SPECIAL ANNIVERSARY ISSUE

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16 WAYS TO CONTROL YOUR MIND
TEST YOUR PSYCHIC ABILITIES

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Collective images, universal energies saturate our consciousness, all bound into the law of self and filtered to control. Artist Stanislaw Fernandes emerges with this month's cover. Control Info, based on African art.

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FIRST WORD

By Kathy Keeton

"The responsibility for the sorry state of affairs at NASA lies squarely with Washington and an administration filled with tired old men who view the world darkly with the eyes and values of the Forties instead of the future."

The story has become part of NASA's folklore an incident that dramatically demonstrates the "can do" "can fix" attitude that once characterized our space program. In the Sixties, during a visit to the Johnson Space Center, actress Grace Kelly became stuck between floors in an elevator—for an hour and a half. After her release, engineers changed over the system from electrical to hydraulic. They had the money then.

I learned this and other fascinating NASA trivia from a charming and elegant man who escorted me around the Johnson Space Center during a recent trip to Houston. These have not been the best years for NASA—and I sensed a feeling of despondency throughout the center. Passing the giant Saturn rocket on exhibition on the grounds, I learned that owls now nest there. All of the intense activity, the optimism and the determination so visible in 1980 before the first shuttle flight were gone. The responsibility for this sorry state of affairs lies squarely with Washington, DC—and an administration filled with tired old men who view the world with the eyes and values of the Forties instead of the eyes of the future.

Before long all of America will suffer the consequences of this nearsightedness. Consider for a moment the implications of the following items from a recent AIAA (American Institute of Aeronautics and Astronautics) report on the U.S. space program: "The formerly healthy U.S. balance of trade in high tech products and services has been decaying sharply since 1980." In fact, there now is a $5 billion *deficit* as opposed to a surplus of over $25 billion in 1980. The report also points out that from 1965 to 1985 NASA's budgets declined 54 percent, while every other government agency's increased substantially.

The Soviets have hardly fallen victim to the same myopia. Since 1957, with the launching of *Sputnik*, they have remained doggedly faithful to the goal of space exploration—and their persistence has paid off. In all types of weather, they have succeeded in launching an average of two rockets each week. Out of 103 space missions completed successfully in 1986, the Soviets accounted for 91.

While their technology can hardly compete with ours at present, the sheer volume of their effort has left America far behind. Our plans for a space station may be more refined, more ambitious, yet the fact remains that we are nearly a decade away from realizing that dream, whereas the Soviets have done it several times over. And currently, more than a dozen scientific missions are on their agenda. In fact, the Soviet lead in space is, as *Jane's Space Flight Directory* put it, "almost frightening."

A manned trip to Mars—which is well within the Soviet Union's grasp—could spell untold disaster for the United States. Mars is the gateway to the asteroid belt and thus the passage to the wealth of the solar system. If the Soviets continue with their plans, Mars will truly become the Red planet. The Soviets have plodded along now for decades. They believe, quite correctly, that those who hold the high ground win the war. And the high ground *is* space.

If we don't move forward, if we don't galvanize our forces, turn the finest minds of this nation toward the challenge of space, then we are indeed doomed to become a second-class power. We need only to look through the pages of history to see what the future holds for us. First, we'll experience a brain drain, similar to what occurred in Great Britain in 1960 and 1970. Other nations—Japan, India and China among them—will welcome our technical experts with open arms and greater opportunities. We will suffer irreparable economic losses, to say nothing of the blow to national pride.

There was a time, says Philip E. Culbertson, NASA's associate administrator for policy and planning, "when NASA clearly established the destiny of the civil space program. Not so today. Now when we seek to arrive at decisions, we are joined by the Department of Commerce, the Office of Science and Technology Policy, the Department of the Treasury, and then we sit down with DOD, OMB, and try to arrive at something."

What we must arrive at is a renewed enthusiasm for, and dedication to, a program both technologically advanced and aggressively postured. And we must be prepared to pay for it. In the past, comments Culbertson, "we used to worry about the technology transfer from us to them. Now they're beginning to worry about technology transfer from them to us, and that's a frightening change."

Perhaps this factor will finally spark the administration into action. In a relatively short period of time, we have witnessed the emergence of Japan, a nation for centuries shrouded in the past, as a leading and determined rival to our technological edge. Unemployment in Detroit and a myriad of other socioeconomic problems stem, in large part, from our inattention to the realities of a rapidly changing world. At the same time that the government neglects our commitment to technology, it continues to waste billions on obsolete weaponry. The general public *has* voiced its opinion in favor of the space program. In a recent poll conducted by Market Opinion Research, an overwhelming number favored spending more on both manned and unmanned missions. Seventy-one percent said it was important to stay ahead of Japan and Russia. Only 34 percent thought space expenditures should be cut.

Because it is the duty, not to mention the privilege, of a free press to expose the inadequacies of government, we believe that an informed public will not allow this travesty to continue. And whereas an elephantine Reagan administration may drag its feet on science, education and space, younger and more progressive generations will continue in that long, visionary, and restless look to the stars. ∞

Kathy Keeton is president of Omni magazine.

CONTRIBUTORS

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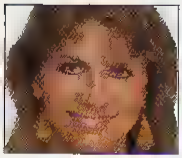
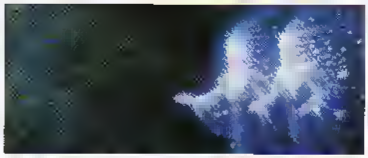


LOWRY

THE PEAR-SHAPED MAN

FRACTAL FAIRY TALES



THIRTEENTH NIGHT

SUPREME QUARTZ

GALE

Close your eyes, please, and let your mind go blank. Now try to imagine the scene in the *Omni* office as we assemble our special ninth-anniversary issue. What impressions do you get? Chances are you can't envision what it's like at this particular moment—and if you could, you probably wouldn't believe it. But if you *can* accurately envision details, researchers are interested in your talent for remote viewing, the ability to sense scenes remote in both time and space.

For years researchers have attempted to establish scientific proof of psychic ability. Until now, writes *Omni* senior editor *Pamela Weintraub* (Mind, page 19), they've been unable to replicate their experimental results or make them fraud proof. To assist in the ongoing work, Weintraub asked laser expert Russell Targ of the National ESP Laboratory to devise a nationwide experiment in remote viewing. And with "Psychic Connections: Can You Make Them?" (accompanying the Mind column), *Omni* readers can test their psi quotients and take part in the psychic investigations.

For "Mind Control" (page 53), writers *Mark Teich* and *Giselle Dodeles* recruited the assistance of a dozen accomplished sports psychologists. Using techniques that have been effective for athletes, the result is a program designed to enhance mental ability. It includes 16 exercises to relax, heighten energy, and promote positive thinking to achieve goals and attain peak performance.

Some social observers say the New Age movement—with its psychic experiences, crystal consciousness, channeled spirits, and other mystic phenomena—is the religion of the future. Others, more critical, believe it's nothing more than a fad, a hodgepodge of techniques, pure psychobabble. Is it self-centeredness disguised as cosmic wisdom? Or does it metaphorically express the need for a transformative, creative spirit?

In an effort to determine what the New Age really is, social historian *Christopher Lasch*, best known for his book *The Culture of Narcissism*, analyzes the movement in "Soul of a New Age" (page 78). And *Omni* contributing editor *Marion Long* ("In Search of a Definition," page 80) adds insights and explanations of New Age metaphysics as understood by such personalities as poet Allen Ginsberg, rock musician Frank Zappa, author Doris Lessing, performance artist Spalding Gray, Sixties icon Abbie Hoffman, and Jesuit priest Daniel Berrigan.

