehearses with Hayden regularly for a faculty ensemble. "When compared with good wooden bows, the sort most professionals use, it does consistently produce a richer sound."—Tracy Mygrant

CONTINUUM

A PLOW AND A SATELLITE TO STEER HER BY



The Air Force's Navstar GPS, a Cold War development, has proven to have many peacetime uses. The latest may be as an aid to help farmers locate just the right spots to plant and fertilize.

Farming has come a long way since the days of the horse-drawn plow, and now it's headed swiftly into the twenty-first century. Research at Indiana's Purdue University uses the Navstar Global Positioning System (GPS), developed during the Cold War, to help increase crop yields and reduce chemical use.

GPS uses satellite signals to determine locations within inches. Under Purdue's scheme, a farmer out in the field would use a GPS receiver mounted on his vehicle to pinpoint his position. A computer linked to the receiver and programmed with the field's soil conditions—which can vary widely from one area to another—would tell the farmer precisely where to plant and how much pesticide and fertilizer to use at that specific site.

"Currently the number-one cost to the farmer is chemicals," says Gary Krutz, a professor of agricultural engineering at Purdue. Site-specific farming can increase yields while reducing chemical use.

But the cost of this new technology may be too high for the small farmer, cautions Godfrey Gayle, chairman of the natural resources and environmental design department at North Carolina's A&T State University in Greensboro.

Mark Morgan, assistant professor of agricultural engineering at Purdue, admits that the cost of taking and testing soil samples every few feet in a farmer's field is a limiting factor: soil tests can run $7 to $8 each. He and his graduate assistants are working on a sensor to be attached to the front of a farm implement, enabling the farmer to perform his own soil tests on the go.

—Deborah Seabrooke

THE END OF THE (CARPAL) TUNNEL

Carpal tunnel syndrome, the most serious of the repetitive stress injuries that cost U.S. industries $20 billion last year, results when the transverse ligament in the base of the palm exerts pressure on the median nerve, causing pain, numbness, and weakness in the fingers, hand, and wrist. For lack of alternative treatment, doctors have always dealt with extreme cases by irrevocably severing the thickened ligament. But a New Jersey surgeon has developed a reversible technique that has worked on over 50 patients at St. Joseph's Hospital and Medical Center in Paterson.

Dr. J. Lee Berger at Orthopedic Associates in Fairlawn, N.J., stretches the ligament, instead of cutting it, using a balloon catheter with a custom-designed nerve protector. "This is similar to the balloon angioplasty done for the heart," explains Berger, whose patented procedure is called percutaneous balloon carpal tunnel-plasty. "I just make a quarter-inch incision in the base of the palm, go under the ligament with the balloon catheter, inflate the balloon, stretch the ligament, and free the nerve. Once you stretch the ligament a certain amount, the carpal tunnel expands, relieving pressure on the median nerve. By not cutting the ligament, bowstringing of the tendon is prevented, preserving grip strength which can be weakened by open or endoscopic carpal tunnel release."

IN A YEAR, THE BODY PRODUCES SEVEN MILES OF HAIR—350 MILES IN AN AVERAGE LIFETIME.

The 20-minute operation minimizes scarring in the carpal tunnel, where a cluster of hand and wrist bones meet. Patients can return to work in a week to 10 days, compared to the usual month or longer recovery.

—George Nobbe

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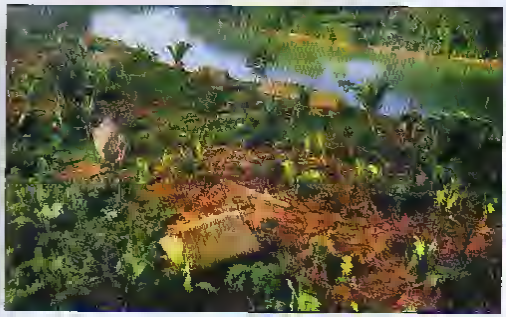
CONTINUUM



As rain forests are destroyed water formerly locked up in plants and forest floors is liberated eventually winding up in the seas

ON THE LEVEL

Activities are underway that make the term *sea level* hard to pin down In fact sea level is going up and has been throughout this century at an average rate of seven one-hundredths of an inch per year What's behind the ascending watermark?

Scientists now point to a previously unheralded culprit *Homo sapiens* According to a recent report humans are responsible for at least one-third of the present rate of ocean rise, and possibly more 'Until now, nobody has bothered adding up all the water we're pouring into the seas ' notes Dork Sahagian, the lead investigator

Sahagian and his colleagues calculated the water lost from the continents through a variety of human activities The biggest losses stem from the destruction of tropical rain forests Water brought up from underground aquifers or pumped from lakes for irrigation also ultimately ends up in the oceans, and desertification takes its toll

All told these sources elevate shorelines by more than two one-hundredths of an inch each year The actual figure may be twice as high, when all the smaller sources not included in Sahagian's calculations are tallied up The threat of coastal flooding is not acute, he says though the rising sea level will exacerbate damage caused during hurricanes and other storms The gravest harm will come from running out of water that we need on the land, not from dumping too much water in the oceans "It's like heating your home with $1,000 bills," Sahagian notes "You'll run out of money long before you have to worry about the air pollution you're causing "

—Steve Nadis

THE SUN CONTAINS 99 8 PERCENT OF THE SOLAR SYSTEM'S MASS

MASS MOVEMENT

Despite the amazing scientific advances of the past century, the internationally recognized standard of mass, the kilogram, is still based on a bar of platinum and iridium—made in 1878—that sits under a glass bell jar in a vault at the International Bureau of Weights and Measures in Sevres, France

The other fundamental measurement units—time and distance—are now based on constants of nature rather than artifacts of man Time, for instance is measured by atomic clocks that count the steady vibrations of cesium atoms This value, in turn defines the meter—the distance light travels in a tiny fraction of a second Scientists now hope to bring the lagging kilogram up to speed

They're investigating several strategies Perhaps the leading approach now being pursued at the National Physical Laboratory in England, involves linking the mass of a kilogram to the mass of an electron, a fundamental constant

A different tactic under study in Europe and Japan hopes to equate the kilogram with the mass of a single silicon atom another fundamental constant

In a separate experiment underway in Germany, scientists are trying to express the kilogram in terms of voltage and electrical resistance, both of which can be defined by natural constants "That's a hard measurement to make," notes Richard Davis, a physicist at the International Bureau of Weights and Measures in Sevres, a standards organization that falls under the authority of more than 40 nations "They're all hard "

Meanwhile, scientists at national standards labs in the United States and other countries periodically have to check their copies of the platinum-iridium kilogram against the international prototype Unfortunately, none of these copies exactly matches the original Dirt and grime build up on their surfaces, altering the mass by about one-millionth of a gram per year

"That's of no consequence to the average person, but it's still a nuisance to us physicists," Davis adds

—Steve Nadis

The kilogram is based on the mass of this bar of metal

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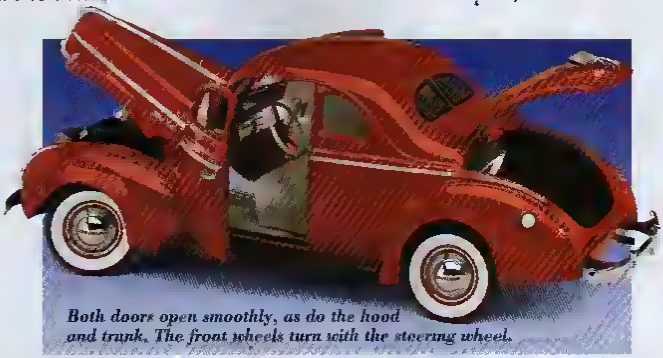

Both doors open smoothly, as do the hood and trunk. The front wheels turn with the steering wheel.

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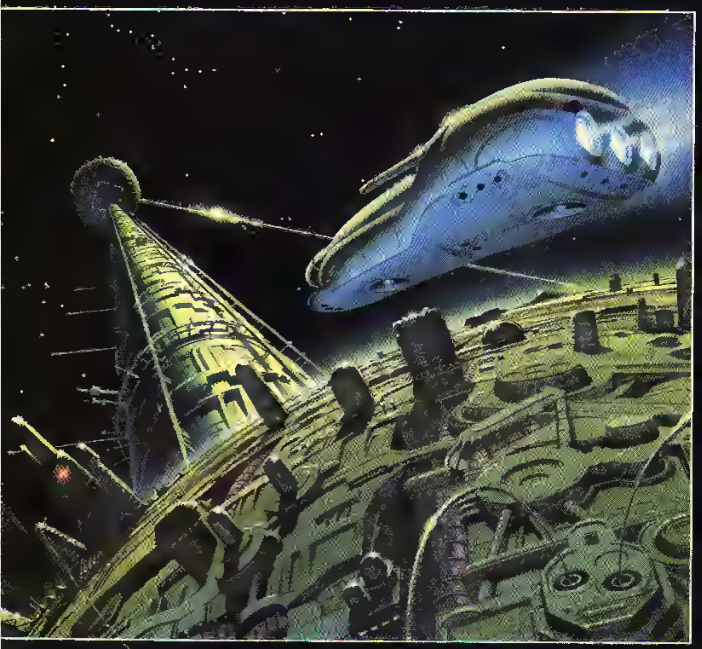


LET THE PROJECT BEGIN

OMNI KICKS OFF PROJECT OPEN BOOK, A WORLDWIDE QUEST FOR CLOSE ENCOUNTERS OF THE DOCUMENTED KIND

IT WAS A CLEAR, COLO NIGHT IN BROOKLYN, NEW YORK, WHEN HAM-RADIO OPERATOR ALEX CAVALLARI PICKED UP BIZARRE, JUMPING WAVE FORMS ON HIS SCOPE. AN HOUR LATER AND SDME TEN MILES WEST IN NEWARK, NEW JERSEY, THE SAME DISTURBANCE PUZ ZLEO FORMER NAVY MAN AND HAM-RADIO OPERATOR JOHN GONZALEZ. GONZALEZ'S NEIGHBORS WERE OISRUPTEO AS WELL: TV RECEPTION WAS INTERRUPTED, HOMES SHOOK AS IF IN AN EARTHQUAKE, ANO SEVERAL WITNESSES REPORTEO A FLASH OF LIGHT. GONZALEZ NOW CLAIMS HE COULO MAKE OUT A DISC-SHAPED CRAFT INSIDE

ILLUSTRATION BY CHRIS MOORE

the light and contends the craft brushed his ham-radio antenna and knocked down tree branches in his backyard. A strange, ashlike sphere the size of a golf ball was later found in his yard. Rich in evidence, this intriguing incident has already been investigated by police and fire departments and by researchers in a lab. The needed culmination for all this data: a synthesis, in which an explanation might emerge.

Multiple witnesses and physical effects also define dramatic sightings over southwestern Michigan, where hundreds of people have reported red and white lights moving in circles through the sky. Here, the documentation includes police reports confirming the strange phenomena as well as data from the National Weather Service at the Muskegon County Airport, where meteorologists have tracked the lights on radar. While experts concede that radar alone can be misleading, it does add weight to reports and suggests that something might be afoot.

And in Alabama, an accounting teacher and mother of two says her abduction by aliens was harrowing. Her story, precise in its detail, echoes the claims of hundreds of other alleged abductees who have come out of the closet of late. But given all the recent research on false memory syndrome, can anyone accept her account rendered through deep hypnosis as literally true? Well, it might be easier to evaluate if some of the evidence described by abductee Leah Haley turns out to be real. From odd scratches and scoops on her skin to weird malfunctions in her security system to alleged harassment by military men in fatigues, Haley claims to have a plethora of evidence that sets her story apart from other, more anecdotal tales.

These incidents all have one thing in common. They offer evidence that can be analyzed, fertile ground for *Omni*'s newest venture, Project Open Book. In our effort to examine the UFO phenomenon, our basic question is clear. In the midst of all the sightings, all the claims and counterclaims, all the abduction scenarios, conspiracy theories, and hype, is there any incontrovertible evidence, solid as nuts and bolts and plain as day, of visitation from on high?

We feel we are in a good position to pose this question because we have no axe to grind. As an editorial staff, we are not yet convinced the invasion has begun. Yet we don't have the knee-jerk instinct to debunk material just because it's weird. Yes, we agree the universe is vast enough and evolution flexible enough to forge intelligent species throughout the cosmos, especially on earthlike planets around sunlike stars. Yet we feel the feat of interstellar travel would be tricky even for geniuses of the cosmic kind. In the end, there's just one thing we sense for sure: The UFO data suggests a mystery—unabiding, unresolved and sometimes downright spooky—in which strange phenomena continue to go unexplained.

In our search for evidence explaining is mostly what we aim to do. As investigators have found in the past, the large majority of UFO sightings are rooted in the mundane. Whether sightings have proved to be practical jokes and hoaxes, meteors, cloud formations, ball lightning, Soviet satellites, or "black" aircraft under development in the United States, some 90 percent of all UFO reports investigated are eventually explained. Just sift through our past columns on the subject, and you will see that finding real-world explanations for the UFO phenomenon has been our impetus throughout.

> IN THE MIDST OF ALL THE ABDUCTION STORIES, CONSPIRACY THEORIES, AND HYPE, IS THERE ANY INCONTROVERTIBLE EVIDENCE, SOLID AS NUTS AND BOLTS, OF VISITATION FROM ON HIGH?

In seeking to explain, moreover, Open Book will continue to embrace *Omni*'s longstanding policy of informed skepticism. Show-me-from-Missouri types, we will abide by the skeptic's tenet: Extraordinary claims require extraordinary levels of proof. In our philosophical universe, if we do not work hard to find an explanation—an ordinary explanation—for each and every case we look into, then our work has not been done. When we send our researchers out to sift through evidence for signs of E.T., you can bet your bottom dollar the terrible burden of proof will stay with us. And Open Book's final query will always be the same: Is there any evidence that proves, to our satisfaction and beyond the shadow of a doubt, that the alien interpretation of UFOs is for real?

UFO researchers have attempted to address this issue from the start. One of the first to try to bring the scrutiny of science to bear on UFO sightings was the late Dr. J. Allen Hynek, who, during the 1940s and 1950s, worked as an astronomer at the Smithsonian, Northwestern University, Ohio State University and Harvard, producing rigorous papers on electronic satellite tracking and supernovas. At first a hard-headed skeptic, Hynek also worked for the Air Force, looking into UFO reports for the notorious Project Blue Book. Although Blue Book has, in recent years, been discredited as a PR organ of an Air Force intent on debunking any and all UFO reports, Hynek himself went through a conversion at its helm. As he followed the program's squelching one UFO flap after the next, he began to doubt his own words. "Somewhere along the line," he told *Omni*, "I realized that I wasn't being scientifically honest. The sightings needed further investigation, but we were disregarding them, throwing the data away."

That realization put Hynek on a path he would follow for the rest of his life. He began making copies of all the documents to come out of Blue Book and gathered data that would allow him to study UFOs as they had never been studied before. He classified the various types of reports and even traveled around the country investigating the more interesting ones. Hynek agreed that many of the sightings could be explained. But he held there was "nothing in the accepted scientific paradigm to explain them all."

His obsession resulted, in 1973, in the founding of the Center for UFO Studies in Evanston, Illinois. Out of this small operation, run mostly through the donations of friends, he produced respected papers and monographs in a field replete with misguided enthusiasts, psychopaths and frauds.

In the end, the so-called science of J. Allen Hynek went soft. Critics and even friends began to say he'd become shockingly gullible. He spent some of his last days in the luxurious Arizona home of a wealthy, but anonymous, benefactor who subscribed to a psychic interpretation of UFOs and promised Hynek he would create for him the most lavish UFO center in the world. When Hynek died of brain cancer in April 1986, it was easy for sympathizers to say he'd gone insane.

Today, Hynek's legacy—his original notion that UFOs could be studied with as much scientific rigor as a volcano or a lake—lives on in a handful of serious researchers and open-minded skeptics.

TEAM OPEN BOOK

MEMBERS OF OUR PANEL, LISTED BELOW, WILL HELP US TURN A PAGE IN UFO RESEARCH. IF YOU SEND US A REPORT FOR STUDY, IT WILL MOST LIKELY BE FORWARDED TO ONE OF THE FOLLOWING:

Patrick Huyghe has been a science writer for 15 years. His work has appeared in *Omni, The Sciences, Health* and *Audubon* among others. He has produced documentaries for WGBH-Boston and WNET-New York and consulted on science exhibits for the Liberty Science Center in New Jersey. He has reported on UFOs for *Newsweek*, the *New York Times Sunday Magazine* and *Omni*. Particularly notable was his investigative expose on the infamous "High Rise Abductee" considered by some UFO researchers to be the case of the century.

Sherry Baker is an Atlanta-based freelance journalist and television consultant specializing in medicine, science, and the arts. She has also applied her significant investigative skills to the arena of UFOs. She has written on the subject for *Omni* for almost 15 years.

Jerome Clark is vice president of the J. Allen Hynek Center for UFO Studies (CUFOS) and edits CUFOS bimonthly magazine *International UFO Reporter*. Author of a multivolume history of UFOs, he is currently based in Canby, Minnesota.

James Oberg is a senior space engineer in Houston, where he specializes in Mission Control operations for orbital rendezvous as an employee of the leading contractor for manned spaceflight operations. He is a widely published author on the past, present, and future of space operations around the world (and off it) and has written ten books, including *Red Star in Orbit*, universally considered the best inside portrait of the history of Soviet space activities, and *Uncovering Soviet Disasters*, a look at secrecy and technological shortcomings in the former USSR. He privately provides expert assessment of Russian space technology. James Oberg has been contributing UFO analyses to *Omni* magazine since its very first issue, when he was the regular "UFO Update" columnist.

Dennis Stacy, an investigative reporter who has covered the UFO beat for 20 years, is editor of the *MUFON Journal* and co-editor and publisher of *Anomalist*. He recently wrote a six-part series on alleged government cover-ups for *Omni*.

Mark Rodighier is director of the Center for UFO Studies in Chicago. He specializes in statistics and research methodology as they relate to UFOs and is author of "UFO Reports Involving Vehicle Interference." He has served on the committee that published the recent Abduction Ethics Code, a series of guidelines and standards for abduction investigation and therapy.

Paul Kurtz, Ph.D., is professor of philosophy at the State University of New York at Buffalo. He is editor of the magazine *Free Inquiry*, former editor of the *Humanist* and founding chairman of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP).

A. J. S. Rayl is a long-time investigative reporter based in Los Angeles and Minnesota. She is currently traveling the country to write and produce an encyclopedic CD-ROM on the Search for Extraterrestrial Intelligence (SETI) for Voyager.

Paul McCarthy, Ph.D., is an expert in political science who originally wrote his thesis on Jim McDonald's efforts to legitimate the study of UFO phenomena in scientific circles. Now a freelance writer based in Hawaii, McCarthy has covered UFOs and other science topics for *Omni* for the past decade.

Jenny Randles, director of investigations for the British UFO Research Association (BUFORA) from 1981 to 1993, has developed a code of ethics for UFO investigators and pushed through a moratorium on the use of hypnotic regression to retrieve UFO reports, as well as an outright ban on use without medical supervision.