It's easier, of course, to explain individual aspects of the movement. Among New Age followers, channeling, for example, is defined as the communication of information from otherworldly beings—usually a god or a spirit—through a living person. With channeling disciples multiplying, we sent writer *Katharine Lowry* ("Channelers," page 46) chasing after a 35,000-year-old man and other discarnate entities spewing universal knowledge. Lowry can't help thinking that they're anthropomorphic manifestations of the channels' sexual frustrations. "They all seem to be gorgeous, powerful studs out of some bad romance paperback," she says in her Texas drawl. "I guess if I ever created an entity for myself, he'd be a millionaire sex maniac who does dishes."

Thanks to New Agers, rock and mineral stores—including the gift shop at the American Museum of Natural History—can't keep enough crystals in stock. According to *Jake Page*, who puts the baubles under his journalistic microscope in "Supreme Quartz" (page 94), there's almost nothing that believers do not credit to the translucent stones—from improving physical health to purifying water and growing houseplants.

New Age believers laud the effects of personal and spiritual transformations. And there's no reason why we can't be both spiritual *and* materialistic, according to urban shaman Lynn Andrews (Books, page 28). But "The Pear-shaped Man" (page 62) undergoes a personal conversion of a different sort in author *George R.R. Martin*'s short story.

Omni assistant editor *Kevin McKinney*, accompanying the spirit of Shakespeare's Ariel, takes a visionary journey in "Thirteenth Night" (page 102). *Bruce Schechter* makes a computer run on mathematical art ("Fractal Fairy Tales," page 86). And *Gorky Park* author *Martin Cruz Smith* interviews Chernobyl doctor Robert Gale (page 110). ☐

OMNI

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Circumcise Wise

Many individuals in the health profession are well aware of the pain and trauma suffered by infants who are subjected to circumcision [Guess What Circumcision Hurts Continuum July 1987] It is the only surgical procedure routinely done in this medical country 1) for which there are *no* medical indications 2) without the patient's consent 3) without anesthetic and 4) to amputate a normal healthy functioning part of the body

Fran Porter may feel the solution to this dilemma is simply to administer an anesthetic to reduce the resulting pain I would invite her however to consider a more humane response to call for a long-overdue end to the primitive practice

Brian A Kristoph
San Mateo CA

Psychic Law

It is hardly surprising that police departments sometimes turn to paranormal detection when the public spotlight is upon them [Courtroom Psychics Forum July 1987] It is also good psychology for the police to have a proclaimed psychic standing by to help put the fear of God into anxious suspects

But to me there is something inherently improbable about this utterly macabre talent for finding corpses in distant canyons This cynic will come around when psychics contact the authorities before not after the fact with a clear un-Delphic message My senses tell me that a violent crime is about to be committed at such and such a place and if you hurry you may be able to prevent it

Robert Owen
San Jose CA

Say Omm'

The excerpt from Jonathan Cott's *The Search for Omm Sety* ['Walk Like an Egyptian' July 1987] was a wonder and a delight I have experienced innumerable episodes similar to those Dorothy Eady spoke of Cott presents the facts in a totally unbiased manner and lets the reader make up his or her own mind

That is all any of us who believe in an alternative religious orientation or in the psychic/esoteric want—an unbiased open-minded hearing Serious students of such phenomena are just as fed up with the frauds the rumormongers and the offbeat UFO crowd as everyone else

Renee W Anderson
Arlington VA

Past Its Prime

There is an error in Anthony Liversidge's article 'Primes and Love' [Continuum March 1987] A 65 050-digit Mersenne prime cannot end with *1212121*

Daryl Nazareth
Ontario Canada

Liversidge responds At the time of writing the discoverer of the twenty-fifth to thirtieth Mersenne primes Dave Slowinsky did not have the right numerals at hand The *1212121* figures were fill-ins that due to a delay in obtaining the actual figures got away without being replaced

Just to make sure that the curse has finally been foiled the number is 7460931 5528447

Desert Fox

Over the years I have spent a great deal of time carefully observing vehicles such as rocket cars turbine dragsters and off-road racing buggies The winners of the *Omni* moon buggy contest [Prix de Lune July 1987] might make great machines for sightseeing But as race cars the designs are totally divorced from reality—abysmal Was this a joke?

If any of the winning buggies ran against a properly designed Baja-style racer powered by a hydrazine turbine and supplemented with rocket motors to augment steering and propulsion they would get buried in the dust And since I saw nothing in the rules governing pit stops the greater range of solar-powered electric vehicles won't count for squat

I suggest that *Omni* put up the money and I'll build the machines Then we'll head for the nearest stretch of moonlike desert and settle the matter

Franklin Ratliff
Maitland FL

EXCEPTIONAL ABILITIES

FORUM

Idiots savants, Tibetan meditators, champion marathon runners, and geniuses on the order of Darwin—at first glance they've got little in common. But they'll soon be put under a microscope by researchers eager to learn what makes some human beings exceptional.

At a symposium to be held next month (November 14–16) in Washington, DC, under the auspices of the Institute of Noetic Sciences, researchers will gather to discuss the chosen few who can claim such special talents and experiences as photographic memory, biofeedback mastery, exceptional athletic speed, strength, or endurance, and out-of-body episodes, to name just a few.

The object of the symposium isn't to discover how the less than extraordinary can become exceptional, says Thomas Hurley III, director of the Institute's Exceptional Abilities Program. He speculates, though, that most people are capable of developing skills to a much greater degree than they probably think they can. "In order to become the most that we can become," says Hurley, "to maximize health and personal satisfaction and find the greatest degree of meaning in our lives, we need to study exceptional abilities. In examining the sometimes grotesque outer limits of human functioning, we are able to get a glimpse of the untapped potentials in all of us."

Here are a few of the topics to be discussed at the Exceptional Abilities Symposium and some tips on how they may help the merely average person become perhaps a little superior.

• Idiots (or autistic) savants. How could a child so mentally handicapped that he is unable to talk learn to play a Beethoven sonata perfectly after hearing it through only once? Researchers have long sought to understand the phenomenon of idiots savants—mentally disabled people who display an exceptional skill in one area, such as music, math, or mechanics.

Hurley, citing the work of Dr. Bernard Rimland, theorizes that while idiots savants are unable to focus their attention on many simple tasks, they can narrow their attention to one specific area that interests them intensely. "If you imagine attention being like light," says Hurley, "theirs is like a laser rather than a broad-spectrum beam." Understanding the workings of the savant's mind could give the rest of us some clues to reaching deeper and more productive levels of concentration.

• Creative geniuses. Are ultracreative types born or bred? To uncover the secret of creativity, Dr. Howard Gruber, professor of psychology at the University of Geneva in Switzerland, has studied the lives of such superbrains as Darwin and Piaget. His conclusion: "There's no such thing as a 'creativity gene.' I think the weight is on culture," he says. And he adds: more than being the product of a eureka-type breakthrough, creativity is the result of hard, focused work.

Does this mean that all of us have locked within us the potential to become creative geniuses? Not exactly. The creative mind is different in the way it assimilates and then uses information, explains Gruber. This is what makes his or her thinking unique.

For instance, he says, when creative geniuses detect a deviation from the norm, instead of saying, "Gee, that's dangerous," or "I must have done the experiment wrong," they try to make the interesting thing happen again. "What we less-than-original thinkers might learn from this," hypothesizes Gruber, "is how to use our 'mistakes' to reach new and original conclusions."

• Getting physical with the mind. Athletes who can run a four-minute mile or bench press 500 pounds, cancer victims cured not by chemicals but with positive thoughts—the symposium's researchers also plan to examine the potent "mind–body" connection in people who possess extraordinary physical powers.

Keith Thompson, the Esalen Institute's expert on exceptional physical functioning, has amassed 9,000-plus studies in more than 60 research fields, all of which deal with people who manifest great physical powers with a little help from meditation, hypnosis, visualization, and spiritual healing.

As an example, Thompson points to visualization—a tactic often employed by athletes before they compete, in which they "see" themselves winning the big event. The athlete, in this way, harnesses his great physical abilities through what's commonly called the power of positive thinking. With discipline and practice, contends Thompson, all of us can achieve supernormal physical feats, from shaving off a few seconds from our 10k time to healing ourselves through biofeedback.

• The emotional body. Dr. Candace Pert, chief of brain chemistry at the National Institute of Mental Health, in Bethesda, Maryland, will examine the ways our emotions are manifested by physical symptoms. She offers a new scientific explanation for those illnesses doctors have always described as being "all in the head." According to Pert, our bodies engage in constant internal "conversations," by way of neuropeptides (substances produced by nerve cells) and the receptors they attach themselves to. This action, she says, produces such physical/emotional effects as thirst, grief, pleasure, or the alleviation of pain. For example, she says, "the lining of the digestive tract, from the esophagus through the large intestine, is lined with cells that contain neuropeptides and their receptors. It seems entirely possible to me that this is why a lot of people feel their emotions in their gut—why they have a 'gut feeling.'" Pert believes that neuropeptides are a key to understanding the mind–body connection. "The more we know about neuropeptides," she explains, "the harder it is to think in more traditional terms of a mind and a body. It makes more sense to speak of a single, integrated entity—a bodymind."

In addition to presentations, there will be demonstrations and performances by mathematical and musical prodigies at the symposium, as well as a meeting on the research and educational policy implications of exceptional abilities. For more information on the conference, write to Thomas J. Hurley III, Institute of Noetic Sciences, 475 Gate Five Road, Suite 300, Sausalito, CA 94965. Phone: 415-331-5650.—Ann Hornaday

TEST YOUR PSYCHIC ABILITIES

MIND

By Pamela Weintraub

Back in 550 B C Croesus king of Lydia feared attack by the increasingly powerful Persians To gain foreknowledge of his enemies plans he decided to consult an oracle But which one? There were half a dozen oracles in and around Greece and Croesus wanted the best

Thus began the first recorded remote viewing experiment in history Today defined as the ability to mentally access information blocked from ordinary perception remote viewing supposedly enables a viewer to glimpse scenes remote in both time and space An oracle with the *power* then was what the beleaguered Croesus needed most.

To find the oracle of oracles Croesus dispatched messengers throughout the ancient world Each messenger was to visit a different oracle and ask for a written description of Croesus activities at a specified time and day

Now Croesus was no fool He knew that if he did something expected on the appointed day—throw a discus say—his behavior might be easy for the oracles to guess So the history books tell us he did something kind of weird—he cut a tortoise and a lamb into pieces and then boiled the flesh in a brass caldron covered with a big brass lid

When his couriers returned with the oracles messages Croesus read what was written by each Only the oracle at Delphi it turned out got it right Croesus was so impressed he is said to have given the oracle gifts worth more than 100 million 1987 dollars accounting for the oracle s extraordinary reputed wealth

This anecdote makes good copy But if today s skeptics were to study Croesus experiment they would undoubtedly find his methodology flawed For instance can we prove that the messenger going to Delphi had not somehow learned of Croesus unkingly plan? Or that Croesus himself had not pretended access to foreknowledge in hopes of scaring the Persians away? And can the result be reproduced? That is if a few weeks after the first experiment Croesus had decided to dance naked in a fireplace could the Delphic oracle have envisioned that, too?

Just such questions and criticisms have plagued psychic research not only in ancient times but through the modern era as well Back in the Thirties when J B and Louisa Rhine joined the psychology lab at Duke University they began to investigate paranormal perception with their now-famous ESP cards To test telepathy the Rhines had an experimenter look at the cards one at a time A subject some distance away meanwhile tried to determine which card each with one of five symbols was being viewed

After doing thousands of such experiments for 30 years J B Rhine declared he had proved—statistically at least—that some of his subjects possessed paranormal skills But his work was relentlessly challenged Many critics pointed out that after a number of trials Rhine s most gifted subjects seemed to lose their touch Moreover anyone could see that Rhine s methodology didn t safeguard against fraud including communication between the tester and the subject

Fraud-proof experiments that could be replicated then were the key And in recent years parapsychologists have tried to do just that By *their* accounts at least the new experiments—including those in the field of remote viewing—are tighter than ever before

Can you glimpse the future with your mind?

The new era of remote viewing got its start in the early Seventies when physicist Harold Puthoff and laser expert Russell Targ of SRI International began working with psychics such as Patrick Price a police officer said to have used his powers to solve many a crime According to Targ "We started sending lab personnel to randomly selected San Francisco Bay Area locations I would sit with Price while Hal Puthoff went someplace a half hour away I would ask Price What do you see? And Price would say I see a little marina There are boats some with their sails up some with their masts stepped The marina is next to something that looks like a Chinese restaurant And a half hour later Hal would come back from the Redwood City Marina in back of Charlie Brown s Restaurant

Targ and Puthoff did nine trials with Price And in an article published in the October 18 1974 issue of *Nature* magazine they declared seven hits Says Targ "It s as if terrorists had kidnapped someone each day and we found the victims in the first place we looked seven out of nine times"

Though the results were extraordinary and the methods an improvement over the days of Rhine criticism of the work was severe Some skeptics for instance pointed out that Price s descriptions provided judges with hints about the order in which each trial took place Since the judges were also presented with the target sites in the order they were visited critics said description and target site could be matched on the basis of order

In answer to the criticism Targ Puthoff and a host of other parapsychology researchers attempted to hone their experiments further still In a subsequent series of experiments SRI put nine subjects through 51 remote-viewing trials In more than half the trials SRI reported in the *Proceedings of the IEEE*, judges

were able to match descriptions to the correct targets. And this time, Targ and Puthoff added, they had carefully edited the transcripts so judges couldn't tell which description was given when.

Perhaps most interesting was the fact that while some participants were experienced psychics, most were ordinary people—government scientists or other officials passing through the lab. Though psychics did better than other subjects, the researchers said, psi, as it is called, seemed to exist in the rest of us as well.

That feeling was shared by Marilyn Schlitz, who, not long after, began her own series of psi experiments at the Institute for Parapsychology in Durham, North Carolina. In her most far-reaching project, she spent ten consecutive days doing what she calls transcontinental remote viewing. Acting as the subject, Schlitz tried to describe her impressions of a person visiting ten computer-selected sites in Italy. He had selected, prior to the experiment, forty possible target locations in Rome, Schlitz explains. He made a list of those places and numbered them. There a group of independent judges visited all ten sites and matched each to one of Schlitz's descriptions. One description, for instance, recalled "little blue lights and some objects shooting up in the air." This matched up with the

CONTINUED ON PAGE 150

PSYCHIC CONNECTIONS: CAN YOU MAKE ONE?

How psychic are you? How do your remote-viewing skills compare with those of your peers? This experiment below, devised by Russell Targ, now running the National ESP Laboratory in Portola Valley, California, might give you a clue. According to Targ, this experiment will test your ability to psychically sense scenes—in this case an object—to be photographed and presented to you sometime in the future. Five hundred participants (those randomly placed in a special control group) will actually receive a picture of their target in the mail. Those participants not in the control group (the majority of those participating in the experiment) will see their target in a future issue of *Omni*. In either case, the target object will be photographed in the hands of well-known psychic Hella Hammid.

To be part of this experiment, please make sure you mail in your questionnaire before October 30, 1987. Your responses should be sent to Remote Viewing, *Omni*, 1965 Broadway, New York, NY 10023-5965.

For the National ESP Laboratory's estimate of your psychic abilities and for information on additional ESP experiments that you may participate in, please enclose a stamped, self-addressed envelope with your response.

PART ONE

To perform Part One of this experiment in remote viewing, pick a relaxed time and place. Close your eyes or stare into space until your mind becomes blank. Ask yourself what the object will look like. Then make sketches of your impressions as they come to you. Jot down any terms that describe the images you see. Record your mental images in the most accurate way possible. But remember: do not try to analyze the images or to decide what they might represent. Take a rest for a minute or so, then gather impressions again. Now that you have completed the precognition part of the experiment, you should have pictures and/or verbal descriptions to help you complete the questionnaire in Part Two.