Joe Nickell, Ph.D., a former magician and private investigator for a world-famous detective agency, now teaches technical writing at the University of Kentucky. He is the author of several books including *Mysterious Realms*, a casebook of paranormal, forensic, and historical mysteries; *Pen, Ink and Evidence*, a manual on historic document study, and (with psychologist Robert Baker) *Missing Pieces*, a manual for investigating paranormal claims.

Robert A. Baker, Ph.D., professor emeritus of psychology at the University of Kentucky, is an expert in hypnosis and false memory. He is also the author of several books including *Missing Pieces* (with colleague Joe Nickell), *They Call it Hypnosis* and *Missing Memory*.

Stuart Appelle, Ph.D., associate dean of the School of Letters and Sciences and professor of psychology at State University of New York College at Brockport, specializes in sensory processing and perception. He has helped create the Abduction Ethics Code, a series of guidelines and standards for use in abduction investigation and therapy, and is editor of the *Journal of UFO Studies*. A trained hypnotist, Appelle is a member of the Society for Clinical and Experimental Hypnosis.

Keith Harary, Ph.D., is research director of the Institute for Advanced Psychology in San Francisco. The author of eight books and more than 100 articles on memory, learning, dreams, and altered states of consciousness, Harary is an expert in coercive persuasion and other manipulative techniques. He is also the originator of the reflective method of personality assessment and co-developer of the first reflective personality instrument, the Berkeley Personality Profile, designed in conjunction with colleagues at the Institute of Personality and Social Research at the University of California at Berkeley.

who continue to sift through evidence seeking to make sense of the data, to explain. It is in this spirit and in hopes of doing what Blue Book couldn't that Project Open Book turns its first page.

Because proof if it exists might be out there anywhere we have asked our readers to help. Already our call for evidence has been heard. Thousands of readers have written sending us their thoughts, perceptions and suspicions, their photographs, video- and audiotapes, their samples of earthly (or unearthly?) leaves, rocks and offerings from backyards and mountaintops throughout the country and the world.

A reader from Canada describes a mysterious object he says smashed into the waters of Shag Harbour, Nova Scotia, three decades ago. "What the Shag Harbour UFO crash lacks in high drama, it gains in solid documentation," this eloquent letter states. "There were many witnesses, and virtually no one of sufficient age in Nova Scotia's Shelburne or Yarmouth counties has forgotten the event. I am still uncovering new evidence, and have even interviewed witnesses from the Royal Canadian Air Force, Coast Guard, and Police."

A reader from Staunton, Virginia, described "a bright red" disc in the night sky above his home. "In the middle were four round black circles," he reports. "When the object floated over the apartments, it seemed to stop and turn one of its sides up. Then it did something really wonderful—it blinked a good-bye. Its speed seemed to go from 200 miles an hour to God-knows-what, and it was gone."

And from the owner of a bed and breakfast inn and dairy farm in northern Vermont we heard this: "Sunday, January 6, 1994, I had two guests from Washington, DC. We had been watching a video and when it went off, everyone was heading up to bed. My husband was already upstairs, but my son and I and one of our guests (an astrophysicist, now lawyer) decided to check the outside temperature. We went over to my large front window to look out at the thermometer (it was 28 degrees Fahrenheit) and we saw two bright lights in the sky across the street. I thought helicopter. But there wasn't any noise, and the two lights were spaced very wide apart. It moved so slowly. We just looked at each other, saying, 'What is it?' Regardless of the cold, we ran out onto my front porch. It was a very gray sky that night, with the threat of snow. The object—two large rectangle shapes connected by a central square or triangle—was slowly moving directly toward us, without a sound, and flew almost directly over our heads. Only then did I hear a faint rumble, like a deeper version of the sound you hear when you place a large seashell up to your ear." This witness reports that the local newspaper, the *County Courier*, eventually carried the story, turning up witnesses she hadn't known about at all. "In all, eight people reported the sighting," she recalls.

Finally, we received three separate missives on the saucerlike designs registered at the U.S. Patent Office. "There are patents in the patent office describing certain flying aircraft not of conventional design," one reader tells us. His claim: The patents link many people who have worked on special or secret projects. Another reader goes even further: "I have spent several years researching current hardware available to build these craft," he states. A third informant sent us, via overnight delivery, more than one hundred photocopied sheets of the patents themselves.

But conventional mail via "pony express" is not the only conduit to Open Book. As our online devotees have discovered, they can reach us through America Online as well. (To get to the Open Book bulletin board, type Key-

CONTINUED ON PAGE 88

BEING THERE

IMAX 3-D takes you beyond the image on the screen into a cinematic world teeming with sights and sounds.

ARTICLE BY ERIN MURPHY

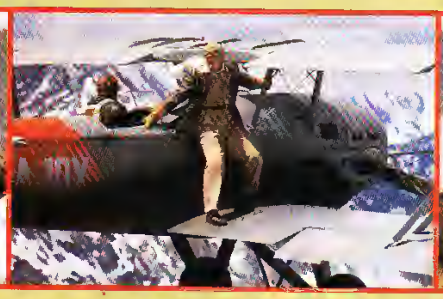
A chilly drizzle falls from the gray sky over Vancouver as the crew of *Wings of Courage* scurries about the tarmac of small Back Bay Airport to set up the film's next shot. Technicians carefully arrange lights, the special-effects crew gets into place, and actor Craig Sheffer (*A River Runs Through It*), wearing a leather flying cap and goggles, climbs into the cockpit of a World War I–era biplane mounted on a giant gimbal. At a signal from director Jean-Jacques Annaud, powerful fans whip the rain into Sheffer's face, the effects crew rocks the plane wildly to simulate a storm's buffeting winds, and Sheffer wrestles with the controls in what the script dictates will be a vain attempt to keep the plane airborne. Moments later, Annaud calls "Cut!" and the crew prepares to film it all over again.

Amid the buzz of activity, the focus of attention on the set is not Sheffer, nor any of the other actors, nor even Annaud, but instead a hulking, improbably shaped black contraption. A technician hovers constantly nearby to coset the machine as needed, but still the crew eyes it nervously for the first signs of an impending breakdown. This unlikely giant is an IMAX 3-D camera, the only one of its kind, and while Sheffer may play the film's leading role, it is truly the star of this production.

Annaud and company are using the notoriously temperamental camera to shoot the first IMAX 3-D feature film ever. Set in 1930, it tells the true story of Henri Guillaumet (Sheffer), a flier for a South American airmail company run by Antoine de Saint-Exupery (*Amadeus*' Tom Hulce), an adventurer best known as the author of *The Little Prince*. Henri and his fellow pilots fly mail daily in biplanes over the Andes mountains between Santiago de Chile and Buenos Aires, sort of an extremely dangerous early version of Federal Express. The route is so treacherous that roughly one pilot is killed each month. Henri crashes in the Andes in winter and spends six tortuous days walking through the mountains, delirious with pain, cold, and weariness. He holds no real hope of saving himself, instead, he's merely trying to ensure that his body can easily be found so that his wife (Elizabeth McGovern of *Ordinary People*) will receive the money from his life-insurance policy without delay.

The Oscar-winning director has wanted to film Guillaumet's remarkable story for years but considered it too thin to sustain a 90-minute-plus movie. So when Sony Pictures Entertainment asked him to consider making a short IMAX 3-D feature to showcase in a new theater complex it's building in New York City, Annaud accepted the challenge, convinced that the new format and shorter length—*Wings* clocks in at about 35 minutes—was ideal for the tale.

And Annaud himself is ideal for the task of bringing an unproven technology to the feature-film world. His movies demonstrate his willingness to take risks professionally. The characters in *Quest for Fire* spoke only a primitive language developed expressly for the



For director Jean-Jacques Annaud, pushing the limits of technology *is* the art of filmmaking.

film. *The Bear* concentrated on its ursine stars, treating humans as only peripheral characters. In addition, Annaud is an avid student of both the history of technology and of film, and he is keenly aware of the crucial role *Wings* could play in making the IMAX 3-D format either the next logical step in the future of filmmaking or the latest technological gimmick to fall by the wayside.

"History has shown that there are two kinds of filmmakers—those happy to have sound and those who fought it, those who welcomed color as something that could make films more realistic, and those who insisted black and white was better. We now look at those who resisted new technology as fools," Annaud says, standing on the tarmac later that May afternoon as the sun peeks feebly through the clouds. "I don't want to be looked at as a fool."

IMAX 3-D seems the logical culmination of the IMAX film format. Anyone who's visited a major science center, museum, or amusement park has probably seen an IMAX film. Shown in special theaters with huge screens up to eight stories high, they're mostly science-oriented documentaries on subjects ranging from space flight to the life cycle of the Serengeti Plain. To fill those huge screens, IMAX films use a very large film frame to create an image ten times larger—and much sharper—than the 35-millimeter frame used for the vast majority of feature films. Like conventional films, most IMAX films are two-dimensional. But recently, Imax

[illegible] SCREEN IN BROADWAY

At first it was the downtown Bijou—a one- or two-story building sporting a brightly lit marquee and names like Chaplin, Swanson, and Valentino. But as war-weary Americans moved into the suburbs of the 1950s and 1960s, they took their movie houses with them. Open-walk malls, a new idea in community shopping, began to emerge as a mecca for adults and children with idle time and money to spend. Clever theater owners saw an opportunity to cash in on the growing trend—why show one picture when you can show two or ten. Today, multiplex cinemas are a permanent and entrenched feature of malls all over the country.

More recently, developers are expanding theaters into entertainment complexes complete with virtual roller coasters, video arcades, food courts, promotional tie-in vendors as well as a dizzying array of movie selections. Sony Theatres, a Sony Pictures Entertainment company, however, has taken a different spin on the old slogan that bigger is better. At the Sony IMAX Theatre in New York City, high-tech entertainment brokers are gambling that the movie-going public is ready for a future that, ironically, is also a celebration of the past.

The building's interior, designed by the architectural firm Gensler & Associates, is a strange merging of high tech and nostalgia. As Mary Jane Dodge, the IMAX project director for Sony Theatres, explains, "This complex is an homage to the great theaters of the past. With the Sony IMAX Theatre, we want to take that past into the future." Walking into the complex from Broadway Avenue, patrons are met by a 65-foot color mural collage of great movie palaces such as the Paradise Theatre and the Avalon. Downstairs, a smaller black-and-white mural depicts behind-the-scenes shots from famous films. There is even a column used as a vertical time line which traces the major events in cinema history.

Although the showcase of the complex is the IMAX Theatre with its impressive 80-by-100-foot screen, personal sound devices, and 3-D goggles, there are twelve additional theaters, ranging from 150 to 900 seats. They incorporate advanced technology into an architectural space designed "to create a cinema experience that has an entertainment value beyond the film," according to Robert Green, a partner at Gensler & Associates. Each theater, designed around Hindu, Chinese, Moroccan, Olympic, Egyptian, and other similar themes, is replete with ornate entrance portals and interior detailing, as well as state-of-the-art lighting and sound.

Going to the movies has survived world wars, the Great Depression, the Cold War, riots and revolution, disco, Disney World, and home video. At the Sony IMAX Theatre, where walking into the theater itself is still quite a thrill, there is a strong suspicion that it's not just the pictures that we've been going to see.—Anna Copeland

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Corporation which developed and owns the technology that bears its name has begun making 3-D films—again all documentaries—in the huge IMAX format. Chances are most moviegoers haven't seen one of these films—only seven of the world's 100 plus IMAX theaters can show IMAX 3-D films and just four movies have been made so far. The newest IMAX 3-D theater, Sony's 650-seat complex in New York City, opens in November with an exclusive seven-month run of *Wings of Courage*, the first IMAX 3-D narrative film slated to begin early next year.

IMAX 3-D takes all the advantages of IMAX 2-D and doubles them—literally. The basics of 3-D filming haven't changed since the 1950s, when 3-D was introduced via a variety of grade-B horror flicks. The 3-D shooting process mimics the way we see, filming everything twice with the distance between the two cameras approximately the same as that between a person's eyes—two and one-half inches. The two cameras, however, don't sit side by side. Instead, one camera is mounted horizontally, looking through a two-way mirror at the image directly ahead, and the other points down into the mirror, filming the image reflected upward.

Three-dimensional movies earned a bad reputation with audiences for various reasons: cheap glasses, bad positioning of objects within the 3-D space, poor illumination, shaky cameras and projectors, all of which combined to produce headaches, eye strain, and queasy stomachs. Aiming to solve at least the shaky-camera problem, Canada's National Film Board and ISTEC, a manufacturer of gyro-stabilized platforms that keep movie cameras rock-steady during all sorts of filming conditions, developed in the mid-1980s a gyro-stabilized camera set-up called a 3-D Rig. Like ISTEC's camera platforms, the 3-D Rig has to be suspended from a crane or a helicopter. In the late 1980s, Imax Corporation and ISTEC created a newer version of the gyro-stabilized 3-D Rig and used it to shoot two 3-D films. But filmmakers and engineers alike found the rig too bulky, and so they sacrificed the gyro and simply mounted the 3-D Rig on a tripod, which surprisingly worked just fine for most shots.

A couple of years later, Imax Corporation decided that it wanted to be able to make 3-D films in its newest film format, called IMAX SOLIDO, which uses a fisheye lens to capture a 150-degree field of view. But if such lenses were installed on the existing rig, they'd actually see part of the rig. For SOLIDO, the engineers figured out, the two cameras' lenses must be side-by-side. They worked for nearly four years on an entirely new 3-D camera, which shoots both SOLIDO and regular IMAX 3-D and which indeed has side-by-side lenses. Unlike other 3-D cameras, however, it doesn't contain two complete and separate cameras. Instead, it has two lenses and two film movements inside a single camera housing. The image viewed by each lens reflects off a mirror and then onto the unexposed film in each of the two movements. This setup actually produces a better image than most 3-D cameras because each lens and movement can capture most of the available light, according to Claude Richard, manager of the camera department at the IMAX Technology Center. The two-way mirror, or beamsplitter, used in conventional 3-D Rigs splits the light that enters the cameras, reflecting half to one lens and half to the other.

Although this prototype, dual-filmstrip camera turned out about a third smaller than its predecessors, it still amounted to a handful, to say the least. And was it up to the rigors of a feature-film shooting schedule? Even its developers didn't think so. Annaud says, "Imax told me that if you do one set-up a day you're lucky. The relatives. Clearly, such a leisurely pace would simply not work for a feature production, which normally calls for directors to shoot between 10 and 12 "set ups" or shots each day. So in June 1993, Annaud took the dual-filmstrip camera and the larger IMAX 3-D tripod-mounted rig model (which was also used on *Wings*), along with a small crew, to Telluride, Colorado, for four days, where at 13,000 feet up in the mountains he filmed a man walking. The resulting footage told no story, but it said volumes to Annaud and his collaborators. "We had to prove to ourselves—because nobody believed it—that we could do four or five set-ups a day," explains Charis Horton, *Wings* producer. "We did twenty-six shots in four days."

"Telluride taught me that I should not listen to the people who said it wasn't possible," Annaud says as the crew rattles busily around him, setting up an interior shot. "And basically what it taught me was that they were cumbersome cameras, but I could do a regular movie. I would have to struggle to make it work, but I would have something very astonishing at the end. And it told me as well that I couldn't dream of doing more than five or six set-ups a day. I'm doing 4.7 as an average.

When it comes to the IMAX 3-D cameras, "cumbersome" is a kind word. Even the dual-filmstrip model is an absolute behemoth compared to the sleek, relatively unobtrusive 35-millimeter cameras used for conventional films. The camera's size affects every aspect of the production. "We've been building the sets for these cameras," Annaud says, "and I had to think in advance where I could put the camera, angle to make the set accommodate them and not the reverse."

In many ways, the size of the camera is the least of its problems. "It's a prototype in every sense of the word. It breaks down with maddening frequency, and there's no replacement that can be whisked in. (For various reasons, the IMAX 3-D rig can't be used for many of *Wings* shots.) While filming in the mountains, after spending hours hauling all the equipment and crew members up by helicopter to the location above the tree line, once every three days, I would set my camera, get ready to shoot, say 'roll' and—" Annaud mimics the grinding sound of the camera breaking down. "You have this full unit that's been struggling for you, and the actors are emotionally prepared, and that's your day. So that's a *terribly* frustrating thing."

During a three-day visit to the set, I watch the crew spend all morning and much of an afternoon setting up and shooting a very complex scene in which a thunderstorm rages outside Henri's house, lightning flashing closer and closer. The lighting inside the house must be absolutely perfect, and a couple of crew members have to pull the heavy camera back a few feet as McGovern walks from one room to another to turn off a light. Filming this scene once presents enough of a challenge, but this is the *second* time around. The first time, a screw had worked loose and closed the shutter on one of the two lenses inside the camera housing, effectively shooting the scene in 2-D. The crew had no idea the camera had malfunctioned until they watched the rushes days later at Vancouver's IMAX 3-D theater.

Because the only place you can see IMAX 3-D footage in 3-D is in such a theater, Annaud has no way of knowing exactly what he's shooting. Indeed, the camera doesn't even have a viewfinder to look through. Instead, Annaud and cinematographer Robert Fraisse, nominated for an Oscar for his work on Annaud's *The Lover*, peer at a grainy black-and-white image on a tiny video monitor plugged into the camera. "We're blind," Annaud says simply, as

he discusses the aggravation of not seeing on the viewfinder what I am going to project on a screen the size of an eight-story-tall building.

Not only can Annaud not see the actors can't hear. The camera makes so much noise that during a dream sequence I watch being filmed in Saint-Exupery's office with Sheffer just a few feet away from Hulce, neither actor can catch more than a few words of what the other says. Hulce jokes about it as he views the scene on the video monitor and hears for the first time the lines Sheffer has uttered. The actors will need to do extensive "looping"—speaking their lines again in a studio, synchronizing them perfectly with the movements of their lips onscreen. While looping is a fairly common practice on Hollywood features, looping virtually an entire film isn't.

Even as simple a task as loading film presents a problem when filming in IMAX 3-D. The film magazines used on *Wings* hold only a few thousand feet of film, giving roughly three minutes of shooting time—usually two to three takes. "When it's dry, you can reload in ten minutes with two or three people," says Ernie McNabb, a film technology specialist with the National Film Board who's working as stereographer on this production. "On a standard camera, if an operator takes more than a minute to reload, he's considered slow."

"When you have momentum," Annaud explains, "then your actors do one take, two takes, three takes, and then about take five or six or seven, they have it, and then it's done. Here, between takes three and four, I have to reload. I lose a scene like that every week."

Just getting a scene onto celluloid can be difficult enough when filming in IMAX 3-D, but Annaud and McNabb must also worry about exactly what that scene looks like—and not just in terms of lighting and costuming. When an object appears out of place in a conventional 2-D film, a moviegoer may be annoyed; in a 3-D film, he or she can end up literally nauseated. Bad stereography—placement of objects within the 3-D space—accounts for much of the sick feeling and eye strain that viewers experience during inferior 3-D films. As stereographer, McNabb evaluates each shot, making sure that the shot composition and camera alignment don't cause the viewer's eyes to converge excessively, a problem that can result from placing objects or actors too close to the camera, or to diverge, which is completely unnatural.