PART TWO

Answer all of the following questions based on the impressions you've gathered about your target object. If you're not sure about a given question, answer to the best of your ability.

	YES	NO
1. Is it made of metal?	☐	☐
2. Is it something to wear?	☐	☐
3. Is it very dark?	☐	☐
4. Could it fit in your cupped hands?	☐	☐
5. Could you use it easily as a container?	☐	☐
6. Is it made of cloth?	☐	☐
7. Is it serpentine or twisty?	☐	☐
8. Is it a relatively light object to hold?	☐	☐
9. Does it make noises or sounds?	☐	☐
10. Is there a prominent funnel shape?	☐	☐
11. Does it look like a framework?	☐	☐
12. Is it basically empty inside?	☐	☐
13. Does it have parts that normally move?	☐	☐
14. Is its geometry mainly circular?	☐	☐
15. Is it manufactured?	☐	☐
16. Is it furry?	☐	☐
17. Is it shiny?	☐	☐
18. Is there any organic material in it?	☐	☐
19. Does it have a complicated shape?	☐	☐
20. Is it an animal?	☐	☐
21. Does it have at least one flat surface?	☐	☐

PART THREE: PERSONAL DATA

Name _____

Address _____

City/State/Zip _____

A note on the protocol. Success in this experiment will be achieved if readers, as a group, describe their target picture with an accuracy that would be seen by chance only one time in 20. The researchers have constructed the questionnaire above from a pool of objects. By studying your answers, the National ESP Lab should be able to determine which object you described. A computer randomly selected two objects the week after the October issue went to press. It then randomly assigned one object to a small control group and one to a large main group of participants. Because the objects had been coded by number and because they were randomly assigned by computer, no one will know which targets have been selected until after the questionnaires have been analyzed.

Of the questionnaires received with a postmark of October 30 or earlier, 500 will be placed randomly in the control group. The 500 people in the control group will receive a picture of their special target through the mail soon after the October 30 cutoff date. The remaining participants will see their special target, alongside a summary of the results, in a future issue of *Omni*.

The presence of a control group in this experiment is essential. Indeed, before any experiment with a single target can be taken seriously, it must be shown to be free of what psychologists call a response bias. That is, if the correct target happens to be a rose, and almost all the subjects say they sense that the target is "like a rose," the researchers must show that a rose is not the sort of description people would be expected to give in the absence of some form of extrasensory perception.

To eliminate response bias, a control group will describe a different picture from the one the main group sees in *Omni*. If response bias has not been a factor, Targ says, then the amount of ESP measured in the control group should be at least as good as that in the main group.

Statistician Jerry Solfvin of John F. Kennedy University assisted in the experimental design. Needless to say, given the controversial history of paranormal research, some experts question aspects of the methodology of this experiment. When we print the National ESP Lab's results, we will discuss all the pros and cons.

SKY GRAFFITI

STARS

By Steve Nadis

A century ago when Alexandre Gustave Eiffel announced plans to build a 1,000-foot monument in Paris, writers, artists, and architects joined together to protest the construction of what they said resembled a "black and gigantic chimney factory." To allow such a monstrosity to be built would be "an unavoidable and tormenting nightmare," complained writer Guy de Maupassant.

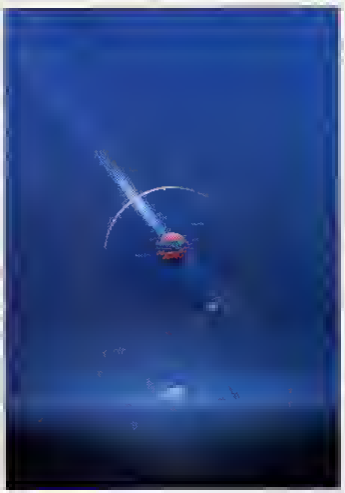
Now astronomers are up in arms over another idea, designed to celebrate the one-hundredth anniversary of the once controversial Eiffel Tower. The French government sponsored a competition for an "Eiffel Tower in Space," and the winning entry was a ring of man-made stars. It will consist of 100 reflective Mylar balloons strung together in a 15-mile circumference. The object—which would appear as large as the moon and be as bright as 100 of the sky's brightest stars—would orbit the earth for three years before self-destructing in the atmosphere.

Astronomers have complained that deep-space observations would be impossible when such an object was in view. Moreover, the light ring would be so bright that if a telescope (including the Hubble Space Telescope) were to be pointed directly at it, sensitive light detectors could be irreparably damaged. Protests from the International Astronomy Union (IAU) and other groups of astronomers have prompted the French government to remove its official backing of the proposal. This was the opening shot in what some see as a series of battles in which astronomers will be at odds with the proponents of space art.

Sidney van den Bergh is president of the International Astronomy Union commission on protecting astronomical observing sites. He considers space art a "silly way to entertain people—like putting graffiti in the sky." Another astronomer, David Crawford of Kitt Peak, agrees. For years he has been leading the fight against light pollution in both Tucson, Arizona, and San Diego, cities that border on the Kitt Peak and Mount Palomar observatories. He argues that the night sky is already an endangered resource. "What is a more important part of nature than the universe and our ability to see it?" he asks. "Unless we get around to preserving space, it could be as trashy up there as it is down here."

Space artists see other motives behind the complaints. "The astronomers don't want anyone else moving into their offices," says Joe Davis, an artist and research fellow at MIT's Center for Advanced Visual Studies (CAVS). His NASA-approved project, *Ruby Falls*, will use an electron gun to simulate flashes of northern lights over the course of a few shuttle orbits during one flight. If it is performed as planned, it will be visible throughout much of the world.

"Why are astronomers arguing about the small fraction of a percent interference from art when there are all these other problems?" Davis asks. For example, the North American Air Defense Command (NORAD), which keeps track of objects in space, says there is a huge amount of debris already in orbit around the earth. Much of it is junk from space launches and space exercises such as star-wars experiments. Currently NORAD uses its radar to track 6,194 space objects the size of a baseball or larger. Of these, only 300 are operating satellites. In addition to these, an estimated 40,000 golf-ball–size objects and billions of smaller pieces of space debris interfere with astronomy and threaten the safety of astronauts, spacecraft, and science payloads.



Art in orbit: space junk or a stroke of genius?

Satellite tracks and jet trails regularly mar astronomical photographs, and in at least one instance some recently discovered stars in the constellation of Pegasus turned out to be reflections from satellites. Even more problems could come in the future. The Soviets are reportedly considering putting large mirrors in space to reflect sunlight to Earth as a potential power source.

Not all astronomers are unequivocally opposed to the idea of space art. Roger Malina, an astronomer at the Space Sciences Lab at the University of California at Berkeley, thinks there is a place for some space art projects like Davis's. "I think it's unfair to isolate art as a problem when other activities in space have much larger effects," Malina says. "We are exploring the universe, and artists should be a part of that process."

Even so, Malina believes that space art proposals should be subjected to the same degree of scrutiny now applied to other activities in space. While the Eiffel Tower project would strongly interfere with astronomy, he doesn't think something as short-lived as *Ruby Falls* (it would last only a few hours) could create a serious problem. "Art objects as bright as the full moon and lasting years would be unsatisfactory, but we should be able to deal with something that lasts only a week. After all, a full moon lasts almost a week, and that happens every month." To protect their delicate components, he suggests telescopes could be programmed to look away from a piece of orbiting art just as they are now programmed to look away from the sun.