Sometimes filmmakers working in 3-D play games with the camera and with the viewer's eyes, moving the camera lenses farther apart or closer together to make things onscreen look smaller or larger respectively than they actually are. Annaud, however, has shied away from these visual tricks, electing to present images as naturally as possible. That includes virtually eliminating the old standby of 3-D films: objects surging out of the screen toward the moviegoer for no practical reason whatsoever. "Why do I need to have the actors throwing things at me?" Annaud asks. "I mean, it's silly. In movies, you don't have things thrown at you. I always remember the mistakes of the first talkies, where people believed that because it was a movie with sound, you had to sing all the time."

Rather than shooting objects out of the screen at moviegoers, Annaud wants to bring viewers *into* the 3-D space created onscreen. IMAX, in particular, makes that possible, he says, because its clarity and size create an image amazingly close to reality. "It puts you in a situation where you can believe more in what you see. In IMAX 3-D, if you have a wide landscape and it's very windy, you would see the grass moving, shh-shh-shh, so you would feel wind—I should say the texture of wind—while in a regular 2-D movie there's no way I can show you that. I have to have a tree bending in front of you to give you the idea—not the feeling, but the idea—of wind," Annaud continues. "You never feel it on your skin. In IMAX 3-D, when you see dust, you close your eyes because you're afraid it's getting on your cornea."

Sheffer found himself taken aback by the reality of the IMAX 3-D image, particularly when he watched footage of himself. "It was the first time that I've seen myself the way I imagine others see me," he says. "Physically, the image on the screen is rounder, so it makes the character's personality rounder and more real somehow. It was almost like sitting beside myself—very dreamlike and yet very real."

SHEFFER FOUND HIMSELF TAKEN ABACK BY THE REALITY OF THE IMAX 3-D IMAGE, PARTICULARLY WHEN HE WATCHED FOOTAGE OF HIMSELF. "IT WAS ALMOST LIKE SITTING BESIDE MYSELF—VERY DREAMLIKE AND YET VERY REAL."

Of course, having a film image simulate reality so perfectly opens an unexpected can of worms for a feature film crew. After all, what they're filming is most definitely *not* reality. Filmmaking is about cheating. Annaud concedes, "and here we almost cannot cheat." Everything the IMAX camera sees ends up onscreen in crisp, clear color—and it sees everything. "In IMAX, if you can see it with your eyes, you can see it on the screen," says producer Horton, which means you can't have fake marble walls; you can't have fake anything. If you can see it's fake with your eye, it'll look fake on the screen.

To make the sets look as authentic as possible, the set dressers on *Wings* searched for as many real set decorations and props as possible, unearthing vintage Argentinian newspapers and old calendars—all in Spanish. The wardrobe crew dressed the cast only in natural materials available in 1930, keeping an eagle eye out for seemingly minor anomalies such as plastic buttons that would stand out in IMAX like a wristwatch on a Roman centurion. Such attention to detail added considerably to *Wings*' budget, which Horton coyly characterizes only as "more than a Merchant-Ivory picture but less than *Cliffhanger*."

The audience will have time to take a leisurely look at all of those carefully chosen items because the average shot in *Wings* lasts at least 10 seconds—a veritable eternity in these MTV quick-cut times. "What you want to do in an IMAX theater is look around the screen," Horton points out. Annaud and his co-writer, Alain Godard (*The Name of the Rose*), deliberately wrote the script as more of a stage play than a film, with relatively few cuts and none of them fast. Sent to Cameroon in his youth to inaugurate a film industry there, Annaud draws a parallel between natives seeing movies for the first time and modern audiences unfamiliar with IMAX 3-D. "The natives would always prefer a long scene because there was time to make up their minds. 'Oh, this is a building,' and 'this is a cloud,' and so on. Editing was disturbing for them. We are those primitives with this new medium in 3-D. That's why I'm doing slow movements because then the perspective is changing slowly and the viewer can feel comfortable." (For the same reason, Annaud decided to make *Wings* a

relatively short film he anticipates making two more 30- to 40-minute films one about Saint-Exupery and another about heroic aviator Jean Mirmoz (played by Val Kilmer of *Tombstone* and *The Doors*) and ultimately stitching the three together into a full-length IMAX 3-D feature)

Virtually a walking history of film Annaud a moment later likens the unhurried look of *Wings of Courage* to a Hitchcock movie He would do scenes two minutes three minutes sometimes the whole roll—eleven minutes It has an advantage It takes you to the real tempo of life Most movies are shot rather quickly and in a way where you can manipulate your reality because of the amount of coverage —shooting a scene from many different angles so that the director can choose among them in the editing room Here my manipulation is quite different I have to build it in with the lighting with the framing It requires much more attention at this stage If I do a mistake m cooked he says with a laugh

Wings visual style may be old-fashioned at heart but its sound is high-tech all the way Besides the six channels of top-notch stereo sound broadcast through the theater speakers *Wings* audiences will hear two channels of three-dimensional sound through a special headset called the Personal Sound Environment (PSE) distributed to each moviegoer Developed by Imax affiliate Sonics Associates of Birmingham Alabama the PSE incorporates both IMAX 3-D glasses and tiny speakers mounted between the lenses of the glasses and the wearers ears The key to producing 3-D sound lies in the unique placement of those speakers the result of about two years of research according to Stevan Saunders Sonics director of research and development In a 3-D film the visuals follow you around the room no matter where you are he says Sound out of loudspeakers even the best loudspeakers doesn t do that You can do really well at producing 3-D sound out of loudspeakers with the listener in the right seat What we ve done is basically attached that spot to the listeners head

Ironically the recording technology used in conjunction with the PSE dates back 50 years This technique known as binaural recording places microphones in the ears of a model of a human head to capture sound the way we actually hear it When recording sound effects binaurally for a film soundtrack for example the sound-effects technician duplicates in the studio the movements of the actor or object producing those sounds onscreen

CONTINUED ON PAGE 98

ISOBEL AVENS
RETURNS TO STEPNEY IN THE SPRING

The third of September this year I spent the evening watching TV in an upstairs flat in North London. Some story of love and transfiguration, cropped into all the wrong proportions for the small screen. The flat wasn't mine. It belonged to a friend I was staying with. There were French posters on the walls, dusty CDs stacked on the old-fashioned sideboard, piles of newspapers subsiding day by day into yellowing fans on the carpet. Outside, Tottenham stretched away, Greek driving schools, Turkish social clubs. Turn the TV off and you could hear nothing. Turn it back on and the film unrolled, passages of guilt with lost edges, photographed in white and blue light.

At about half past eleven the phone rang. I picked it up. "Hello?"

FICTION BY M. JOHN HARRISON ❤ ILLUSTRATION BY RAFAL OLBINSKI

It was Isobel Avens

Oh China she said She burst into tears

I said Can you drive ?"

"No" she said

I looked at my watch "I'll come and fetch you"

"You can't" she said "I'm here You can't come here"

I said "Be outside love Just try and get yourself downstairs Be outside and I'll pick you up on the pavement there"

There was a silence

Can you do that ?"

"Yes" she said

Oh China The first two days she wouldn't get much further than that

"Don't try to talk" I advised

London was as quiet as a nursing home corridor I turned up the car stereo Tom Waits *Downtown Train* Music stuffed with sentiments you recognise but daren't admit to yourself I let the BMW slip down Green Lanes through Camden into the centre then west I was pushing the odd traffic light at orange clipping the apex off a safe bend here and there I told myself I wasn't going to get killed for her What I meant was that if I did she would have no one left I took the Embankment at eight thousand revs in fifth gear nosing down heavily on the brakes at Chelsea Wharf to get round into Gunter Grove No one was there to see By half past twelve I was on Queensborough Road where I found her standing very straight in the mercury light outside Alexander's building the jacket of a Karl Lagerfeld suit thrown across her shoulders and one piece of expensive leather luggage at her feet She bent into the car Her face was white and exhausted and her breath stank The way Alexander had dumped her was as cruel as everything else he did She had flown back steerage from the Miami clinic reeling from jet lag expecting to fall into his arms and be loved and comforted He told her As a doctor I don't think I can do any more for you The ground hadn't just shifted on her it was out from under her feet Suddenly she was only his patient again In the metallic glare of the street lamps I noticed a stipple of ulceration across her collarbones I switched on the courtesy light to look closer Tiny hectic sores closely spaced

I said Christ Isobel

"It's just a virus" she said "Just a side effect"

"Is anything worth this?"

She put her arms around me and sobbed

"Oh China China"

It isn't that she wants me only that she has no one else Yet every time I smell her body my heart lurches The years I lived with her I *slept* so soundly Then Alexander did this irreversible thing to her the thing she had always wanted and now everything is fucked up and eerie and it will be that way forever

I said "I'll take you home

Will you stay?

What else?"

My name is Mick Rose which is why people have always called me "China" From the moment we met Isobel Avens was fascinated by that Later she would hold my face between her hands in the night and whisper dreamily over and over— Oh China China China China But it was something else that attracted her to me The year we met she lived in Stratford-on-Avon

IT ISN'T THAT SHE WANTS ME, ONLY THAT SHE HAS NO ONE ELSE. YET EVERY TIME I SMELL HER BODY MY HEART LURCHES. THE YEARS I LIVED WITH HER I SLEPT SO SOUNDLY. NOW EVERYTHING IS EERIE.

I walked into the café at the little toy aerodrome they have there and it was she who served me She was twenty-five years old slow heavy-bodied easily delighted by the world Her hair was red She wore a rusty pink blouse a black ankle-length skirt with lace at the hem Her feet were like boats in great brown Dr Martens shoes When she saw me looking down at them in amusement she said "Oh these aren't my real Docs these are my cheap imitation ones" She showed me how the left one was coming apart at the seams "Brilliant eh ?" She smelled of vanilla and sex She radiated heat I could always feel the heat of her a yard away

"I'd love to be able to fly" she told me

She laughed and hugged herself

"You must feel so free"

She thought I was the pilot of the little private Cessna she could see out of the cafe window In fact I had only come to deliver its cargo—an unadmitted load for an unadmitted destination—some commercial research centre in Zurich or Budapest At the time I called myself Rose Medical Services Plc My fleet comprised a single Vauxhall Astra van into which I had dropped the engine brakes and suspension of a two litre GTE insurance write-off I specialised If it was small I guaranteed to move it anywhere in Britain within twelve hours, occasionally if the price was right to selected points in Europe Recombinant DNA viruses at controlled temperatures sometimes in live hosts cell cultures in heavily armoured flasks What they were used for I had no idea I didn't really want an idea until much later and that turned out to be much too late

I said It can't be so hard to learn.

Flying?

"It can't be so hard"

Before a week was out we were inventing one another hand over fist It was an extraordinary summer You have to imagine this—

Saturday afternoon Stratford Waterside The river has a lively look despite the breathless air and heated sky above it Waterside is full of jugglers and fire-eaters entertaining thick crowds of Americans and Japanese There is hardly room to move Despite this on a patch of grass by the water two lovers trapped in the great circular argument are making that futile attempt all lovers make to get inside one another and stay there for good He can't stop touching her because she wants him so She wants him so because he can't stop touching her A feeding swan surfaces caught up with some strands of very pale green weed Rippling in the sudden warm breeze which blows across the river from the direction of the theatre these seem for a moment like ribbons tied with a delicate knot— the gentle deliberate artifice of a conscious world

Oh look! Look!" she says

He says "Would you like to be a swan?

"I'd have to leave the aerodrome"

He says "Come and live with me and be a swan"

Neither of them has the slightest idea what they are talking about

Business was good Within three months I had bought a second van I persuaded Isobel Avens to leave Stratford and throw in with me On the morning of her last day at the aerodrome she woke up early and shook

me until I was awake, too.

"China!" she said.

"What?"

"China!"

I said, "What?"

"I flew!"

It was a dream of praxis. It was a hint of what she might have. It was her first step on the escalator up to Alexander's clinic.

"I was in a huge computer room. Everyone's work was displayed on one screen like a wall. I couldn't find my A-prompt!' People laughed at her, but nicely. 'It was all good fun, and they were very helpful.' Suddenly she had learned what she had to know, and she was floating up and flying into the screen, and through it, 'out of the room, into the air above the world.' The sky was crowded with other people, she said. 'But I just went swooping past and around and between them.' She let herself fall just for the fun of it; she soared, her whole body taut and trembling like the fabric of a kite. Her breath went out with a great laugh. Whenever she was tired, she could perch like a bird. 'I loved it!' she told me. 'Oh, I loved it!'

How can you be so jealous of a dream?

I said, "It sounds as if you won't need me soon."

She clutched at me.

"You help me to fly," she said. 'Don't dare go away, China! Don't dare!'

She pulled my face close to hers and gave me little dabbing kisses on the mouth and eyes. I looked at my watch. Half past six. The bed was already damp and hot. I could see that we were going to make it worse. She pulled me on top of her, and at the height of things, sweating and inturned and breathless and on the edge, she whispered, "Oh, lovely, lovely, lovely' as if she had seen something I couldn't. 'So lovely, so beautiful!' Her eyes moved as if she was watching something pass. I could only watch her, moving under me, marvellous and wet, solid and real, everything I ever wanted.

The worst thing you can do at the beginning of something fragile is to say what it is. The night I drove her back from Queensborough Road to her little house in the gentrified East End, things were very simple. For forty-eight hours all she would do was wail and sob and throw up on me. She refused to eat; she couldn't bear to sleep. If she dropped off for ten minutes, she would wake silent for the instant it took her to remember what had happened. Then this appalling dull asthmatic noise would come out of her—"zhhh, zhhh, zhhh"—somewhere between retching and whining—as she tried to suppress the memory and wake me up and sob, all at the same time.

I was always awake anyway.

"Hush now, it will get better. I know."

I knew because she had done the same thing to me.

"China, I'm so sorry."

"Hush. Don't be sorry. Get better."

"I'm so sorry to have made you feel like this."

I wiped her nose.

"Hush."

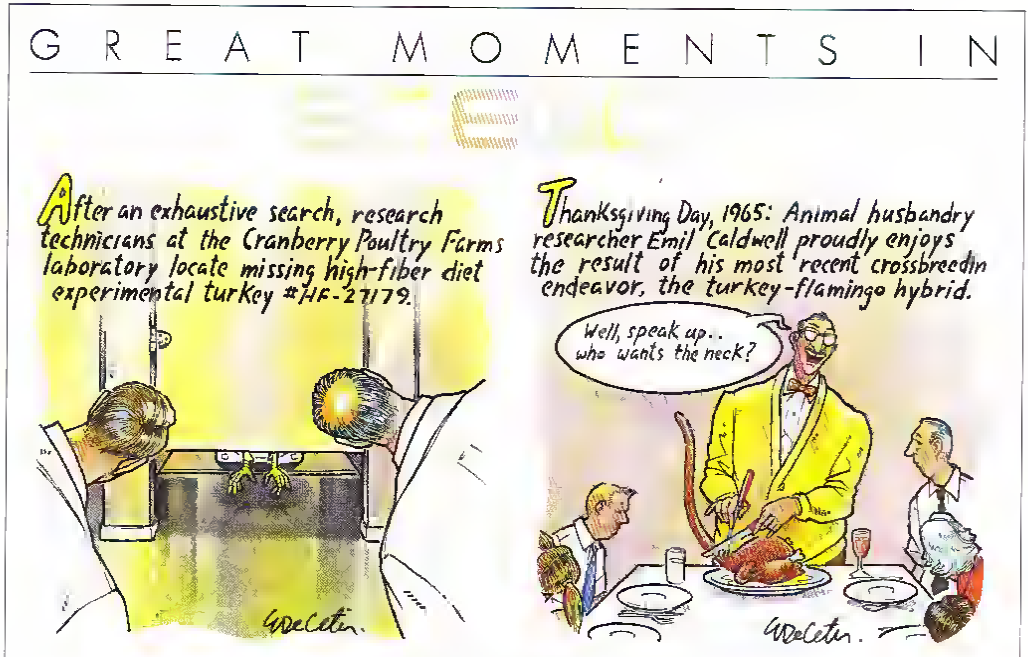
That part was easy. I could dress her ulcers and take care of what was coming out of them, relieve the other effects of what they had done to her in Miami, and watch for whatever else might happen. I could hold her in my arms all night and tell lies and believe I was only there for her.

But soon she asked me, "Will you live here again, China?"

"You know it's all I want," I said.

She warned, "I'm not promising anything."

"I don't want you to," I said. I said, "I just want you to need me for something."



SATIRE BY ERIC JAY DECETIS

That whole September we were as awkward as children We didn't quite know what to say We didn't quite know what to do with one another We could see it would take time and patience We shared the bed rather shyly and showed one another quite ordinary things as gifts

"Look!

Sunshine fell across the breakfast table onto lilies and pink napery (I am not making this up)

"Look!"

A grey cat nosed out of a doorway in London E3

"Did you have a nice weekend?"

"It was a lovely weekend Lovely"

"Look"

Canary Wharf shining in the oblique evening light!

In our earliest days together while she was still working at the aerodrome I had watched with almost uncontainable delight as she moved about a room I had stayed awake while she slept so that I could prop myself up on one elbow and look at her and shiver with happiness Now when I watched it was with fear For her For both of us She had come down off the tightrope for awhile But things were still so precariously balanced Her new body was all soft new colours in the bedside lamplight She was thin now, and shaped quite differently but as hot as ever, hot as a child with fever When I fucked her she was like a bundle of hot wires I was like a boy I trembled and caught my breath when I felt with my fingertips the damp feathery lips of her cunt but I was too aware of the dangers to be carried away I didn't dare let her see how much this meant to me Neither of us knew what to want of the other anymore We had forgotten one another's rhythms In addition she was remembering someone else's it was Alexander who had constructed for me this bundle of hot thin hollow bones wrapped round me in the night by desires and demands I didn't yet know how to fulfill Before the Miami treatments she had loved me to watch her as she became aroused Now she needed to hide at least for a time She would pull at my arms and shoulders shy and desperate at the same time then as soon as I understood that she wanted to be fucked push her face into the side of mine so I couldn't look at her After awhile she would turn onto her side encourage me to enter from behind stare away into some distance implied by us our failures the dark room I told myself I didn't care if she was thinking of him Just so long as she had got this far which was far enough to begin to be cured in her sex where he had wounded her as badly as anywhere else I told myself I couldn't heal her there only allow her to use me to heal herself

At the start of something so fragile the worst mistake you can make is to say what you hope But inside your heart you can't help speaking and by that speech you have already blown it

After Isobel and I moved down to London from Stratford business began to take up most of my time Out of an instinctive caution I dropped the word "medical" from the company description and called myself simply Rose Services Rose Services soon became twenty quick vans some low-cost storage space and a licence to carry the products of new genetic research to and from Eastern Europe If I was to take advantage of the expanding markets there I decided I would need an office

"Let's go to Budapest" I said to Isobel

She hugged my arm

"Will there be Ice on the Danube?" she said

"There will

There was

"China we came all the way to Hungary!