Other astronomers worry that allowing one piece of space art in orbit will open a Pandora's box. "The trouble is," explains

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CASTRO'S SCIENCE

EARTH

By Bill Lawren

La famosa Udra Blanca (the famous White Udder) was Cuba's most celebrated cow—a real-life Marxist rival to Borden's Elsie. In her prime she produced 28 gallons of milk a day. The result of a long-term attempt by scientists to manufacture a high-production, disease-resistant tropical dairy animal. Udra was one-quarter zebu (an Indian breed widely used in the Tropics) and three-quarters holstein. The cow with the pendulous udder is now dead, but her calves represent the first of a brave new agricultural world.

Udra Blanca has become a potent symbol of Cuba's scientific revolution. (A picture of Udra reportedly hangs in Fidel Castro's office.) In a mere 25 years the government, with a great deal of help from its Communist friends, has built a national science policy that has pulled off some surprising scientific accomplishments, from genetic engineering to space exploration. Cuban engineers have produced a minicomputer that compares favorably with its American progenitors. In the area of agricultural research, the Cubans have borrowed sophisticated tissue culture techniques for plants and have become a world leader in the creation of new varieties of sugarcane. Biologists have successfully used alpha interferon to fight a wide range of diseases such as chronic hepatitis, dengue fever, hemorrhagic conjunctivitis, even breast cancer. Animal scientists have developed promising new treatments for a variety of livestock diseases, including salmonellosis, a gastrointestinal disease caused by the salmonella bacterium. They also have devised a method for cleaning the lungs of an infected calf without killing the animal. The lung-cleaning technique, as well as a diarrhea treatment, has been awarded international patents and aroused interest in France and the United States.

The important thing is the momentum, says Eric Holtzman, chairman of the department of biological science at Columbia University in New York. Holtzman has been traveling intermittently to Cuba for 20 years to train researchers. "They started with absolutely nothing and have managed to put in place a functioning, large-scale scientific enterprise. Their steady progress is amazing."

In 1958, the year before the revolution, the entire Cuban scientific establishment consisted of a medical school in Havana—where professors are said to have sold grades to the highest bidder—and one underfunded agricultural research station near the coastal city of Santiago. The budget of Cuba's National Academy of Sciences was barely enough to cover the salaries of a librarian and a doorman. When Castro took over in 1959, only a handful of scientists remained. Half of the country's 6,000 doctors had fled, and the medical school was staffed by 12 professors. In 1960, in a speech at the national academy, the new leader set a strident tone. "The future of the country," he said, "must be the future of men of science."

To launch Cuba into that future, Castro negotiated a major commercial agreement with Moscow, including a $100 million loan specifically earmarked for science and technology. In 1959 the Cuban population was ill prepared for a scientific explosion—fully 30 percent of the population couldn't read. Castro organized a massive educational campaign that brought the literacy rate to well above 90 percent today. Over the next ten years top researchers from all over the world, including Columbia's Holtzman and New York University neuroscientist Roy John, arrived to train a new cadre of Cuban scientists.

Castro refounded the Academy of Sciences in 1962 and opened the National Center for Scientific Research (CENIC) in 1965. CENIC, the largest multidisciplinary institution in Cuba, spun off a number of smaller departments whose titles reflect the research priorities of the Castro government: the Institute for Tropical Medicine, the National Institute for Animal and Plant Health, the Center for the Protection of the Environment.

CENIC director Juan Kouri perhaps best typifies the hardheaded, thoroughly practical orientation of Cuba's scientific leadership. A compact, balding man whose taste in clothes runs to Levi's and

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Cuba is milking science for all it's worth—and developing some pretty big udders.

ANDREWS'S SISTERS

BOOKS

By Rose Marie Staubs

In 1973—when the reigning spiritual gurus from Carlos Castaneda to Werner Erhard were all males—a Beverly Hills art dealer named Lynn Andrews embarked on her own search for self-fulfillment and enlightenment. She wound up in Manitoba.

It was in the Canadian province that Andrews met two elderly Native American shamans—Agnes Whistling Elk and Ruby Plenty Chiefs—and persuaded them to take her on as an apprentice. She was eventually inducted as the only white woman into the Sisterhood of the Shields, a global sorority of sorceresses who maintain the ancient mystical knowledge of female consciousness that predates Judeo-Christian cultures.

Today, referring to herself as an urban shaman, Andrews provides private spiritual counseling in her Los Angeles home. She has recounted her spiritual quest and her wilderness adventures in the best-selling novels *Medicine Woman*, *Flight of the Seventh Moon*, and *Jaguar Woman* (Harper & Row), as well as *Star Woman* (Warner Books).

Andrews's sagas are similar to Castaneda's hallucinogenic tales of spiritualism and have been described as visionary anthropology. She explores aboriginal culture and religious beliefs through such phenomena as telepathy, time travel and communication with animals. Her experiences—which she insists are true—include deadly spells cast by evil male sorcerers and the painless insertion of magic crystals inside her solar plexus by a friendly spirit. In her new book, *Crystal Woman* (Warner), dream visions are transmitted by dolphins via a eucalyptus tree that acts as an antenna.

Andrews decided to write the books only after the sisterhood asked her to spread their gospel. "They told me I was needed in Los Angeles, New York and London," she says, citing places where "people don't understand the relatedness of life and haven't learned how to integrate their spiritual and material lives."

Although she had been taking notes from the very beginning, even in the woods, Andrews's sisters sometimes don't sound all that authentic. One aboriginal warrioress, for example, intones, 'There's no free lunch, my daughter, even on the road to the stars.'

Despite such writing, the gutsy heroines, and the New Age wrapper, Andrews is sometimes less a harbinger of change than a defender of the status quo. She's convinced that people can reconcile spirituality and materialism. "We have chosen to be born into a world where we have to make money to survive," she says. "But there's no reason why we can't also be spiritual."

This is not her first excursion into this world. According to Andrews, she and Agnes Whistling Elk had "walked the moccasin path" together during many previous lifetimes. And she adds, "My shamanistic training and initiation into the sisterhood was a process of remembering." In this lifetime, Whistling Elk told her, Andrews was destined to be a "rainbow warrioress," the bridge between the primal mind and white consciousness.

"By white consciousness, I think they mean the world that has become extraordinarily patriarchal, as opposed to the ancient indigenous cultures that are usually immersed in feminine consciousness," she explains.

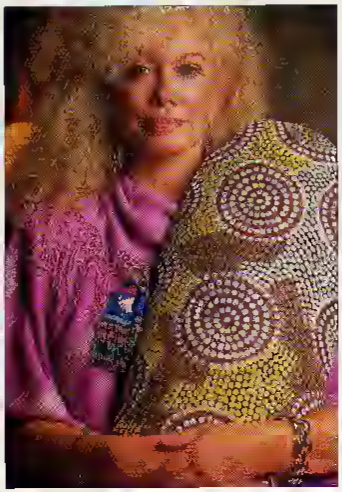
"I view Earth as a schoolhouse," adds Andrews, who also thinks we're on the brink of nuclear disaster because men usurped female power thousands of years ago. "We've come here to heal the feminine consciousness within men and within women. Such healing," she believes, will result in a "sacred androgyny."

Many of her beliefs sound like, Anatomy is destiny"—for planets. In her universe, men are naturally warlike and alien to the female planet Earth. "If we were on a male planet, like Mars, we'd be healing the male part of ourselves," she says. "Look at the great priests of the world," she adds. "Whether he's the Pope, a rabbi, or a sun dancer, he wears a skirt whenever he performs his ceremony. There's a good reason for that. Power is female. That's always the first lesson of shamanistic training."

Most women, even those in a loving relationship with a man, haven't learned that a supreme manifestation of female power—indeed, the obligation of all women—is the education of men.

In *Crystal Woman*, however, Andrews goes beyond the power-behind-the-throne advice that once filled women's magazines. The villain in her recently published novel is Booru, an aboriginal chieftain who kills four children and abuses numerous women. He even sentences one of his six wives to death for adultery committed under duress. The book's moral: A woman's greatest use of her power is to forgive Booru.

Andrews says she really did meet Booru in the Australian outback, healed him with her crystals, and pardoned him. Yet she says the story of Booru should also be understood metaphorically. "In a sense, Booru represents my dark side as well as the collective darkness of all women. Once we understand that we each individually created it, we can suck out the poison, eat of the darkness, and rebalance ourselves. Then we can forgive our own ignorance."



Andrews: Gonna take a shamanistic journey

BIRTH CONTROLLERS

BODY

By Gregg Levoy

With 350 tests already available to identify genetic defects in either parents or fetus, the promise of a perfect child would seem to be within our grasp. Tests can pinpoint gene enzyme deficiencies and chromosomal abnormalities during such procedures as amniocentesis, ultrasound fetal blood sampling, and chorionic-villus sampling (a placental biopsy).

Prenatal tests can identify such conditions as Down's syndrome, Tay-Sachs disease, sickle-cell anemia, spina bifida, and anencephaly. Furthermore, doctors can correct certain conditions in the fetus, by using chemicals or surgery.

Although today's tests are geared to helping would-be parents avoid bringing an abnormal child into the world, tomorrow's may enable them to select their baby's eye coloring, height, and even specific character traits or talents. In the meantime, some parents are starting to blame their doctors for the unforeseen birth of an abnormal child, and they are taking those doctors to court.

Lawyers are brought into play *after* an unhealthy child is born. Their role so far has been to try the growing number of "wrongful birth" and "wrongful life" lawsuits, suits brought against doctors and medical labs that fail to use tests and techniques at their disposal and use them properly.

Wrongful birth and wrongful life suits are extremely similar and are often filed in tandem. The important distinction is in the identity of the plaintiff. Wrongful birth suits are filed on behalf of dissatisfied parents. Wrongful life suits are filed on behalf of children *by* their parents or other representatives. Both types of suits charge that an abnormal child was born because of a physician's or medical laboratory's negligence.

Examples of wrongful birth claims include misdiagnosis of a couple's previous children, failure to test or identify risks for such genetic defects as sickle-cell anemia or cystic fibrosis, and inaccurate reporting of tests by medical labs. The parents' claim in such suits usually implies that had they been armed with certain knowledge of their unborn child's condition they would have opted for abortion. Damages are awarded for the high price these parents must pay—in terms of physical and mental suffering as well as money—to provide appropriate care for their abnormal child.

Wrongful life suits brought on an infant's behalf assert that the child in his present condition should not have been born. Doctors should have detected or prevented his defect with appropriate diagnostic procedures or treatment in utero. Again, there is an assumption that the child, were he able to voice his feelings, would have opted to be aborted rather than to be born in his existing condition. Compensation is asked for the child's pain and suffering.

Phillis and Hyam Curlender were among the first parents to attempt this gut-wrenching form of malpractice litigation. When they decided to have a baby in 1977, they had themselves tested to see if they were carriers of Tay-Sachs disease, a fatal neurological disorder peculiar to Eastern European Jews. Bio Science Laboratories, the California medical lab that administered the tests, advised the couple that neither had the killer gene.

Their daughter, Shauna, was born with Tay-Sachs. It was then discovered that Bio-Science had misinterpreted the results of her parents' test. (The lab had previously been warned that its technical methods were inaccurate.) The Curlenders filed a wrongful life suit against the lab on Shauna's behalf. In granting recovery for pain and suffering, monetary loss, and punitive damages, the court declared that "the reality of the wrongful life concept is that a plaintiff both exists and suffers due to the negligence of others."

With that declaration in 1980, California became the first state to uphold this new form of medical malpractice. Since then, other states have followed California's lead. More than 150 wrongful life suits and an equal number of wrongful birth suits have been decided in 21 states in the last ten years—some of them at the highest appellate levels. Given the large number of medical malpractice claims

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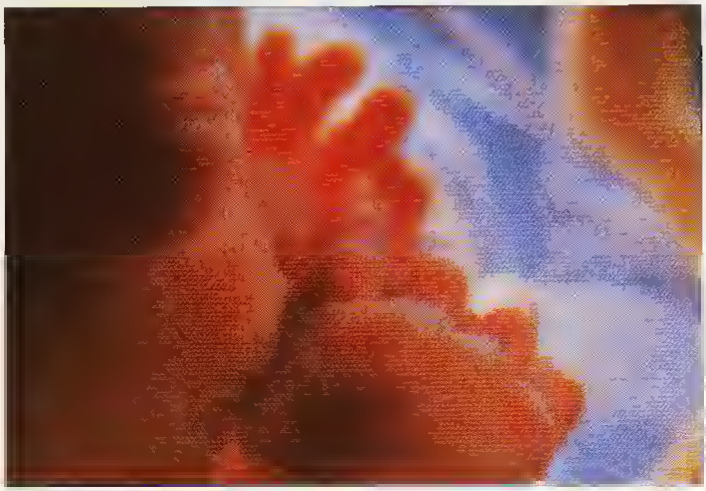

Malice toward some? Will parents sue doctors who don't catch abnormalities prenatally?

ASTRONAUT'S DIARY

SPACE

By Jeffrey A Hoffman

Editors note *During his first space shuttle flight 51-D in April 1985 astronaut Jeffrey Hoffman kept a log on a small cassette recorder The following is an excerpt from some of his thoughts about traveling in space and making his first spacewalk*

Seven-twenty PM April eleventh Just a little more than twelve hours before launch Everything s going well hopefully nothing will stop us now except the weather Just a little while ago after dinner I went out for a walk—beautiful sunset I had wine with dinner smoked a nice cigar had the last of my earthly pleasures for a while A lot of thoughts going through my mind The STAs [Shuttle Training Aircraft used for training flights and weather checks] were flying overhead wind blowing through the trees It makes me feel a little bit different about things knowing that twelve hours from now I m going to be outside it all

Four-forty AM [April 12] Just finished breakfast The press is already congregating ready to photograph us as we come out to get into the astrovan I don t see any clouds we re going into the weather briefing now Twenty-five hundred feet scattered clouds Twelve thousand feet overcast and it looks like it's going to stay that way Not a great day for a launch but at least we ll be able to go up

[On the launchpad] Out of the elevator at the one-hundred-ninety-five-foot level There s the shuttle Steam s coming out of the engines there is water coming out of the side of the pad a fire s burning in the hydrogen burn-off tank It's just like Bo [Commander Karol J Bobko] said the thing seems alive

Six fifteen and we re strapped in Count checks are finished an hour and ten minutes on the countdown clock [The ground crew's] removing all the ingress paraphernalia from the door and getting ready to close the hatch They re swabbing the O-ring seal [applying fluid to ensure a tight seal] right now The door is closing the latch is closed and locked That s the only thing separating us from the vacuum of space My pulse rate is up to seventy two now (My resting pulse when I got up this morning was fifty-four coming out in the astrovan it was sixty-six) They re getting ready to pressurize the cockpit for the leak checks

The last message we got from the launch director We have a cargo ship problem [the ship was cruising offshore near the launch area] and potentially a weather problem Consensus of the [weather plane] crew upstairs is that we may have some precipitation in the clouds Of course if we have to do an RTLS [return to launch site] abort we don't want to go flying through rain showers at four hundred knots, it would take all the tiles off the shuttle So I guess for the first time today there s an element of doubt as to whether we are actually going

Eight-oh-five. Launch time has come and gone The STAs continue to report water droplets on the windshield, which means that there is precipitation in the clouds The launch director says we can wait as late as eight-thirty five to resume the countdown

Eight fifty two Go! Pick up the clock! I really didn t believe we were going to go They left it [the decision to launch] to the last minute I feel a thumping in the bottom of the orbiter Another thumping The whole thing is shaking I can see the wind blowing the wires out there Okay my visor s coming closed This is the last transmission before launch We are going! [*Discovery* lifted off at 8 59 05 EST weightlessness began at 9 07 57]