She had never been out of Britain She had never flown in an aeroplane She was delighted even by the hotel I had booked us into a place called the Palace on Rakoczi Street Like the city

itself the Palace had once been something now it was a dump Bare flex hung out of the light switches on the fourth-floor corridors The wallpaper had charred in elegant spirals above the corners of the radiators Every morning in the famous Jugendstil restaurant they served us watery orange squash The rooms were too hot Everything else—coffee food water from the cold tap—was lukewarm It was never quiet even very late at night Ambulances and police cars warbled past Drunks screamed suddenly or made noises like animals But our room had French windows opening onto a balcony with wrought-iron railings From there in the freezing air we could look across a sort of high courtyard with one or two flakes of snow falling into it at the other balconies and their lighted windows That first evening Isobel loved it

"China isn't it fantastic? Isn't it?"

Then something happened to her in her sleep I wouldn't have known but I woke up unbearably hot at 3 00 a m sweating and dry-mouthed beneath the peculiar fawn-fur blanket they give you to sleep under at the Palace The bathroom was even hotter than the bedroom and smelled faintly of very old piss When I turned the tap on to splash my face nothing came out of it I stood there in the dark for a moment swaying while I waited for it to run I heard Isobel say reasonably "It's a system fault"

After a moment she said "Oh no Oh no" in such a quiet sad voice that I went back to the bed and touched her gently

"Isobel Wake up"

She began to whimper and throw herself about

"The system's down" she tried to explain to someone

"Isobel Isobel"

"The system!"

"Isobel"

She woke up and clutched at me She pushed her face blindly into my chest She trembled

"China!"

It was February a year or two after we had met I didn't know it but things were already going wrong for her Her dreams had begun to waste her from the inside

She said indistinctly "I want to go back home"

"Isobel it was only a dream"

"I couldn't fly" she said

She stared up at me in astonishment

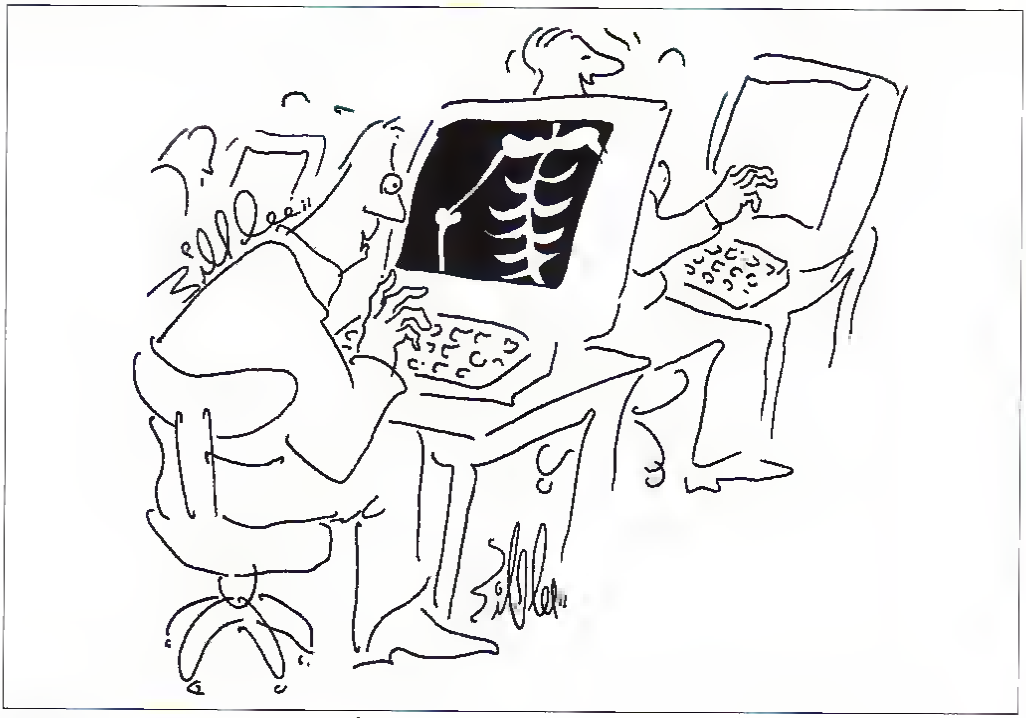
"China I couldn't *fly*"

At breakfast she hardly spoke All morning she was thoughtful and withdrawn But when I suggested that we walk down to the Danube via the Basilica at St Stephen's cross over to Buda and eat lunch she seemed delighted The air was cold and clear The trees were distinct and photographic in the bright pale February light We stared out across the New City from the Disney-white battlements of Fishermen's Bastion "Those bridges!" Isobel said "Look at them in the sun!" She had bought a new camera for the trip a Pentax with a motor-wind and zoom "I'm going to take a panorama" She eyed the distorted reflection of the Bastion in the mirror-glass windows of the Hilton hotel "Stand over there China I want one of you too No *there* you idiot!" Snow began to fall in flakes the size of five-forint pieces

"China!"

For the rest of the day—for the rest of the holiday—she was as delighted by things as ever We visited the zoo ("Look! Owls!") We caught a train to Szentendre We photographed one another beneath the huge winged woman at the top of the Gellert Hill We translated the titles of the newsstand paperbacks

"What does this mean 'Nagy Secz'?"



"You know very well what it means Isobel"

I looked at my watch

I said "It's time to eat"

"Oh no. Must we?"

Isobel hated Hungarian food

"China" she would complain "why has *everything* got *cream* on it?"

But she loved the red and grey buses. She loved the street signs TOTO LOTTO HIRLAP TRAFIK. She loved Old Buda redeemed by the snow white clean properly picturesque.

And she couldn't get enough of the Danube.

"Look China it's fucking huge! Isn't it fucking huge?"

I said "Look at the speed of it."

At midnight on our last day we stood in the exact centre of the Erzsebet bridge gazing north. Szentendre and Danube Bend were out there somewhere locked in a Middle European night stretching all the way to Czechoslovakia. Ice floes like huge lily pads raced toward us in the dark. You could hear them turning and dipping under one another piling up briefly round the huge piers jostling across the whole vast breadth of the river as they rushed south. No river is ugly after dark. But the Danube doesn't care for anyone without warning the Medieval cold came up off the water and reached onto the bridge for us. It was as if we had seen something move. We stepped back straight into the traffic which grinds all night across the bridge from Buda into Pest.

"China!"

Be careful!

You have to imagine this—

Two naive and happy middleclass people embracing on a bridge. Caught between the river and the road they grin and shiver at one another unable to distinguish between identity and geography love and the need to keep warm.

"Look at the *speed* of it."

"Oh China the Danube!"

Suddenly she turned away.

She said "I'm cold now."

She thought for a moment.

"I don't want to go on the aeroplane," she said. "They're not the real thing after all."

I took her hands between mine.

"It will be okay when you get home," I promised.

But London didn't seem to help. For months I woke in the night to find she was awake too staring emptily up at the ceiling in the darkness. Unable to comprehend her despair I would consult my watch and ask her. "Do you want anything?" She would shake her head and advise patiently "Go to sleep now love" as if she was being kept awake by a bad period.

I bought the house in Stepney at about that time. It was in a prettily renovated terrace with reproduction Victorian street lamps. There were wrought-iron security grids over every other front door and someone had planted the extensive shared gardens at the back with ilex ornamental rowan even a fig. Isobel loved it. She decorated the rooms herself then filled them with the sound of her favourite music—The Blue Aeroplanes *Yr Own World*. Tom Petty *Learning to Fly*. For our bedroom she bought two big blanket chests and polished them to a deep buttery colour. "Come and look China! Aren't they beautiful? Inside they smelled of new wood. The whole house smelled of new wood for days after we moved in beeswax new wood dried roses.

I said "I want it to be yours."

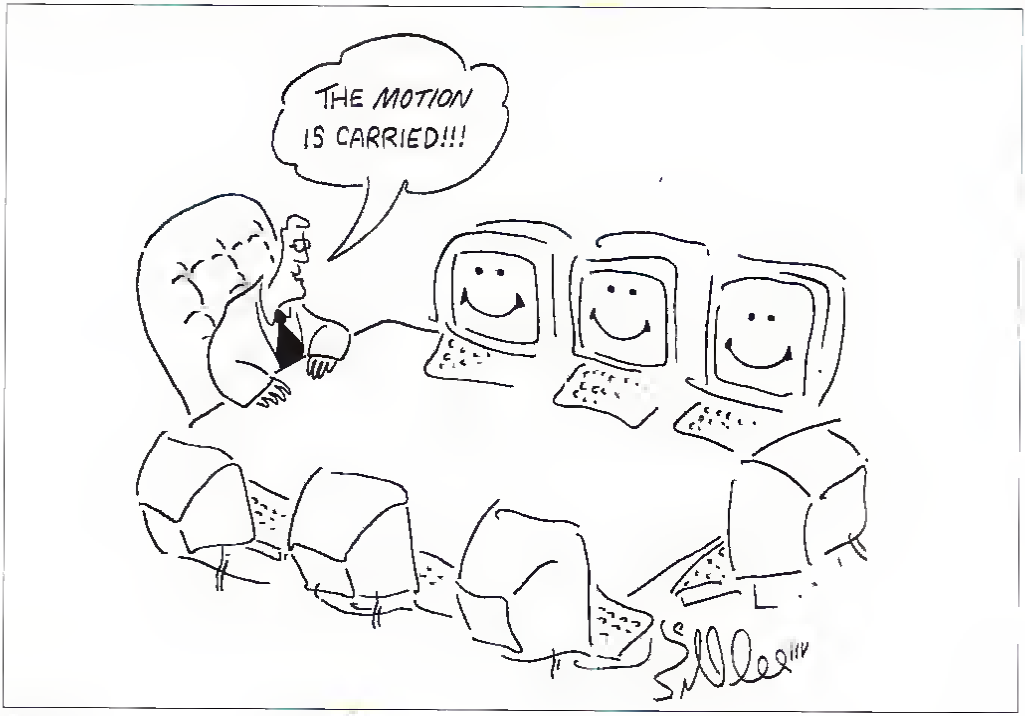
It had to be in her name anyway I admitted for accounting purposes.

"But also in case anything happens."

She laughed.

"China what could happen?"

What happened was that one of my local drivers went sick and I asked her



to deliver something for me.

I said: "It's not far. Just across to Brook Green. Some clinic."

I passed her the details.

"A Dr. Alexander. You could make it in an hour there and back."

She stared at me.

"*You* could make it in an hour," she said.

She read the job sheet.

"What do they do there?" she asked.

I said irritably: "How would I know? Cosmetic medicine. Fantasy factory stuff. Does it matter?"

She put her arms round me.

"China. I was only trying to be interested."

"Never ask them what they do with the stuff," I warned her. "Will you do it?"

She said: "If you kiss me properly."

"How was it?" I asked when she got back.

She laughed.

"At first they thought I was a patient!"

Running upstairs to change, she called down:

"I quite like West London."

Isobel's new body delighted her. But she seemed bemused too, as if it had been given to someone else. How much had Alexander promised her? How much had she expected from the Miami treatments? All I knew was that she had flown out obsessed and returned ill. When she talked, she would talk only about the flight home. I could see a sunrise over the wing of the airliner, red and gold. I was trying hard to read a book, but I couldn't stop looking out at this cold wintery sunrise above the clouds. It seemed to last for hours. She stared at me as if she had just thought of something. "How could I see a sunrise. China? It was dark when we landed!"

Her dreams had always drawn her away from ordinary things. All that gentle, warm September she was trying to get back.

"Do you like me again?" she would ask shyly.

It was hard for her to say what she meant. Standing in front of the mirror in the morning in the soft grey slanting light from the bedroom window, dazed and sidetracked by her own narcissism, she could only repeat: "Do you like me this way?"

Or at night in bed: "Is it good this way? Is it good? What does it feel like?"

"Isobel—"

In the end it was always easier to let her evade the issue.

"I never stopped liking you." I would lie, and she would reply absently as if I hadn't spoken.

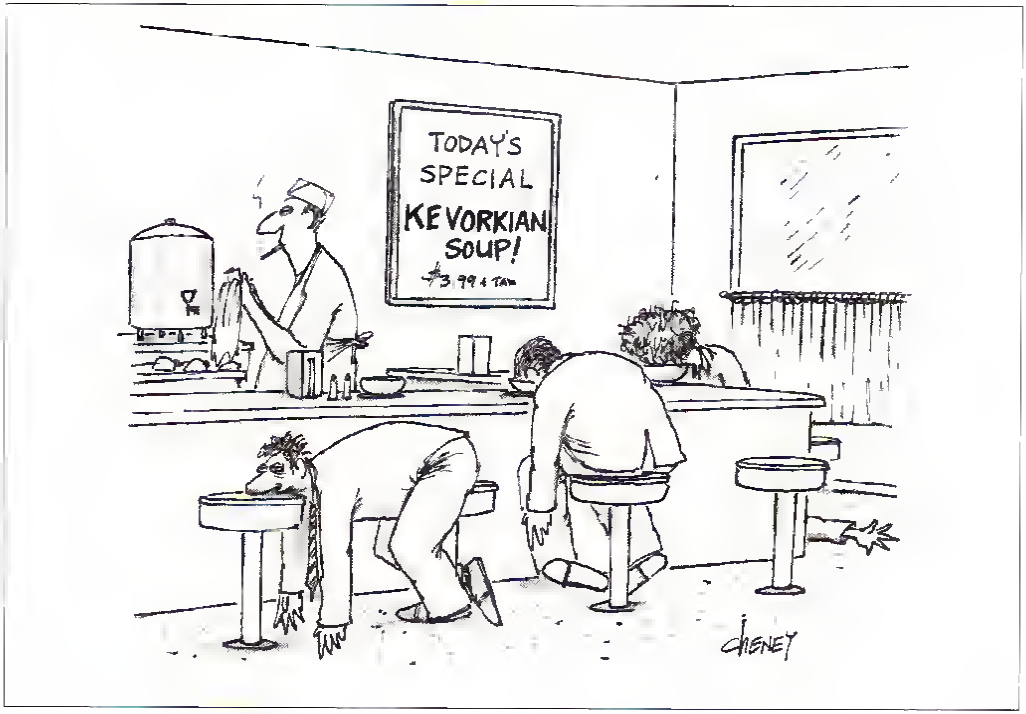
Because I want us to like each other again."

And then add, presenting her back to the mirror and looking at herself over one shoulder:

"I wish I'd had more done. My legs are still too fat."

If part of her was still trying to [illegible] back from Miami and all Miami entailed, much of the rest was in Brook Green with Alexander. As September died into October and then the first few cold days of November, I found that increasingly hard to bear. She cried in the night, but no longer woke me up for comfort. Her gaze would come unfocussed in the afternoons. Unable to be near her while thinking of him, she pretended to leaf through *Vogue* and *Harpers*. I walked out into the rainy unredeemed Whitechapel streets. Suddenly it was an hour later and I was watching the lights come on in a hardware shop window on Roman Road.

Other times, when it seemed to be going well, I couldn't contain my delight. I got up in the night and thrashed the BMW to Sheffield and back, parked outside the house and slept an hour in the rear seat, crossed the river in the morning to queue for croissants at



Ayres Bakery in Peckham playing *Empire Burlesque* so loud that if I touched the windscreen gently I could feel it tremble much as she used to do beneath my fingertips

I was trying to get back too

I'll take you to the theatre I said *Waiting for Godot* Do you want to see the fireworks? I said I brought you a present—

A Monsoon dress Two small stone birds for the garden anemones and a cheap Boots nailbrush shaped like a pig

"Don't try to get so close China she said "Please"

I said "I just want to be something to you"

She touched my arm She said "China it's too soon We're here together after all isn't that enough for now?

She said "And anyway how could you ever be anything else?

She said "I love you"

"But you're not in love with me

"I told you I couldn't promise you that

By Christmas we were shouting at one another again late into the night every night I slept on the futon in the spare room There I dreamed of Isobel and woke sweating

You have to imagine this—

The Pavilion quite a good Thai restaurant on Wardour Street Isobel has just given me the most beautiful jacket, wrapped in birthday paper She leans across the table "French Connection China Very smart" The waitresses who believe we are lovers laugh delightedly as I try it on But later when I buy a red rose and offer it to Isobel she says What use would I have for that? In a voice of such contempt I begin to cry In the dream I am 50 years old that day I wake thinking everything is finished

Or this—

Budapest Summer Rakoczi Street Each night Isobel waits for me to fall asleep before she leaves the hotel Once outside she walks restlessly up and down Rakoczi with all the other women Beneath her beige linen suit she has on grey silk underwear She cannot explain what is missing from her life but will later write in a letter "When sex fails for you—when it ceases to be central in your life—you enter middle age a zone of the most unclear exits from which some of us never escape" I wake and follow her All night it feels like dawn Next morning in the half-abandoned Jugendstil dining room, a paper doily drifts to the floor like a leaf while Isobel whispers urgently in someone else's voice

"*It was never what you thought it was*"

Appalled by their directness, astonished to find myself so passive I would struggle awake from dreams like this thinking "What am I going to do? What am I going to do?" It was always early It was always cold Grey light silhouetted a vase of dried flowers on the dresser in front of the uncurtained window but the room itself was still dark I would look at my watch turn over and go back to sleep One morning in the week before Christmas I got up and packed a bag instead I made myself some coffee and drank it by the kitchen window listening to the inbound city traffic build up half a mile away When I switched the radio on it was playing Billy Joel's *She's Always a Woman* I turned it off quickly and at 8.00 woke Isobel She smiled up at me

"Hello" she said "I'm sorry about last night"

I said "I'm sick of it all I can't do it I thought I could but I can't"

"China what is this?

I said "You were so fucking sure he'd have you Three months later it was you crying not me"

"China—

"It's time you helped," I said.

I said, "I helped *you*. And when you bought me things out of gratitude I never once said, 'What use would I have for that?'"

She rubbed her hands over her eyes.

"China, what are you talking about?"

I shouted, "What a fool you made of yourself!" Then I said, "I only want to be something to you again."

"I won't stand for this," Isobel whispered. "I can't stand this."

I said, "Neither can I. That's why I'm going."

"I still love him, China."

I was on my way to the door. I said, "You can have him then."

"China, I don't *want* you to go."

"Make up your mind."

"I won't say what you want me to."

"Fuck off, then."

"It's you who's fucking off, China."

It's easy to see now that when we stood on the Erzsebet Bridge the dream had already failed her. But at the time—and for some time afterward—I was still too close to her to see anything. It was still one long arc of delight for me, Stratford through Budapest, all the way to Stepney. So I could only watch puzzledly as she began to do pointless, increasingly spoiled things to herself. She caught the tube to Camden Lock and had her hair cut into the shape of a pigeon's wing. She had her ankles tattooed with feathers. She starved herself, as if her own body were holding her down. She was going to revenge herself on it. She lost twenty pounds in a month. Out went everything she owned, to be replaced by size 9 jeans, little black spandex skirts, expensively tailored jackets which hung from their own ludicrous shoulder pads like washing.

"You don't look like you anymore," I said.

"Good. I always hated myself any way."

"I loved your bottom the way it was," I said.

She laughed.

"You'll look haggard if you lose anymore," I said.