Fourteen hours into the mission Everyone else in the cabin is asleep It all happened so quickly especially this morning just when we were sure that we were not going to launch and all of a sudden we were off What has not sunk in is that I'm *really* out in space Sitting over here in the corner [it] looks no different from being in the simulator except I'm floating with my head on what would normally be the floor And then you look outside and see the black of space and the ice crystals following us around and the sunrise and sunset every hour and a half You look out and see the lightning storms flashing the cities making their light patterns beneath the clouds the patterns

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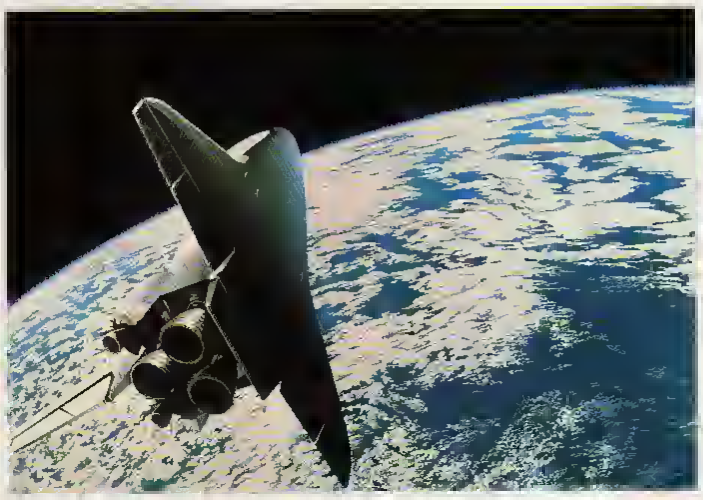

Dear Zero-g Diary a personal look at one of the last shuttle flights of the pre Challenger *era*

ARTIFICIAL INTELLIGENCE

By Steve Ditlea

Author Howard Reingold began keeping a diary of his dreams in 1981 after editing a manuscript on lucid dreaming by Stanford psychologist Stephen LaBerge whose dream experiment for *Omni* readers was described in the April 1987 issue.

"I used an artist's sketchbook," Reingold recalls. "On the left-hand page of a spread I would write down what I had dreamed and what had happened during the day. On the right side I would try to sketch some of what I had seen in the dream, but I wasn't a good enough artist to tell the whole story in pictures."

As his dream notebooks began to pile up, the need to easily find recurring themes and images made Reingold realize the limitations of pen and paper. "I thought computer software could help," he says, "but the hardware around at the time wasn't advanced enough to handle the kind of software that would be needed."

Then Apple's graphics-oriented Macintosh personal computer arrived on the scene with the capabilities his software project required. *DreamWorks*, Reingold's ultimate dream book, was born.

What makes *DreamWorks* a unique tool, Reingold explains, "is its ability to record images for the nonartist and to find patterns in dreams recorded at different times."

In fact, the principal *DreamWorks* screen looks like a high-tech version of his old diaries. On the left side of the screen, which is split in half, are three blocks. The top block is for recording the dream; the middle one is reserved for notes about the day (where you went, for instance, or what you ate); and the bottom section has room for interpretations of the dream. The entire right-hand side of the screen is for images. The program comes with a bank of 120 icons (such as symbols for mother, father, or thunder), which can be added to with the help of a MacPaint-like image editor.

Although the images provided by *DreamWorks* are the same, their meaning will be slightly different for each user. "Everyone has his or her own symbols," says Reingold. The program encourages you to explore their meanings. "As symbols are recorded with each dream, the user provides verbal associations or interpretations and, in the process, creates a dictionary of personal dream symbols. So for some users, authority figures may be represented by the father icon, while others may use an image of a courtroom gavel."

Throughout the early stages of the program, a figure called the Adviser—itself inspired by one of Reingold's dreams—offers on-screen help and suggestions. "I had a dream in which a little man in a chef's hat told a story, and then thunder and lightning blacked out the city," he says. "In dream literature, thunder and lightning are symbols of fertility and an outpouring of creativity, so I took the dream to mean that I should trust the inner guide each of us has." The Adviser in *DreamWorks* looks like the little storyteller I dreamed of that night, though you can create your own image for him if you want.

As the dream book grows, the user can indicate links between dreams. He or she can direct the program to call up dreams that have similar iconography or themes. You could, for instance, ask for all dreams involving lightning in which I'm running. The program will quickly sort through the diary, selecting the appropriate dreams.

Of course, the usefulness of *DreamWorks* hinges on remembering dreams, a feat some people find almost impossible. Dream researchers suggest various methods for improving dream recall, such as telling yourself before you fall asleep that you want to remember your dreams, or being awakened halfway through the night by an alarm.

Eventually Reingold plans to attach a sensor to the computer capable of detecting the rapid eye movements that signal dreaming during sleep. The computer will then sound a soft alarm to awaken the dreamer so he or she can record a dream. Such an elaborate plan doesn't seem odd or extreme to Reingold. Whatever the quest, he says, "the answer may be waiting for you just beyond the borders of the waking world."

Elementary, my dear Freud. A new computer program can help you analyze your dreams.

CONTINUUM

SCIENCE DISCOVERS WOMEN

Medical researchers have discovered women. For decades medical studies have focused on males—male rats, male hamsters, and the human male. For instance, a $10 million study on aging began in 1958 in Baltimore with 60 men and no women. When female scientists protested in 1978, researchers reluctantly added six women. Slowly more women have been added. Today there are approximately 600 men and 375 women in the ongoing study.

"We would have been years ahead in osteoporosis alone if women had been included in the study from the very beginning," says Estelle Ramey, professor of physiology at Georgetown University. "I could give you example after example of studies affecting women where no women were included," she says. She cites a $150 million, ten-year National Heart, Lung, and Blood Institute study of cholesterol and heart disease, with no women onboard, although the heart is hardly a secondary sexual characteristic. "The excuse was that women do not have heart attacks the way men do," says Ramey. "There are a lot of women in the cemetery who would be surprised to hear that."

Rosalind Barnett, a research associate at Wellesley Center for Research on Women, says the problem is bias. "Men are the shakers and doers, so they get the attention," she says. Stress, she adds, is one example. "There are studies on men and stress in the workplace, but no studies on stress from both the workplace and the home," she says. "If you did this study on women, you would never omit the home." Unemployment studies, too, focus on men. "The old belief is that men have jobs, and women work for pin money," says Barnett, noting that recent studies show employment contributes greatly to women's emotional well-being.

Researchers have been ingenious in explaining why their studies omit females. Ramey cites a boys-only study of children's performance in primary school. The researchers said girls do so well in the early grades that including them was pointless. "The unofficial belief is, since Eve came from Adam's rib, she has the same genetics—except she doesn't," says Ramey. Actually, all fetuses start out female, she says. "They have to work to become male," she adds. "The Bible just had it backwards."

So why research's macho bias? Rockefeller University researcher H. Leon Bradlow traces the habit to medical schools. "Medical students needed volunteers for their research, so who did they recruit? Their classmates," he says. Until recently those classmates were mostly males.

Another reason for overlooking females in studies is that female bodies are more complicated: their hormones ever busy. "It's very difficult to put human females in a study because you'll get different results from different women, depending on where they are in their menstrual cycle," says biochemist Meira Fields of the U.S. Department of Agriculture's Beltsville Human Nutrition Research Center in Maryland. Pregnancy, lactation, and menopause present additional complications. A standard conclusion is much harder to reach," she adds.

Rockefeller University's Bradlow cites that complexity in explaining why he set up a preliminary study of the effects of a high-fat diet on *breast* cancer using only male subjects. He says the men ate the same foods at the same time. "With women the diets must coordinate with the beginning of their menstrual cycles," he says. "Since each woman's menstrual cycle is different, diet schedules have to be designed individually."