"Piss off, China. I won't be a cow just so you can fuck a fat bottom."

I was hurt by that, so I said, "You'll look old. Anyway, I didn't think we fucked. I thought we made love. Something caused me to add, "I'm losing you." And then, even less reasonably, "Or you're losing me."

"China, don't be such a baby."

Then one afternoon in August she walked into the lounge and said, "China, I want to talk to you." The second I heard this, I knew exactly what she was going to say. I looked away from her quickly and down into the book I was pretending to read, but it was too late. There was a kind of soft thud inside me. It was something broken. It was something not there anymore. I felt it. It was a door closing, and I wanted to be safely on the other side of it before she spoke.

"What?" I said.

She looked at me uncertainly.

"China, I—"

"What?"

"China, I haven't been happy. Not for some time. You must have realised. I've got a chance at an affair with someone, and I want to take it."

I stared at her.

"Christ," I said. "Who?"

"Just someone I know."

"Who?" I said. And then, bitterly, "Who do you know, Isobel?" I meant, "Who do you know that isn't me?"

"It's only an affair," she said. And, "You must have realised I wasn't happy."

I said dully, "Who is this fucker?"

"It's David Alexander."

"*Who?*"

"David Alexander. For God's sake, China, you make everything so hard! At the clinic. David Alexander."

I had no idea who she was talking about. Then I remembered.

"Chris," I said. "He's just some fucking *customer*."

She went out. I heard the bedroom door slam. I stared at the books on the bookshelves, the pictures on the walls, the carpet, dusty gold in the pale afternoon light. I couldn't understand why it was all still there. I couldn't understand anything. Twenty minutes later, when Isobel came back in again carrying a soft leather overnight bag, I was standing in the same place, in the middle of the floor. She said, "Do you know what your trouble is, China?"

"What?" I said.

"People are always just some fucking this or that to you."

"Don't go."

She said, "He's going to help me to fly, China."

"*You always said I helped you to fly.*"

She looked away.

"It's not your fault it stopped working," she said. "It's me."

"Christ, you selfish bitch."

"He wants to help me to fly," she repeated dully.

And then, "China, I *am* selfish."

She tried to touch my hand, but I moved it away.

"I can't fucking believe this," I said. "You want me to forgive you just be-

cause you can admit it?"

I don't want to lose you China"

I said. "You already have

We don't know what we might want" she said Later on Either of us"

I remembered now we had been at the beginning Stratford Waterside whispers and moans *You help me to fly China* "If you could hear yourself" I said "If you could just fucking hear yourself Isobel" She shrugged miserably and picked up her bag I didn't see her after that I did have one letter from her It was sad without being conciliatory and ended "You were the most amazing person I ever knew China and the fastest driver

I tore it up

"Were" I said "Fucking *were!*"

By that time she had moved in with him somewhere along the Network South East line from Waterloo Chiswick Kew one of those old-fashioned suburbs on a bladder of land inflated into the picturesque curve of the river with genteel deteriorating houseboats an arts centre and a wine bar on every corner West London is full of places like that— shabby" comfortable" until you smell the money Isobel kept the Stepney house I would visit it once a month to collect my things cry in the lounge and take away some single pointless item—a compact disc I had bought her a picture she had bought me Every time I went back the bedroom with its wooden chests and paper birds seemed to have filled up further with dust Despite that I could never quite tell if anything had changed Had they been in there the two of them? I stayed in the doorway so as not to know I had sold Rose Services and was living out in Tottenham drinking Michelob beer and watching Channel 4 movies while I waited for my capital to run out Some movies I liked better than others I cried all the way through *Alice in the Cities* I wasn't sure why. But I knew why I was cheering Anthony Hopkins as *The Good Father*

"You were the most amazing person I ever knew China and the fastest driver I'll always remember you"

What did I care? Two days after I got the letter I drove over to Queensborough Road at about 7 00 in the evening I had just bought the BMW I parked it at the kerb outside Alexander's clinic which was in a large postmodern block not far down from Hammersmith Gyratory Some light rain was falling I sat there watching the front entrance After about twenty minutes Alexander's receptionist came out put her umbrella up and went off toward the tube station A bit later Alexander himself appeared at the se-

CONTINUED ON PAGE 92

INTERVIEW

BRIAN MICHAEL JENKINS

DEPUTY CHAIRMAN OF THE WORLD'S FOREMOST PRIVATE INVESTIGATIVE AGENCY, JENKINS IS THE GLOBAL EXPERT ON TERRORISM AND ITS IMPACT ON OUR FUTURE.

PHOTOGRAPHS BY ROBERT SEBREE

Silent was the village of Karubama, Rwanda, with its streets of tidy brick buildings. Everybody was dead—children in the schoolyard, women under the shade tree, the faithful at church—killed in a war of the future. Not by neutron bombs, cruise missiles, or night-vision scopes, but with machetes, spears, and clubs. They were Tutsi, so the Hutu who came down from the green-terraced hillside exterminated them.

A decade ago, while others at the Rand Corporation think tank pondered nuclear strategies, Brian Jenkins worked on another world war. He can't be sure when it started, but the first entry in his wooden box of 3-by-5-inch cards reads: January 25, 1968: parcel bomb of anti-Castro group El Poder Cubano explodes in Miami. The next cards annotate a hostage kidnapping, airliner hijacking, embassy bombing. Within three years his nascent computerized database listed 1,500 terrorist attacks. "Each like a dot of color in a painting by Seurat," says Jenkins. Stepping back, could see shapes and structure, then a composition.

Historian Jenkins watched extremists failing to get their way through protest and combat: guerrillas fizzled out in South America, Israel crushed Arab armies, leftists were squelched in Japan and western Europe. He knew their struggles had not ended. They were searching for new fighting tactics. Then satellites started to beam into living rooms television pictures

from far-off places. One day in the global village square, extremists appeared as a kind of theater. In the role of desperadoes, they held guns to the heads of innocent people. They told stories of torment and abuse, and demanded retribution. Terrorist theater in Beirut commanded a TV audience in New York, London, and Peoria. "An attack in one place would overnight inspire a similar act in another part of the world," says Jenkins. "The Third World War had begun as a hundred little wars."

Terrorists murdered airline passengers at Lod Airport in Tel Aviv, and gunned down athletes at the Munich Olympics. Shocked State Department officials asked for "that guy at Rand." When asked how embassy personnel should respond if kidnapped, Jenkins interviewed ex-hostages to find out. While academics proposed theories on the psychology of terrorism, Jenkins, using systematic analysis of real histories, created a science of terrorism. Each terrorist act, each "dot" forming Jenkins' picture of the world, emerged from some conflict. Observing every war at about incident 5,000, he detected a new trend. Terrorism was getting more vicious. In 1984, he predicted that in the next century implacable foes would fight endless wars filled with atrocities. When the Soviet Union fell, other analysts offered their visions of the world after the Cold War. Jenkins has already seen it.

Born in Chicago in 1942, Jenkins was five when he first fought rival toughs in the street; he was seven when he attended the renowned Art Institute of Chicago. When his father, an entrepreneur, suffered from bad business, Brian and his parents climbed into the Ford station wagon with all they owned and headed to Phoenix. Jenkins fondly remembers driving with his father through Arizona and New Mexico selling transistor radios.

FEARING LABELS LIKE 'SOFT' OR 'TRAITOR,' TERRORIST LEADERS ARE SOMETIMES VIRTUALLY BLACKMAILED TO ESCALATE THE VIOLENCE BY DOMINATING THUGS. AS FOUNDER OF AN EXTREMIST GROUP, HOW CAN YOU RETAIN CONTROL IF YOU SEEM LESS EXTREME THAN THE NEWCOMERS?

School often bored Jenkins. Each time he got into trouble a counselor pushed him up a semester. He graduated from high school at 15, entering UCLA as a gifted student. A Fulbright fellowship took him to Guatemala City to research a doctorate on the nature of conspiracy. The High Command of Colonels had just overthrown the government. There were bombings in the streets and guerrillas in the hills. Culling old news clips for names of ringleaders of past coups, Jenkins found some were listed in the phone book. He went to see them. He was arrested twice by government authorities who were curious about this gringo's activities.

In 1965, he joined the Green Berets. Rising to the rank of captain, he served in Vietnam where he was decorated on several occasions for valor in combat. In Southeast Asia, he met researchers from Rand. On leaving the army, he joined them. Jenkins was soon briefing Congress and advising the likes of Kissinger, Inman, and Shultz—going to the front line whenever terrorists struck. After 17 years, he chaired Rand's political science department, fearing his appointment to a front office job, "where I'd sit at a desk and talk government

Living with the antediluvian.

Twenty miles of Indian Ocean and eight thousand years isolate Barrow Island from the whole of Australia.

On that red spit of clay dwell some of the world's most curiously evolved and protected creatures. Dwarf kangaroos. Eight-foot-long lizards. Pocket-sized bandicoots. And, sharing the island with them, a partnership of more than two hundred oil workers.

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contracts, a fate worse than death," Jenkins laments.

So Jenkins went to work for Kroll Associates who, with offices around the world, investigates fraud, espionage, theft of trade secrets, computer crime and hostile takeovers. One client, the new government of Russia, wanted help in recovering some of the billions stolen by corrupt officials. Deputy Chairman Jenkins flies 300,000 miles a year overseeing Kroll's crack crisis management team, responding to kidnappings, extortion cases, product tamperings, sabotage and terrorist campaigns. In February 1993, when a bomb thundered through the parking garage of the World Trade Center, the Port Authority called in Kroll to help cope with the crisis and make the property secure again.

Jenkins now works in a gleaming Los Angeles skyscraper, wears a dark suit, and looks like a corporate executive. But really he's still a scholar on an adventure.—Paul Bagne

Omni: How can you make a facility like the World Trade Center more secure?

Jenkins: It begins with an analysis of the threat and evaluation of the risk—which isn't easy. The last bombing of this magnitude was in 1920 when suspected anarchists set off explosives in a horse-drawn wagon parked on Wall Street. When dealing with a statistically rare event, the level of security is more subjective. Perceptions are as important as statistics, catastrophes capture our attention. The odds that an American will die in a car are one in 5,000. The odds of being murdered are about one in 12,000, and those of being killed by a terrorist are less than one in 100 million. But that doesn't mean we can ignore the threat. We still had to try to protect the World Trade Center. Another catastrophic bombing could shut it down. The media and world were watching to see what would emerge. A castle with a moat? This is a free society; we were not going to turn it into a fortress. We've tried to take steps that are enough of a deterrent to persuade the next group to take their car bomb down the street.

That sounds cynical, but physical measures don't reduce terrorism—they only move the threat along. Society cannot invest enough resources to protect everything, everywhere, all the time. Someone wanting to set off a bomb in Manhattan to kill scores of people can do it. And reducing terrorism has nothing to do with access control or how thick you make the concrete wall. It requires going after the terrorists and taking their groups apart.

Omni: Will the World Trade Center bombing make domestic terrorist attacks more likely?

Jenkins: Probably, but we don't know by how much. The history of terrorism only tells us a second act is more likely than the first—whether it be a second airline hijacking or a second car bombing. Historically, while seeing Americans abroad as fair game, terrorists around the world have always distinguished between the government and the people. When TWA Flight 839 was hijacked in 1985, while the terrorists in Lebanon were threatening to kill American hostages, one terrorist even inquired about how he might get a green card to live in the United States. There was an apparent reluctance to carrying terrorism to America. The attack on the World Trade Center broke that taboo.

Omni: Why the World Trade Center?

Jenkins: It was a landmark, a symbol, and therefore a suitable venue for a dramatic attack. It was also vulnerable. Terrorist attacks are staged for drama. They want to cause the most alarm, so they go after symbols. But they must also consider feasibility. "Gee, we could blow up the Statue of Liberty, but we can't get a car full of explosives out there.' One target doesn't have a garage. Another target doesn't have a parking space. At the United Nations they can't get through the gate. If I had my way, all car bombs would go off in subgrade parking. Had that bomb gone off at that hour in any of the crowded downtown streets, hundreds of people might have been killed.

Omni: Why do you think we fear terrorism so much?

Jenkins: Terrorists choreograph violence to create an atmosphere of fear in which people will exaggerate the strength of the terrorists. People attribute great seriousness to it and alter their behavior. They cancel airline trips or support draconian measures to stop it. But the reactions go beyond the threat. Something else is going on. Condensed into an act of terrorism are other anxieties, like the fear of nuclear holocaust or muggings. Look at the outpouring of literature on terrorists with 'the bomb.' They've never had one; yet here the two fears are brought together. And in our books and movies is the wild-eyed Muslim, rooted in 2,000 years of history, armies of Persia marching against democracy in Athens, Muslims killing Christian children in the Crusades, artwork of women in chains, sailors held by Barbary pirates. To the TV screen from the Middle East came images of hostages with guns to their

heads, villains like Qaddafi, Ayatollah Khomeini, Saddam Hussein. Then Mahmud Abouhalima and his gang of bombers. Omar Abdel Rahman, a blind and bearded sheik. Such images awaken deep-rooted fears.

Omni: Who is a terrorist?

Jenkins: Not the serial killer, the drive-by shooter, not the employee who gets fired and returns to the post office with an assault rifle. Terrorism is not irrational violence. Not that terrorists think as you or I, but they have their own terrible logic. Their actions are calculated to create an atmosphere of fear and alarm to force social or political change. We have laws against the things terrorists do—murder, kidnapping, arson. They sometimes claim to be above these laws as soldiers at war. Yasser Arafat once said that no one who stands for a just cause is a terrorist. But we do not define a terrorist by his cause; we know him by the quality of his act.

Omni: The World Trade Center bombing was on the anniversary date of our first air attack of Desert Storm. One analyst said it shows the Gulf War is still on—for Muslims.

Jenkins: At Rand, we were once asked to find all dates of significance to various groups. Well, the calendar is completely filled. I can guarantee you a bomb will go off somewhere in Latin America on July 26, the anniversary of the Cuban Revolution, like a greeting card. I doubt the date of the Trade Center bombings had any magical meaning. What brought them together and gave them a sense of mission were their religious views, their support of Muslims fighting the Soviets in Afghanistan, and the trial of their comrade El Sayyid Nosair for the murder of Rabbi Meir Kahane.

Immigrating to a vastly different culture, they also faced prejudice, derision, isolation. They reacted by hurtling themselves into religious-political fervency. What must it be like for a devout Muslim to come to a city like New York? One is regularly insulted just being there. Abouhalima drove a cab, with cars cutting him off, people shouting obscenities. They saw nudity on billboards, rampant materialism. To someone with their beliefs, such images and attitudes daily mocked their religion and culture. They wanted to strike out against a society they loathed.

Omni: How is the immigrant transformed into a terrorist?

Jenkins: Terrorism begins with a conspiracy. And a conspiracy begins as talk. "How did these clowns become the government?" "I can't stand the depravity of this society." Conversations are fervent; you slam your fist on the table. You burn with rage. You decide you're willing to go beyond talk and do something. But you'll need help. A bit of testing goes on. Maybe you and I held protest signs at Nosair's trial or prayed at the same mosque or trained together to fight in Afghanistan. This gives you confidence. I won't call the cops. You take me aside and say, "We must do something." Now we are sliding into conspiracy. I say, 'My cousin will come in on this.' You say "so will my good friend." And it begins to grow. It is an intimate and fragile thing. Maybe one person in your circle leaves the room whenever there is talk of taking action. He will be assessed as someone to leave out of the conspiracy. Maybe whenever you say "something must be done," Abdul shouts, "All of them should be blown up!" Ah, there's someone to approach.

This is a self-selecting group of angry, action-oriented people. Most core members are true believers. Then others come in for membership itself. Like in street gangs, an army unit, people join to participate, to wear the colors. Their ideological grounding may be lower than the founders', but their dedication to violence may be higher. It's what the group does—the violence—that attracts them. Finally the psychopaths, the thugs, join. For them terrorism satisfies emotional needs. It is a license to blow things up, to kill. Their dedication to ideology is very low, their dedication to violence, high. The thugs begin to dominate decision-making. Fearing labels like 'soft' or 'traitor,' the leaders are virtually blackmailed into escalating violence. As founder of a self-selected extremist group, how can you retain control if you are seen as less extreme than the most extreme?

Omni: The authorities cited the "witches brew" at the World Trade Center as evidence of their amateurism.

Jenkins: That was just dangerous chemistry. They could have blown themselves up on the highway in New Jersey. Years ago someone published the *Anarchist Cookbook* that gave a recipe for making nitroglycerin on your kitchen stove. I half-suspected the authorities put it out to eliminate people crazy enough to try it. They left fingerprints, took no internal security precautions, used their real names when renting the van. Found in their possession were not only manuals on bomb making, but books about knives and martial arts.

I've seen this peculiar fascination with all instruments of violence before. Hostages from terrorist kidnappings

CONTINUED ON PAGE 99

ANTIMATTER

UFO UPDATE:
Are UFO researchers using hypnosis to manufacture memories in abductees?

Are UFO abductees describing true-to-life kidnappings at the hands of space aliens, or is the abduction experience all in the mind? Members of the False Memory Syndrome Foundation (FMSF) say they have an answer: Abductees weave their strange tales based on the suggestions of overzealous therapists who may be unaware of the new studies on hypnosis and suggestibility. In fact, say false-memory advocates, abductees may soon start suing for malpractice like any patient claiming abuse by psychiatrists, psychologists, and other assorted shrinks.

The False Memory Syndrome Foundation got its start in March 1992 in response to the cries of parents claiming they'd been wrongly accused of sexual abuse. Made up of both mental health professionals and family members trying to get to the bottom of some of these charges, the group has found that while sexual abuse is real, some claims emerge only after biased practitioners ask leading questions during therapy, casting doubt on whether actual abuse ever occurred.

Foundation Executive Director Pamela Freyd, who has a Ph.D. in education, admits her group does not investigate UFO abductions per se. However, she explains, their findings suggest abductions are the product of similarly biased practitioners who ask their clients leading questions during therapy. "Memories are reconstructed from bits and fragments and reinterpretations, they are not videotape," says Freyd. "In other words, hypnosis is not a reliable tool, and memory is not a fixed thing. People can recall what they want to recall or what they are encouraged to recall, even if the events never occurred."

"People who are confused may be led to interpret experience in light of what the hypnotist believes and suggests," notes Steven Lynn, an Ohio University psychologist who studies hypnotically induced pseudomemories. "The person becomes primed in one way or another to want to believe it," adds Concordia University psychologist Campbell Perry. Perry, an FMSF board member in Montreal, also suspects that abductees are highly responsive to hypnosis, have intense imaginations, and find it difficult to distinguish fact from fiction.

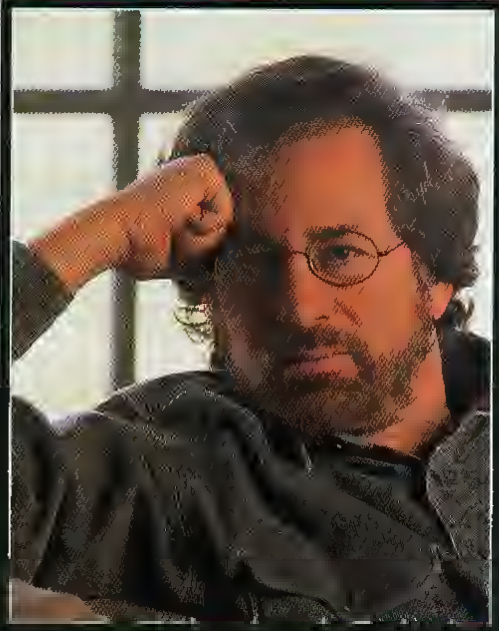
The scientific issues central to the false memory debate worry Toronto therapist David Gotlib because, he notes, it means "at least some abductee memories recalled under hypnosis may not be true."

But Temple University historian and abduction researcher David Jacobs doesn't know if the false-memory work is applicable to abductees at all. "First of all," he says, "much of FMS is based on adult recollections of childhood events, while many abductees are trying to figure out what happened to them last week." Throwing a further wrench into the works, Jacobs adds that "abduction researchers have uncovered false memories of childhood sexual abuse that masked the memory of the abduction itself."

Still, Jacobs, who often hypnotizes the abductees he works with, *is* concerned about lawsuits. "That's why I'd rather have competent mental health people dealing with this than lay people."

Perry is not reassured. "When I consider some of the flaky claims—like past lives—that people with M.D.s and Ph.D.s have accepted uncritically," he says, "I'm not surprised that some of them buy into the abduction stuff."—*PAUL McCARTHY*

ANTIMATTER



PROJECT X

It's a tad more likely than a UFO landing on the White House lawn perhaps, but that's not really saying much. The rumor is that movie mogul Steven Spielberg's next out-of-this-world project will expose the cover-up behind the mysterious crashed saucer and alien bodies that were allegedly recovered in Roswell, New Mexico, in 1947.

According to the *London Daily Mirror*, where the story first appeared, Spielberg's hush-hush, $60-million film is being called *Project X*. Not a fairy story like *E.T.* or science fiction like *Close Encounters of the Third Kind*, the new film will supposedly be science fact.

The tabloid's story, titled "Spaced Out," quotes some unnamed Hollywood insiders as saying that Spielberg has obtained some previously unseen film footage of the Roswell crash scene that was taken by a military officer. The story also claims that a team at Spielberg's Amblin Productions is working on a script for the movie, which is reportedly due to appear in 1997—the fiftieth anniversary of the infamous and controversial crash.

But Spielberg's office flatly denies these rumors. "We're not involved with this project," says Kris Kelley, a spokesperson at Amblin Productions.

Not all showbiz observers are convinced, though. Some smell a big PR job. "Their response doesn't surprise anybody," says Michael Luckman, a public relations man himself and an expert in celebrity UFO matters. "My inclination is that there is something to all of it."

People may be mixing up their paranormal p's and q's, however. A movie called *Roswell*, made for Showtime, the cable television channel, was released during the summer of 1994, but Spielberg had nothing to do with it.

On the other hand, Spielberg's company *is* shooting a movie about a nonhuman entity, but its subject is a friendly ghost by the name of Casper.

—Patrick Huyghe

MUMMY-MEISTER

You may never live like royalty, but you can now leave this world in the style of an Egyptian Pharaoh—mummified and interred in a casket featuring your portrait.

Summum Bonum Amon Ra, known as Claude "Corky" Nowell before he took the Egyptian sun god's name and founded Salt Lake City–based Summum Corporation in 1975, says that although his company's modern-day mummification process

THE BODY IS PLACED ON A TABLE AND WRAPPED IN LINEN CLOTH EMBROIDERED WITH MESSAGES BY THE CLIENT.

was inspired by ancient Egypt, it uses high-tech materials and foregoes the Egyptians' penchant for yanking the brains out through the deceased's nose.

First the corpse is soaked in a vat of preservative, then sealed with polyurethane, fiberglass, and a heat-resistant gypsum paint. Finally, the mummy is placed inside the mummiform—a bronze casket sculpted into the likeness of the deceased—and argon gas pumped in. The mummiform is welded shut, ready for place-

ment—perhaps in Ra's abandoned Utah silver mine, fashioned for his clientele as a tomb.

So far, Ra says, he has mummified 30 humans, cadavers from medical schools. "But," he adds, "137 people have contracted with us to be mummified when they die."

If you're interested in the procedure, the price will be steep. Pet mummifications run around $4,200. For humans, the basic procedure costs $32,000 but can reach half a million dollars if the client wants a 23-karat, gem-inlaid casket.

Is it worth the price? "Some people don't like the idea of their body decomposing in the ground," Ra says, "or eventually being burned. This way, they can use technology to make a memorial of their body. And it could be a gift to the future, when archaeologists exhume these mummies and study the remains."—Sherry Baker

URI TWO

He was billed as the new Uri Geller, the multimillionaire Israeli psychic whose spoon-bending feats dazzled the world in the 1970s. In March of 1994, Ronny Marcus, also from Israel, made his U.S. debut, giving a demonstration of his powers to a small private audience in New York, then submitting to tests by scientists at the University of Nevada.

For the past seven years, Marcus, born in South Africa, has practiced psychic healing from a clinic in Jerusalem. "Most of my patients come to me for bad backs, migraine headaches, and other physical ills," he explains. He had come to the United States with the hope that, like Uri Geller, "recognition from scientists" would give his work more credibility.

In New York, Marcus read the serial number of a volunteered dollar bill while blindfolded, levitated an empty matchbook, and performed some metal-bending feats.

But while Marcus impressed many in the audience, one longtime amateur magician who wishes to remain anonymous recognized all the old chestnuts. "It was a bunch of $2 magic tricks," he said.

Parapsychologist George Hansen, who has read accounts of Marcus' performances, agrees. "They're straight out of the magic catalogs."

When asked if he's a magician, Marcus denies it. "A magician brings his own spoons and forks, his own people," he says. "I don't. A magician never works with people all around him as closely as I do. And a magician does not consent to be tested at different labs. I have."

But scientific recognition will likely elude Marcus. He presented essentially the same feats to parapsychologist Dean Radin, director of the Cognitive Sciences Laboratory in the Harry Reid Center for Environmental Studies at UNLV. However, when Radin had Marcus repeat the feats in a way to prevent magical trickery, "Marcus could not do a thing," says Radin. "There was no evidence that anything he did was paranormal."

Will the next Uri Geller please stand up?

—Patrick Huyghe

HOPING TO FOLLOW IN THE FOOTSTEPS OF FELLOW ISRAELI AND MULTIMILLIONAIRE URI GELLER, PSYCHIC RONNY MARCUS CAME TO AMERICA IN SEARCH OF SCIENTIFIC CREDIBILITY AND FAME. HE MAY HAVE LEFT IN DISAPPOINTMENT.

PROJECT OPEN BOOK

CONTINUED FROM PAGE 51

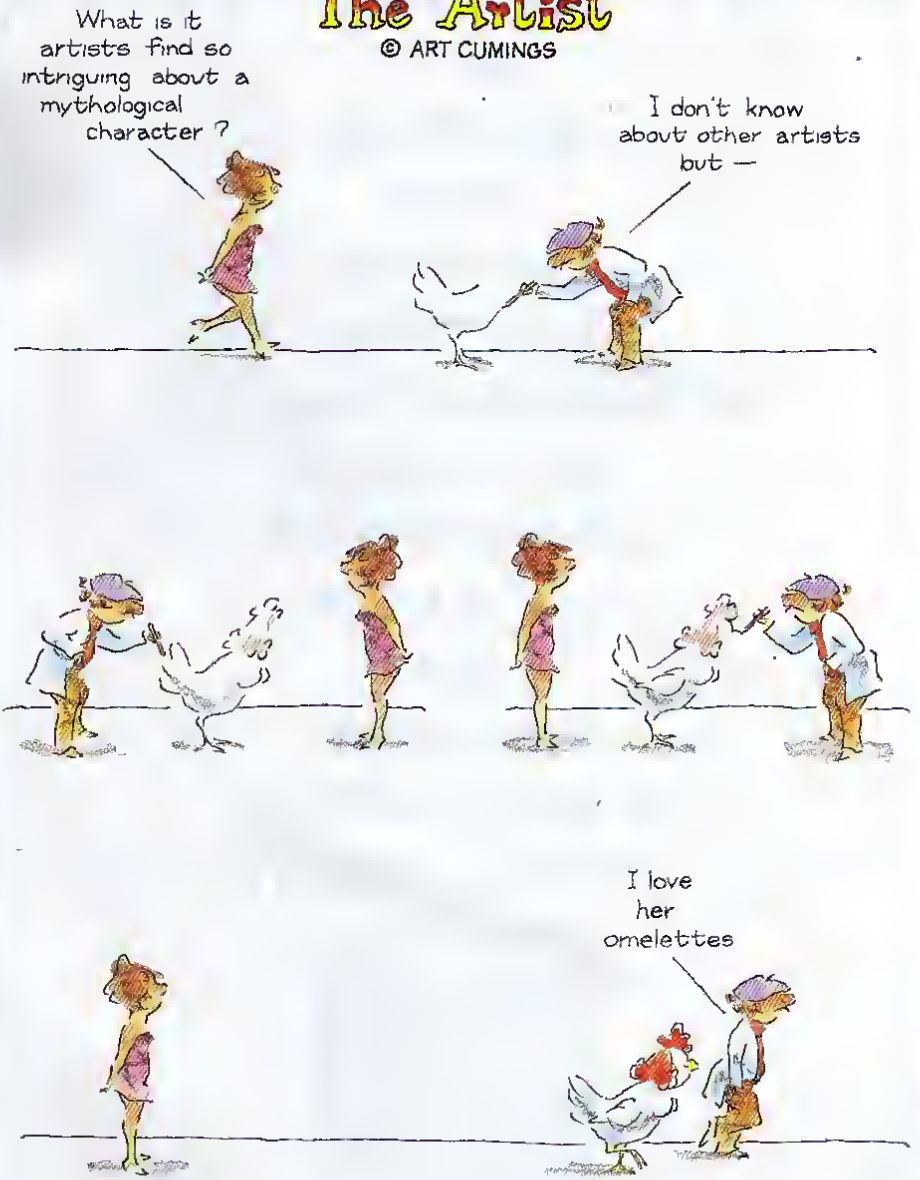
word *OMNI*. Then click *Antimatter*. Click *Message Board*. Click *List Topics*. And go to *REAL PROJECT OPEN BOOK*.) Posting on our board, a few readers have mentioned the so-called triangle craft, recently witnessed over California and elsewhere in the United States. "During the winter of 1992–1993, I was at Beale AFB, Marysville, California, and was in my backyard with my telescopes," explained one of our online regulars. "I am an amateur astronomer with over thirty years' experience, and was also a trained photo intelligence specialist in all types of systems. The date was around the third of March at about 10:30 p.m. Pacific Standard Time. I had just walked out of my warm-up shed and was walking back to my telescopes about ten feet away when I noticed something floating above me, going from southeast to northwest. The craft was a triangle shape with two rows of lights going around the middle on the two sides and was a light gray on the bottom, possibly from the reflected lights of the housing area I lived in. There was no sound of any type and no sign of engines. The craft looked to be as thick as a C-5A transport, which I have seen and flown in many times. The corners and sides were curved and were only broken by the two rows of lights. As I stood there with my mouth open, the craft traveled out of sight toward the PAVE PAWS radar site about two miles away. For a long time, I thought what I saw was the new Mach +6 reconnaissance plane that has flown near Beale for many years, but on reflection, the craft was too thick (30 to 50 feet) to travel at such speeds. Having worked with the SR71, I can say I have never seen a craft like this, and others here in the Sacramento Valley have also seen the same type of craft in January and February of this year. Any ideas?"

Since ideas are the currency Open Book trades in online, our postees have given us quite a few. For instance, our online participants have helped us fine-tune our notion of what is and what is not legitimate "proof." A few people pointed out, for instance, that radar, while an important tool, is not valid as the *only* evidence of a UFO. "Since radar is dependent upon electromagnetic waves," we were told, "it may be easily distorted by other electromagnetic waves that are man-made or natural in origin."

Our online board has also sponsored a lively discussion on the type of evidence required to prove that bona fide extraterrestrials have, in fact, been in touch with alleged abductees. The consensus can be summed up by this posting: "Real evidence, it was suggested, would come when, following abduction, an alleged abductee could deliver 'advance information of an astronomical or physical nature, not known to contemporary science but checkable or verifiable ex post facto.'"

To help us evaluate the evidence, we have chosen a small but balanced panel of experts (see sidebar). Because we need people experienced at UFO investigation, we have selected a number of researchers allied with the UFO camp; all UFO researchers on our panel have been noted not only for their field work, but also for the high quality of their *skeptical* work. To give some credence to the other side of the realm, moreover, we have solicited the help of some noted skeptics. Intent on policing the UFO field, these panel members will help us make sure we never let down our guard. To provide background and expertise, we have recruited experts in aerospace and military craft. To shed some light on the human mind, we have asked for help from

The Artist



a few psychologists. And, because *Omni's* roots are ultimately journalistic, we've selected a number of investigative reporters who will wield their craft to go through data coming up with what we hope is a semblance of truth.

Already, their investigations have begun. A. J. S. Rayl, an investigative journalist most recently writing and producing a CD-ROM on the Search for Extraterrestrial Intelligence (or SETI), is speaking with Leah Haley, the accountant-abductee. Jerome Clark, editor of the *International UFO Reporter*, is researching the Holland, Michigan, sightings and their radar components. Investigative science reporter Patrick Huyghe is on the trail of abduction cases in which multiple witnesses (and/or multiple abductees) claim to have been involved. Other Open Book panelists have been assigned to investigate the saucerlike designs in the U.S. Patent Office, the Nova Scotia water crash, and the bed-and-breakfast sighting in Vermont.

Our panel has also been poking around in the past. Longtime *Omni* writer Paul McCarthy, for instance, was intrigued by reports that an Army Air Corps nurse helped autopsy aliens recovered from a UFO that crashed near Roswell, New Mexico, in July 1947—and then just disappeared. Top Roswell researchers, in fact, told McCarthy they had attempted to find her along with other Roswell nurses to no avail, suggesting perhaps that they'd been intentionally deleted from the record for good. McCarthy decided to track the nurses, and thus far has had astonishing good luck. (Look for his Open Book report in an upcoming *Omni*.)

And James Oberg, our longtime resident skeptic, an aerospace engineer, and a world-class expert on the Soviet space program, has been looking back a decade to 1984. His current assignment: bringing new evidence to bear on a Soviet sighting already touted as having it all—visual, radar, and physical effects. Just added to the mix, Oberg tells us, is a series of sketches that now may shed light on the origin of the mysterious apparition as it changed shape, color, and size.

Today, these researchers will help Open Book move forward, joining other serious groups across the spectrum, from the Mutual UFO Network (MUFON) to the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), who have been investigating the phenomenon for years. Thanks to our readers, our efforts will be fueled by reports coming in at a steady pace from around the world. With our own perspective, our own techniques, and

our own special panel, we throw our hat into the ring. We have no way of knowing what we will find—or if we will find anything at all. We only know this: Any story we agree to look into must provide plentiful evidence to analyze, dissect and explore. From our camp without such elements as multiple witnesses, physical traces, medical documentation or electromagnetic effects, you have nothing at all.

In marking our place on the UFO map, we evoke the trajectory of our near-namesake—the frustrated Project Blue Book—and its leader, J. Allen Hynek himself. In the end, Hynek could not use science to unlock the mystery of the UFO as he had planned. Near the end of his life, ensconced in a grand hacienda in the heart of Arizona's Quartz Mountain, he glimpsed a geographic wonder: a mammoth slab of rock sculpted by nature to resemble a monk kneeling in prayer. In this gorgeous spot called Paradise Canyon, Hynek discovered fervor in his calling. Moved more by religion than reason, more by mysticism than science, Hynek the investigator was finally swept away. For him the dream had come to this: "I've often said that someday I would enjoy being snowbound on the rocky coast of Maine," he told *Omni*. "I imagine myself in front of the fireplace, keeping my friends entertained for many nights with one interesting UFO tale after the next. I'd enjoy being given the chance, as long as the food held out."

But now, at the cusp of the twenty-first century, the busboy has come and cleared the food away. In a sense, it's sad. Who can deny an attraction to the stories? After all, from a literary perspective, UFO yarns can now unequivocally take their place among the greatest ghost stories and science-fiction stories of our time. No doubt about it, from the tragicomic plight of the closet abductee and her frail, half-human "hybrid" heirs to the ominous stalwart bureaucrat who keeps crashed saucers and alien bodies under lock and key, magnificent UFO stories, rich in social commentary and psychological truth, abound. The heroes of these tales, be they missing nurses or pale hybrid children, lost forever to the world of love, have become mythological symbols for our time. We will continue to listen to their cries. But now it is also time to move on. Kicking and screaming, we must let loose our grip on these riveting, best-loved allegories and embrace the evidence, leaving literary conceits behind.

On this cautious note, and in hopes of finding some answers, our investigation begins. ◻◻

ISOBEL AVENS

CONTINUED FROM PAGE 75

curity gate. I was disappointed by him. He turned out to be a tall thin man, middle-aged, grey-haired, dressed in a light wool suit. He looked less like a doctor than a poet. He had that kind of fragile elegance some people maintain on the edge of panic, the energy of tensions unresolved. Glassy, never very far from the surface. He would always seem worried. He looked along the street toward Shepherd's Bush, then down at his watch.

I opened the nearside passenger window.

"David Alexander?" I called.

I called, "Waiting for someone?"

He bent down puzzledly and looked into the BMW.

"Need a lift?" I offered.

"Do I know you?" he asked.

I thought, Say the wrong thing, you fucker. You're that close.

I said, "Not exactly."

"Then—"

"Forget it."

He stood back from the car suddenly and I drove off.

Christmas. Central London. Traffic locked solid every late afternoon. Light in the shop windows, in the rain. Light in the puddles. Light splashing up round your feet. I couldn't keep still. Once I'd walked away from Isobel, I couldn't stop walking. Everywhere I went, *She's Always a Woman* was on the radio. Harrods, Habitat, Hamleys, Billy Joel drove me out onto the wet pavement with another armful of children's toys. I even wrapped some of them—a wooden penguin with rubber feet, two packs of cards, a miniature jigsaw puzzle in the shape of her name. Every time I saw something I liked, it went home with me.

"I bought you a present." I imagined myself saying, this fucking little spider that really jumps—

"Look!"

Quite suddenly I was exhausted. Christmas Day I spent with the things I'd bought. Boxing Day and the day after that, I lay in a chair staring at the television. Between shows I picked up the phone and put it down again, picked it up and put it down. I was going to call Isobel, then I wasn't. I was going to call her, but I closed the connection carefully every time the phone began to ring at her end. Then I decided to go back to Stepney for my clothes.

Imagine this—

Two a.m. The house was quiet.

Or this—

I stood on the pavement. When I looked in through the uncurtained ground-floor window I could see the little display of lights on the front of Isobel's CD player.

Or this—

For a moment my key didn't seem to fit the door.

Imagine this—

Late at night you enter a house in which you've been as happy as anywhere in your life, probably happier. You go into the front room, where streetlight falls unevenly across the rugs, the furniture, the mantelpiece and mirrors. On the sofa are strewn a dozen colourful, expensive shirts, blue and red and gold, like macaws and money. Two or three of them have been slipped out of their cellophane, carefully refolded and partly wrapped in Christmas paper. "Dear China—" say the tags. "Dearest China." There are signs of a struggle but not necessarily with someone else. A curious stale smell fills the room, and a chair has been knocked over. It's really too dark to see.

Switch on the lights. Glasses and bottles. Food trodden into the best kilim. Half-empty plates, two days old.

"Isobel? Isobel!"

The bathroom was damp with condensation, the bath itself full of cold water smelling strongly of rose oil. Wet towels were underfoot, there and in the draughty bedroom, where the light was already on and Isobel's pink velvet curtains, half-drawn, let a faint yellow triangle of light into the garden below. The lower sash was open. When I pulled it down, a cat looked up from the empty flowerbed, ran off. I shivered. Isobel had pulled all her favourite underclothes out onto the floor and trodden mascara into them. She had written in lipstick on the dressing table mirror, in perfect mirror writing: "Leave me alone."

I found her in one of the big blanket boxes.

When I opened the lid a strange smell—beeswax, dried roses, vomit, whiskey—filled the room. In there with her she had an empty bottle of Jameson's, an old safety razor of mine and two or three blades. She had slit her wrists. But first she had tried to shave all the downy, half-grown feathers from her upper arms and breasts. When I reached into the box they whirled up round us, both soft blue and grey, the palest rose-pink. Miami. In some confused attempt to placate me, she had tried to get out of the dream the way you get out of a coat.

She was still alive.

"China," she said. Sleepily, she held

her arms up to me. She whispered "China."

Alexander had made her look like a bird. But underneath the cosmetic trick she was still Isobel Avens. Whatever he had promised her, she could never have flown. I picked her up and carried her carefully down the stairs. Then I was crossing the pavement toward the BMW, throwing the nearside front door open and trying to get her into the passenger seat. Her arms and legs were everywhere, pivoting loose and awkward from the hips and elbows. "Christ, Isobel, you'll have to help!" I didn't panic until then.

"China,' whispered Isobel.

Blood ran into my shirt where she had put her arms round my neck.

I slammed the door.

"China."

"What, love? What?"

'China."

She could talk but she couldn't hear.

"Hold on," I said. I switched on the radio. Some station I didn't know was playing the first few bars of a Joe Satriani track, *Always with You, Always with Me*. I felt as if I was outside myself. I thought: 'Now's the time to drive, China, you fucker." The BMW seemed to fishtail out of the parking space of its own accord, into the empty arcade-game of Whitechapel. The city loomed up then fell back from us at odd angles, as if it had achieved the topological values of a Vorticist painting. I could hear the engine distantly, making a curious harsh overdriven whine as I held the revs up against the red line. Revs and brakes, revs and brakes: if you want to go fast in the city you hold it all the time between the engine and the brakes. Taxis, hoardings, white faces of pedestrians on traffic islands splashed with halogen pink, rushed up and were snatched away.

"Isobel?"

I had too much to do to look directly at her. I kept catching glimpses of her in weird, neon shop-light from Wallis or Next or What She Wants, lolling against the seat belt with her mouth half open. She knew how bad she was. She kept trying to smile across at me. Then she would drift off, or cornering forces would roll her head to one side as if she had no control of the muscles in her neck and she would end up staring and smiling out of the side window, whispering. "China. China. China. China."

'Isobel.'

She passed out again and didn't wake up.

"Shit, Isobel," I said.

We were on Hammersmith Gyratory, deep in the shadow of the flyover. It was twenty minutes since I had found her. We were nearly there. I could almost see the clinic.

I said "Shit, Isobel, I've lost it."

The piers of the flyover loomed above us, stained grey concrete plastered with anarchist graffiti and torn posters. Free and ballistic, the car waltzed sideways toward them, glad to be out of China Rose's hands at last.

"Fuck," I said. "Fuck fuck fuck."

We touched the kerb, tripped over our own feet, and began a long slow roll, like an airliner banking to starboard. We hit a postbox. The BMW jumped in a startled way and righted itself. Its offside rear suspension had collapsed. Uncomfortable with the new layout, still trying to get away from me, it spun twice and banged itself repeatedly into the opposite kerb with a sound exactly like some housewife's Metro running over the cats-eyes on a cold Friday morning. Something snapped, the window post on that side and broken glass blew in all over Isobel Avens' peaceful face. She opened her mouth. Thin vomit came out, the colour of tea, but I don't think she was conscious. Hammersmith Broadway, ninety-five miles an hour. I dropped a gear, picked the car up between steering and accelerator, shot out into Queensborough Road on the wrong side of the road. The boot lid popped open and fell off. It was dragged along behind us for a moment, then it went backward quickly and disappeared.

'China."

Draped across my arms, Isobel was nothing but a lot of bones and heat. I carried her up the steps to Alexander's building and pressed for entry. The entryphone crackled but no one spoke. "Hello?" I said. After a moment the locks went back.

Look into the atrium of a West London building at night and everything is the same as it is in the day. Only the reception staff are missing, and that makes less difference than you would think. The contract furniture keeps working. The PX keeps working. The fax comes alive suddenly as you watch, with a query from Zurich, Singapore, LA. The air conditioning keeps on working. Someone has watered the plants, and they keep working too, making chlorophyll from the overhead lights. Paper curls out of the fax and stops. You can watch for as long as you like: nothing else will happen and no one will come. The air will be cool and warm at the same time, and you will be able to see your own reflection,

very faintly in the treated glass.

'China.'

Upstairs it was a floor of open-plan offices—health finance—and then a floor of consulting rooms. Up here the lights were off, and you could no longer hear the light traffic on Queensborough Road. It was 2.50 in the morning. I got into the consulting rooms and then Alexander's office, and walked up and down with Isobel in my arms, calling.

"Alexander?"

No one came.

"Alexander?"

Someone had let us in.

"Alexander!"

Among the stuff on his desk was a brochure for the clinic's modern 'magic wand.' I read. "Brand new proteins.' I swept everything off onto the floor and tried to make Isobel comfortable by folding my coat under her head. "I'm sorry," she said quietly, but not to me. It was part of some conversation I couldn't hear. She kept rolling onto her side and retching over the edge of the desk, then laughing. I had picked up the phone and was working on an outside line when Alexander came in from the corridor. He had lost weight. He looked vague and empty, as if we had woken him out of a deep sleep. You can tear people like him apart like a piece of paper, but it doesn't change anything.

'Press 9," he advised me. "Then call an ambulance.'

He glanced down at Isobel. He said. "It would have been better to take her straight to a hospital."

I put the phone down.

"I fucked up a perfectly good car to get here,' I said.

He kept looking puzzledly at me and then out of the window at the BMW, half up on the pavement with smoke coming out of it.

I said. "That's a Hartge H27-24."

I said. "I could have afforded something in better taste, but I just haven't got any.'

"I know you," he said. "You've done work for me."

I stared at him. He was right.

I had been moving things about for him since the old Astravan days, since before Stratford. And if I was just a contract to him, he was just some writing on a job sheet to me. He was the price of a Hartge BMW with racing suspension and 17-inch wheels.

'But you did this," I reminded him.

I got him by the back of the neck and made him look closely at Isobel. Then I pushed him against the wall and stood away from him. I told him evenly. "I'm fucking glad I didn't kill you when I wanted to." I said. "Put her back together.'

He lifted his hands. "I can't," he said.

'Put her back together."

"This is only an office,' he said. "She would have to go to Miami.'

I pointed to the telephone. I said. "Arrange it. Get her there."

He examined her briefly.

'She was dying anyway," he said. "The immune system work alone would have killed her. We did far more than we would normally do on a client. Most of it was illegal. *It would be illegal to do most of it to a laboratory rat.* Didn't she tell you that?"

I said. 'Get her there and put her back together again."

'I can make her human again," he offered. "I can cure her.'

I said. "She didn't fucking want to be human."

"I know,' he said.

He looked down at his desk, his hands. He whispered. "Help me to fly. Help me to fly!'"

"Fuck off,' I said.

'I loved her, too, you know. But I couldn't make her understand that she could *never* have what she wanted. In the end she was just too demanding, effectively, she asked us to kill her."

I didn't want to know why he had let me have her back. I didn't want to compare inadequacies with him. I said. "I don't want to hear this.'

He shrugged. "She'll die if we try it again,' he said emptily. "You've got no idea how these things work.'

'Put her back together."

You tell me what else I could have said.

Here at the Alexander Clinic, we use the modern 'magic wand' of molecular biology to insert avian chromosomes into human skin-cells. Nurtured in the clinic's vats, the follicles of this new skin produce feathers instead of hair. It grafts beautifully. Brand new proteins speed acceptance. But in case of difficulties, we remake the immune system, aim it at infections of opportunity, fire it like a laser.

Our client chooses any kind of feather, from pinion to down, in any combination. She is as free to look at the sparrow as the bower bird or macaw. Feathers of any size or colour! But the real triumph is elsewhere—

Designer hormones trigger the 'brown fat' mechanism. Our client becomes as light and as hot to the touch as a female hawk. Then metabolically induced calcium shortages hollow the bones. She can be handled only with great care. And the dreams of flight! Engineered endorphins released dur-

ing sexual arousal simulate the side sweep, swoop, and mad fall of mating flight the frantically beating heart long sight Sometimes the touch of her own feathers will be enough

I lived in a hotel on the beach while it was done Miami TV prophecy humidity like a wet sheet, an airport where they won't rent you a baggage trolley You wouldn't think this listening to Bob Seger Unless you are constantly approaching it from the sea Miami is less a dream—less even a nightmare—than a place All I remember is what British people always remember about Florida the light in the afternoon storm, the extraordinary size and perfection of the food in the supermarkets I never went near the clinic, though I telephoned Alexander's team every morning and evening I was too scared One day they were optimistic, the next they weren't In the end I knew they had got involved again, they were excited by the possibilities She was going to have what she wanted They were going to do the best they could for her, if only because of the technical challenge

She slipped in and out of the world until the next spring But she didn't die, and in the end I was able to bring her home to the blackened, gentle East End in May, driving all the way from Heathrow down the inside lane of the motorway, as slowly and carefully as I knew how in my new off-the-peg 850i I had adjusted the driving mirror so I could look into the back of the car Isobel lay awkwardly across one corner of the rear seat Her hands and face seemed tiny In the soft wet English light, their adjusted bone structures looked more rather than less human Lapped in her singular successes and failures, the sum of her life to that point, she was more rested than I had ever seen her

About a mile away from the house outside Whitechapel tube station, I let the car drift up to the kerb and stop. I switched the engine off and got out of the driving seat

"It isn't far from here," I said

I put the keys in her hand

"I know you're tired," I said, "but I want you to drive yourself the rest of the way"

She said, "China, don't go Get back in the car."

"It's not far from here," I said

"China please don't go."

"Drive yourself from now on."

If you're so clever, you tell me what else I could have done All that time in Miami she had never let go, never once vacated the dream The moment she closed her eyes, feathers were floating down past them She knew what she wanted Don't mistake me I wanted her to have it But imagining myself stretched out next to her on the bed night after night, I could hear the sound those feathers made, and I knew I would never sleep again for the touch of them on my face DD

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CREDITS

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BEING THERE

CONTINUED FROM PAGE 61

Wings will employ the PSE 3-D sound sparingly, primarily to voice Henri's thoughts as he wanders through the icy landscape. Although the soundtrack work hadn't yet begun at press time, Saunders predicts that Sheffer will perhaps whisper into the ear-mounted mikes while circling the head to create the illusion of someone's thoughts coming from everywhere and nowhere at once.

Impossibly crisp images eight stories high, so real you reach out to touch them, three-dimensional sound that seems to come from inside your head—they're certainly technological advances over current moviemaking methods, but are they the future of film as sound and color were so many years ago? Annaud firmly believes so. "I still think it's impossible that in twenty years people will still go to see movies on a screen that's not much better than television," he maintains. "Because even bad television is going to be so much better. Movie theaters will have to offer a wider screen with more definition," whether it's IMAX or one of its competitors on the wide-screen front.

Theaters, studios, and filmmakers all play pivotal, interdependent roles in determining the future of wide-format films. Owners must decide that building a huge, expensive IMAX-scale theater (all of the competing wide-screen formats require supersize theaters as well) is worth their while, which it won't be unless there is a good selection of quality wide-screen films to show. It's up to studios—many of which are in the theater business themselves, like Sony, which owns the Loew's theater chain, now called Sony Theatres—to greenlight those films and to persuade top-name directors such as Annaud to make them. Will all the pieces fall together?

"What I see onscreen is just so exciting that I would take it as a personal failure if tomorrow doesn't see more and more IMAX 3-D theaters around the world," Annaud insists. But as a student of the history of technology, he also recognizes that there are many forces at work here. "It's fabulous to see the enormous resistance to an invention by the establishment," he muses. "But when the compass was invented, it changed navigation. When printing was invented, it led to the collapse of the church. These are the consequences.

"There is nothing in the history of man where an invention makes it better that it does not become the standard. This is a fact. This is evolution. This is transformation." DG

INTERVIEW

CONTINUED FROM PAGE 82

have told me their captors would get out of bed, disassemble their weapons, clean and oil them. In the afternoon they'd do it again. They are fascinated by instruments of violence. In one case, kidnappers introduced their hostage to the submachine gun that killed the American ambassador as if it were alive. Terrorists spend a lot of time fondling and talking about weapons. If you bugged their lampshade, you'd think they were up to bombing nuclear plants or kidnapping the Pope. It's mostly pretending. These are amateurs.

Omni: But not harmless.

Jenkins: Extremely dangerous. Inspired by religious fervor, they have a mandate from God to dismiss constraints against using violence. The Trade Center bombers didn't worry about offending their constituency—their constituency was outside this world. This is sanction-of-God stuff in their heads. The deaths were justified and they think it's a shame only six people died.

Omni: A terrorist driven by political cause would not have done this?

Jenkins: A seemingly normal, nice person always comes down after every lecture or briefing I give and says, "If I were a terrorist, I'd ..." and lays out the most diabolical scheme. Armchair terrorists can conjure up terrible things. Terrorists in the field have not done. Why? Because most terrorists impose constraints on themselves. Their violence is not an end in itself, but for advancing a goal. Political terrorists believing they're the vanguard of the people's will, use violence to shock, get publicity, and leverage a government. They know if they act too horribly, they may alienate their perceived constituents, create public backlash, or provoke the police to crack down on them—with popular support. The Irish Republican Army receives political and financial support from people it doesn't want to upset. When IRA members are about to set off a bomb in London, they warn the police so people can get out of the way. Or at least they want to be seen as providing warning.

Omni: Will terrorism become increasingly more deadly?

Jenkins: Probably more large scale, indiscriminate violence. That's a trend. The first bombings were extraordinary events, but the 400th bombing was just another bombing. Seeking to escalate the shock, terrorists are forced to set off bigger bombs. Governments have defended preferred targets like airports and embassies, so terrorists have moved to softer targets like department stores, public buildings, or crowded streets. The Trade Center incident was but only one of 100 terrorist car bombings in 1993, in Florence, Bogota, Lima, the financial district of London, in Bombay, 300 people died from a car bomb in the street.

The engine that drives armed conflict in the next century will not be ideological quarrels so much as religious and ethnic conflict. Most of the 30 armed conflicts going on now are based on religious or ethnic differences. This type of conflict lends itself to atrocities, the kind of violence seen in the slaughter of women and children in Rwanda, the massacre of Palestinians in prayer at Hebron, the World Trade Center. Through the mouth of a sheik in a Jersey City mosque, God says it is proper to kill infidels. God whispers in the ear of a Jewish fanatic to gun down his enemies. In an ethnic war, your death may be the very purpose of my struggle. If you are not a member of my tribe, I consider you barely human. A goat that gives milk is of more value.

Omni: What now, after the passing of the Cold War?

Jenkins: For 40 years the threat of nu-

clear war provided a framework for analysis and a fairly clear intelligence mission. There was symmetry—CIA and KGB. That's gone. People wrote of a new world order of peace and stability, but I consider that unlikely. Geostrategists and geopolitical analysts now generally believe considerable disorder will swirl around islands of order. Low-level conflict affects one-quarter of the globe. Bosnia, Yemen, Armenia, Azerbaijan, Angola, Rwanda. Three months from now will be a new set of wars, mixing guerrilla, limited conventional warfare, and terrorism, unconfined by national borders. Bringing their quarrels with them, floods of refugees will spill into other countries. Armies might stop fighting when the belligerents exhaust themselves or external powers impose temporary cease-fires. But in time hostilities will flare up again. The distinction between war and peace will dissolve.

Omni: As an "island of order," will we be isolated from these wars?

Jenkins: We're moving toward a world without borders. It's wishful thinking that all this conflict will stop at our shores. On occasion it will slop over. The strategic purpose of national borders has always been to keep danger on the outside. The advent of nuclear weapons eroded this purpose. Now borders are dissolving. Information flow can no longer be diverted at a border. With global finance, investment, and markets, there are few economic borders. And everywhere there is immense human traffic crossing porous borders: immigrants, illegal aliens, refugees shoved back and forth. Terrorism is a tactic common to the conflicts we see. It's ridiculous to think we'll be immune to it. This does not mean I predict a sustained domestic campaign of terror. I don't think it's likely. But for future terrorist spectaculars of the "Koranic proportions" the Trade Center bombers envisioned—why not?

Omni: Why did car bombs become the weapon of choice?

Jenkins: When little bombs could no longer get the world's attention, when terrorists could no longer get close enough to targets with bombs hidden under their overcoats, they looked for a way to make bigger explosions. Unable to carry around a half-ton of nitrate fertilizer and diesel fuel, they put it on wheels. It's not high-tech, but almost anybody can make one. Innovations in terrorist weapons are few: homemade mortars, altimeters to set off bombs in airliners, electronic timers for bombs set months before detonation. But mostly crude bombs. They do half their work with bombs first used in the nineteenth century. Assassination is an ancient practice. They adopted kidnapping for ransom from the criminal world, borrowed airline hijacking from people using it to seek political asylum.

Omni: Why so little creativity?

Jenkins: The first concern of any terrorist operation is group cohesion. They make decisions by consensus, do not experiment. A terrorist attack is not about trying something new; it's about succeeding. And they can do that by exploding a bomb. We once tried to analyze why terrorists had attacked a certain bank and found they intended their bomb to go off somewhere else. Suppose the gang was headed for the World Trade Center with their bomb in the van and it went off in the Lincoln Tunnel. Who would know? It would be just as good! Show me a group that decides by committee, takes no chances, must succeed, and always thinks it has—and I'll show you a group that cannot innovate.

Omni: Will terrorists acquire and use advanced weapons?

Jenkins: To a kid with a hammer, the world's a nail. If a group acquires an exotic weapon, it'll try to find a way to use it. The United States gave the Afghan rebels hundreds of Stingers, precision-guided surface-to-air missiles, that we can't get back. The Soviets handed out hundreds of heat-seeking missiles to their surrogates. Corrupt officials and black marketeers are dealing in these lethal, high-tech weapons. The IRA, the Palestinians, and some guerrillas in Africa have them. They brought down a few civilian airliners. We may see terrorists using more sophisticated rocket launchers, mortars, and remotely piloted vehicles.

Omni: Will they acquire weapons of mass destruction?

Jenkins: You can find individual crazies in hospitals for the criminally insane who are quite willing to blow up the world, elaborately planning to do so in their cells. But how would some psychopath get a nuclear or biological weapon? We're not talking about one bright lunatic in his garage. This is orders of magnitude more complex than getting a chemist to help make a car bomb. In the entire world only a handful of terrorist groups are at this level of sophistication. These organizations behave almost like a state. They make political decisions and have a degree of prudence. Terrorists most willing to carry out mass murder are the least capable. Those most capable are the least willing. Terrorists driven by religious or ethnic hatreds are probably willing to commit mass murder, as they may have no pur-

pose to an attack other than to kill or destroy. Abouhalima and his gang would have used a nuclear bomb, but they'd probably never get one.

Omni: Is it more likely with the Soviet arsenal no longer under absolute control?

Jenkins: This is a legitimate concern. Scientists are desperate for money, corrupt officials and organized criminals are smuggling weapons. In dismantling warheads under arms control agreements, Russia itself is creating mountains of fissile material. If it or an actual weapon were to get into the black market, the environment would change. Four decades ago, the secrets of making the bomb were held by a few scientists. Today more people have the theoretical knowledge, though not the practical experience. It's improbable that an individual could make a device that works.

Omni: A Red Army Faction terrorist in Germany once said, "With a nuclear bomb we could make the Prime Minister dance on a table."

Jenkins: In that corner are boxes of novels. I've read about 100 to see how novelists solve problems we analysts can't. So far they haven't. Strategic planners deal with unthinkable things in war games. We applied the same gaming techniques to better comprehend the dynamics of nuclear terrorism. We engaged high government officials. In some cases the role of secretary of state or secretary of defense was played by the secretary himself.

The government team set up an operations center, just as it would in real life. The opposing team was made up of terrorism analysts. A third group, called the "control team," had members playing leaders of other nations, senators, newspaper reporters, the outside world. The game planners' opening move: "We have a nuclear bomb set to go off in a city, and here's what we want."

From the start it was apparent any terrorist claiming to have a nuclear bomb has a serious credibility problem. He has to persuade the government he has the capability. Diagrams don't do it. He'll have to detonate one bomb and convince the authorities he has a second at the ready. If he solves his credibility problem, what is he going to demand? "Change your policy toward Israel." Suppose we agree, and the president announces the change. Does he not deliver his device? If so, we renege and tell him "tough luck." Unless he persuades the government he will end the threat, there's no incentive for us to yield. Otherwise, we're not talking about a finite demand, but about governance. He'll call us every-

day with a new demand and run the country with his device. But the government will not liquidate itself. In the game we could never get it to work out for the terrorists.

Omni: Why wouldn't they set off a nuclear bomb?

Jenkins: They could, but for what purpose? In any case of extortion, the purpose is to get something. In a mugging, the fellow wants the wallet. If he just shoots somebody, that's mindless murder. Terrorists can use a nuclear device to punish, set it off anytime. They don't have to communicate with anyone to do that. In one of our games, the terrorists did set off their device. They decided since they couldn't get anything, they'd just cause some damage.

Omni: So a terrorist can use a nuclear bomb to destroy but not to blackmail the government.

Jenkins: This fascinates me because we are the superpower with the ultimate weapon of terror. And we can't make anybody in the world do anything. It's for this reason they're a deterrent against their own use. "If you use yours, we destroy you." The other side says the same. Nuclear weapons are not useful as a coercive weapon for terrorists or anyone.

Omni: Will terrorists attack computer networks, the vulnerable nervous system of modern society?

Jenkins: In the realm of computer crime, most crackers who break into the system are simply demonstrating their skills. In some cases it's taken a more malevolent form. Some perpetrators have personal motives, like revenge. Others are mercenaries selling their skills for purposes of espionage or larceny. We don't find these villains of the information age in the ranks of today's terrorists. It's not a matter of terrorists moving into the domain of computer crime. Politically motivated hackers might move toward terrorism. Other than opposition to control— nobody owns the Net"— they don't seem driven by ideological causes. Terrorists can't go out and recruit computer literates. It's too risky, conspiracies don't work like that. I don't see terrorists innovating much with tactics. I expect to see a more brutal version of yesterday's terrorist.

Omni: What are some of the things you do at Kroll Associates?

Jenkins: An extortionist will threaten to put cyanide in a client's pain-relief capsules unless he receives a million dollars. Now, our crisis team is helping to negotiate the return of two executives kidnapped for ransom. We're working on a case in Russia where a gang is attempting to extort protection money by threatening to kill employees. We as-

sess security for corporate targets of terrorism. We're advising a client to pull out of a country where political violence is out of control. That's the routine. We respond to a new crisis once every five days. In the last 18 months, we dealt with 26 kidnappings, more than 30 product tamperings, and dozens of other crises: death threats, terrorist acts, and espionage.

Members of the team are ex-agents from French, German, or American intelligence services, the FBI, and Scotland Yard. The phone rings, and we may put someone on a plane to Mexico, Angola, Manila, Moscow, wherever. We have people stationed in Miami, Manila, Rio, London, Paris, and other places so they can be on the scene quickly. Today an international business can expect to deal with kidnapping, extortion, or violence. It's a bit like the American Old West with no law and order. When companies get into jams, their governments can't always do much, and they're obliged to resort to private remedy. We're kept busy.

Omni: You created behavioral teams for extortions and hostage negotiations. What do they tell you?

Jenkins: They analyze the content, syntax, logic, patterns of writing or speech to understand the extortionist or other villain's mindset and the threat. Was it written by a terrorist organization or a madman pretending to be one? Why does this person who claims to possess a nuclear device have a sixth-grade education? Are there signs of editing by another hand? Are these personal grievances? Does this group want to hurt people? Some letters are frighteningly cold and logical; others are so preposterous as to be humorous. Our behavioral team does something between science and art refined after years of studying hundreds of extortion messages, terrorist demands, and ransom notes. What they distill shapes our strategy in dealing with a remote adversary.

Omni: Behavioral teams advised the FBI in the assault on the Branch Davidian cult in Waco, Texas. What went wrong with their strategy?

Jenkins: Kroll was not involved, but I took interest in the situation. The authorities didn't see tearing down the walls and inserting tear gas as a final assault, but as one more step in an incremental strategy to steadily increase psychological pressure and reduce the perimeter of the compound. They tried not to provoke the cultists, telling them through loudspeakers precisely what they were doing. Some officials thought maternal instinct would triumph over the cult's hold on the mothers, and they'd run with their children to safety. Others expected the armed defenders to sally forth and be neutralized so agents could rescue the children.

But unless they had evidence the group cohesion inside was breaking down, it was probably unrealistic to hope tear gas and tanks would persuade cult members to rescue themselves and children. They'd spent years together in mindless devotion. The weeks of siege may have driven them closer together. Those who left the compound said the cult members had talked about mass lethal injections and clustering around hand grenades. Yet somehow the authorities did not see mass suicide as likely. To finely adjust the psychological pressure and make the action less threatening, one psychologist suggested using a bulldozer to scrape away at the wall instead of a tank to poke holes in it. This is an example of the razor-edged decisions the strategy required. How could they so precisely gauge human responses? It was beyond the capability of behavioral science. They were slowly squeezing human nitroglycenn and it blew up on them.

Omni: Do you pay ransom so that

hostages will be released?

Jenkins: Hundreds of business people are kidnapped in foreign countries each year. Many have ransom insurance. In the private sector we negotiate, pay ransom, and get people back. It's a psychological struggle. The kidnappers start with an attitude. "We give the orders because we have the hostage!" They'll demand an astronomical sum, but usually settle for much less. We slowly chip away at their assumption of absolute authority, without giving them reason to harm. We suggest that they don't hold all the cards. Eventually we will come to an agreement in the interest of both sides.

Omni: Why are you so critical of the government's policy of no concessions to terrorist kidnappers?

Jenkins: I'm not opposed to it as a policy, but like all policies it has to be applied flexibly. A no-concessions policy is based upon the theory that if every country did the same, terrorists could never obtain anything by seizing hostages, and they'd stop doing it. But terrorists get other payoffs. Just by holding hostages they get publicity, create crises, become a force to be reckoned with, to many groups that's of great value. Policies vary from no negotiations to quickly meeting demands. There's no clear evidence a hard-line approach reduces further taking of hostages. Apprehension reduces kidnappings, not policies.

Ransom kidnapping was a major problem in this country in the Twenties and early Thirties. There were hundreds of them. When the Lindbergh baby was snatched, it shocked the nation and resulted in tougher laws. Now, kidnappers get caught and convicted. If you go down on a kidnapping charge, you'll be old and gray before you get out. So ransom kidnappings are rare. Not from a policy of no concessions. Kidnappings are rare because we enforce the law within our borders. If other countries can't do that, and many can't, then our policy posture isn't going to prevent kidnappings. Of course, there are other reasons for not granting certain kinds of concessions. If we released prisoners for hostages, it would subvert our criminal justice system.

Omni: But you'd at least talk to them, say, "We can't give you prisoners, but will you take money?"

Jenkins: I've argued about this with government officials. One got quite irritated with me. I asked, Would you release prisoners for hostages? Clearly not. Would you hand over weapons? We should say no. Would you pay $100 million? Probably not. Would you pay a few thousand bucks to end a govern-

ment crisis? Why not? If we can settle on a sum of money, maybe it's worth it. Terrorists holding hostages can threaten a presidency. When Iranian militants held Americans for 444 days, they virtually paralyzed our government. It destroyed a presidency. This policy wasn't handed down by Moses; when necessary, we can set it aside and do the sensible thing. By negotiating, you might play for time and maneuver for tactical advantage in a rescue. Go after and kill them if that will get the hostages back alive. Negotiate and pay ransom if you have to. Getting tough on terrorism doesn't mean forsaking hostages. Keep in mind who the enemy is.

Omni: Of the U.S. government officials you've advised, who did the most to counter terrorism?

Jenkins: Secretary of State George Shultz. Before him, we had rhetoric, but no real strategy. Nixon appointed a cabinet committee after the Munich Olympics incident in 1972, but it met only once. When the hostage crisis erupted in Iran, Carter was not prepared. When Shultz arrived at the State Department, terrorists were on the attack. They blew up our embassy in Kuwait and Lebanon, killed 241 Marines in Beirut. In early 1984, Shultz summoned high officials from the Defense Department, the CIA, the Security Council, and others. In a reception room furnished with antique chairs and tables, with portraits of the Founding Fathers on the wall, we talked terrorism. Not how to deal with this bombing or that hijacking, but overall strategy—what was the nature of this threat, and how should we respond. This led to a more comprehensive approach spelled out in a presidential directive to vigorously pursue and punish terrorists, to not tolerate state-sponsored terrorism. It authorized military action.

Omni: How did you become television's expert on terrorism?

Jenkins: I responded to one request, and it was like getting on a cocktail circuit. To be a TV expert, you have to be available, otherwise they call the next person on the list. You have to speak in short sentences, and your tie has to be straight. Next, you have to prepare a few 15-second epigrams to use even if they don't answer the question. It's not analysis, it's a trick, an artifice of the medium. But at this point, you're only one step from show biz. I never let them use the word "expert." I'm always at a disadvantage in studio discussion. Terrorism is complicated and emotive. A guest will slam his fist down and say, 'We've had enough and we're gonna get 'em!' I start wondering what this means and people start switching the channel. ◻◻

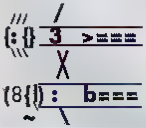
GAMES

HERE'S SMILING AT YOU.
The winners of Competition #56 should put on a happy face

By Scot Morris

WINNERS BOX

1. W C Fields
   [*|:o)]*
2. The Energizer Bunny
   >B3
3. PacMan
   (.V)
4. Alfred Hitchcock (vertical)
   {
5. Male and Female



QUIZ BOX

1	**/:#(**	A. Manute Bol
2	**Q:-)**	B. Cheshire Cat
3	**(:b**	C. Davy Crockett
4	**(;-#**	D. Kirk Douglas
5	**:-)3**	E. Wyatt Earp
6	**[:-x**	F. M. Gorbachev
7	**CCC:-)**	G. Adolf Hitler
8	**[):-3)=**	H. Captain Hook
9	**~:-)**	I. Kilroy
10	**?:^O**	J. Hannibal Lecter
11	**Q~;'?**	K. Narcissus
12	**:) (:**	L. Oliver North
13	**: 0)**	M. Elvis Presley
14	**: -)**	N. Marge Simpson
15	**)**	O. Stimpy

VERTICAL SMILEYS

1. Ross Perot
   (. .)
   1
2. Saturday Night Fever
   o/
   /\
   />
3. Smokey Bear
   A
   (. .)
   (ε)
4. Online Signature
   {õ ô}
   ~
5. The Easter Bunny
   ( ) ( )
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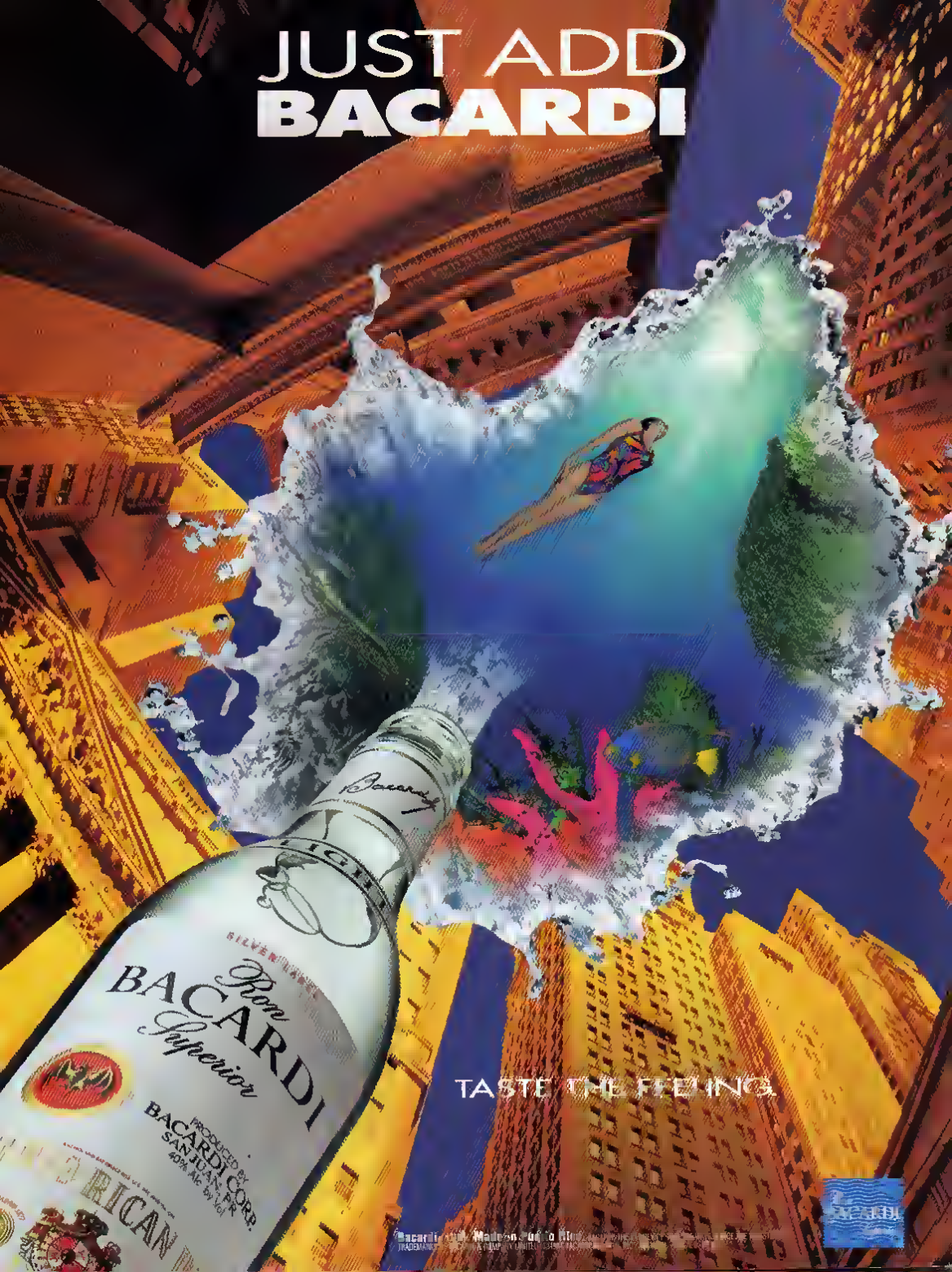
Millions of computer users are now familiar with those frowns :-(winks ;-), and kisses :-)* that people use to liven up their E-mail messages. These icons were invented to convey emotions ordinarily carried by facial expression or tone of voice. "Emoticons" is the cleverest name for them, but everyone calls them "smileys."

Omni Competition #56 asked for new and better smileys, and we promised $100 to the winner and $25 to each of four runners-up. The winning entries in the box above, at left, are from: 1 Carolyn A. Staab, Reston, Virginia, 2. Howard Cherry, Boca Raton, Florida, 3. TIR-Man@aol.com, 4. Paul Cafaro, Midland, Michigan, and 5. Tom Horton, Atlanta.

MATCH-UP. I compiled a quiz using some of the other competition entries. To take the quiz in the box above, at center, match the numbered smiley at left with its lettered identity at right. Answers and credits appear at the end of this article.

VERTICALS. Usually you tilt your head to the left to see smileys, but with a Halloween pumpkin (^_^), a rose @—>—>——, or a smiling fish >)))>><, who's to say which way is up? A sampling of vertical smileys appears in the box above, at right, from: 1. Dawn and Michelle Messer, Atco, New Jersey; 2. Jennifer Watson, Ann Arbor, Michigan, 3. W. Richard Freeman, Willernie, Minnesota, 4. Thomas Boelens, Palatine, Illinois, and 5. Dawn and Michelle Messer.

ANSWERS: 1-G (The Gravenson Group, Seattle, Washington); 2-C (Chad Andrews, Davis, California), 3-I (Susan Tudor, Montgomery, Alabama); 4-J (Robin and Shannon Drew, Phoenix), 5-D (Lee A. Turton, Lakewood, Ohio), 6-L (M. Funakoshi, Honolulu), 7-N (Kelsey Moline, Vancouver, Washington), 8-E (Lisa Ingram, Oceanside, California); 9-F (Ryan Kittleson, Fertile, Iowa), 10-M (Ken Hamady, Langhorne, Pennsylvania), 11-H and 12-K (Michael David Dorsey, San Jose, California), 13-O (Liz Smith, San Diego, California), 14-A (Peggy Sue Precup, West Lafayette, Indiana), 15-B (Nina Todd, Boston).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