Ramey is unappeased. "You cannot just assume that what works for men will work for women," she says.

That insight has finally dawned on the health establishment. In March 1987 the National Institutes of Health (NIH) issued new guidelines. Researchers must now include women in studies unless they provide a "clear rationale for their exclusion."

Men may be the big winners. Biochemist Meira Fields cites a recent heart-disease study in which she fed her rodents a diet high in sucrose, deficient in copper. By the thirteenth week all the males were dead, while the females were still scampering about. Scientists may one day be able to isolate what protected the females and feed it to the males.

"I've been doing research for twenty years, and I never worked with females—never, ever," says Fields. "I always worked with male animals. Most studies are conducted on male animals." Hencetorth, she says, she will include females in every appropriate study. "I was absolutely surprised," she says. "I repeated the experiment. I repeated it several times. The results were always the same. The males died, the females lived. Scientists make a big mistake drawing conclusions from just one sex. Is the moral she draws? As she puts it: "The sex difference can be a matter of life and death."—*RICHARD AND JOYCE WOLKOMIR*

CONTINUUM

An adult [illegible] made from [illegible] 165 pounds of bones which are crushed then added to a concoction organs pickled in brandy The resulting wine can cost $5 00 per kilogram

TIGER WINE

The unslakable thirst of the Chinese people for an illicit brew whose main ingredient is dried tiger bones has not only reduced the Siberian and South China tiger population to a meager 100 it has also further strained the republic s relations with neighboring India

Alarmed at the rising slaughter of its tigers in the Dudhwa National Park and the surrounding forests of Pilibhit and Kheri the state government of Uttar Pradesh complained to Peking charging that 110 distilleries are turning out vast quantities of tiger wine on the Chinese side of the border Not so says Peking The bones come from Burma

India is understandably concerned since it has only 4 000 wild tigers of its own all of which live in 9 650 square miles of forest sanctuary Poachers and smugglers lured by the rising price of the wine (used as an aphrodisiac and occasional fever remedy) have grown desperate in recent months Lacking tigers the Chinese have started decimating golden cats and both common and clouded leopards to get more bones or so say the Indians

According to Peter Jackson the editor of *Cat News* a publication of the International Union for Conservation of Nature in Gland Switzerland a single adult tiger can yield about 165 pounds of bone It is crushed and then added to a concoction made from the sex organs of the tiger pickled in alcohol usually brandy The price varies from city to city in China and it s very expensive says Jackson It costs anywhere from $400 to $540 per kilogram "The wine is really one of the major threats to China s tiger population if you can call it that."

—George Nobbe

HITLER'S TEETH

Did Adolf Hitler really die a suicide in his underground bunker near the Berlin Chancellery? The Russians who captured the bunker maintain that he did saying that they recovered a charred corpse whose teeth precisely matched descriptions of Hitler s mouth based upon the written records of the Fuhrer s dentist But a new and exhaustive investigation by a Canadian forensic dental expert casts doubt on the authenticity of the corpse reviving speculation that the Nazi leader may have escaped

Dr Robert Dorion director of forensic dentistry for the Ministry of the Solicitor General of Quebec in Montreal has compared photographs of the corpse s teeth with thousands of openmouthed closeup photos of the Fuhrer himself Dorion found a number of glaring discrepancies The pattern of gaps between the teeth was differ

Hitler impostor Was his corpse an impostor too?

ent. Hitler had root canal and a porcelain tooth that did not show up in the corpse, and the corpse had different lower bridgework from what Hitler is alleged to have had.

Is the Hitler corpse a fraud? Did the Fuhrer make off to Argentina? The Russians claim to have Hitler's dentist's original files, which Dorion has requested permission to examine and which could well solve the riddle once and for all. In the meantime, says Dorion mysteriously, "I have my theories [as to what may have happened to Hitler], but I'm not ready to speculate in public." —Bill Lawren

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All you talk about is vaginas, vaginas, vaginas. I'm getting out of here.

—Jeannette Rankin to Margaret Sanger at an international birth control meeting

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Gods are born and die, but the atom endures.

—Alexander Chase

I don't know if God exists, but it would be better for His reputation if He didn't.

—Jules Renard

MRS. GOD

Zeus had his Hera, and Jupiter his Juno, two of the godly "better halves" that people the world's mythologies. Now comes biblical scholar David Noel Freedman to tell us that in the monotheistic belief system of the ancient Jews of Israel, Jahweh—the prototype for the Judeo-Christian God—may also have had a wife.

Freedman, a former editor of the Anchor Bible and now a professor of Hebrew biblical studies at the University of California at San Diego, bases his contention upon an inscription on a piece of 2,800-year-old pottery found in the Negev desert by archaeologist Zev Meshel of the University of Tel Aviv. The inscription refers to Jahweh (God) and "his asherah." In ancient Canaanite mythology, Freedman explains, *asherah* meant "the queen of the gods," so it follows that the writer of the inscription may have been referring to the Israelite equivalent of a Mrs. God.

Freedman's assertion is controversial. Other scholars point out that the word *asherah* also means "a sacred grove or some place you could swear by." "If that were the meaning of the inscription," Freedman says, "then why the pronoun *his*?" The use of the personal pronoun, he argues, usually refers to a personal possession, like a wife or a lover. "Even Shakespeare knew that," Freedman maintains. "The closing lines of *Romeo and Juliet* speak of Juliet and *her* Romeo." —Bill Lawren

Roman god with spouse: Zeus had Hera and Jupiter had Juno. So what's wrong with Jahweh being hitched up with a nice lady, Jahweh?

If only God would give me some clear sign! Like making a large deposit in my name at a Swiss bank.

—Woody Allen

MOTHERING HORMONE

When a surrogate mother gives birth and suddenly decides she *must* keep her baby, it may be the result of a neuropeptide called oxytocin that could be the triggering mechanism behind maternal behavior. That, at least, is a possibility raised by National Institute of Mental Health psychiatrist Thomas Insel, who is studying the hormone.

"We've known since the Forties that oxytocin is secreted by the brain before labor, causing the uterus to contract and milk to come down for nursing," Insel explains. "But now we're seeing that the peptide also has effects *within* the brain. That could give a biological basis to the 'mothering instinct.'"

Is oxytocin the chemical that triggers mothers' maternal instinct?

Insel points out that if oxytocin is injected into the brain of a virgin rat that has never had pups before, she will build a nest and care for other rats' pups. And if the hormone is removed from rats, maternal behavior in females that have been pregnant is blocked.

"Abnormalities in the same system in humans could contribute to events such as postpartum depression, maternal rejection, or maternal attachment in surrogate mothers," says Insel.

Oxytocin may also influence men. "Huge amounts of it are secreted by men during orgasm," Insel says. "It could be that the peptide is important not just in the bonding between a mother and an infant but also between two consenting adults."—Sherry Baker

CONTINUUM

Phil Niekro: Scientists want to know what his secret is, too

KNUCKLEBALL SCIENCE

If Joel Hollenberg has his way, the knuckleball could replace the split-fingered fastball as the baseball pitch of the Nineties. Using theoretical aerodynamics studies and a three-dimensional computer model, the mechanical engineering professor at New York's Cooper Union promises his work will give pitchers far greater control over baseball's most baffling and erratic pitch than ever before.

Hollenberg began studying the mechanics of the notorious pitch six years ago (it has virtually no spin, making it easy to analyze), but batters have flailed away at it for decades, ever since Dutch Leonard began throwing it in the Thirties.

The study includes arcane mathematics of such things as laminant and turbulent flow, drag forces on the weight of the ball, the speed at which it's thrown (under 70 mph), the trajectory during its 0.7-second journey to the plate, and something called skewed resistance force vectors. Several of Hollenberg's students worked with Major Leaguer Phil Niekro to make sure a knuckleball pitcher could actually make the necessary adjustments in grip and angle of release to give him better control over the movement of the ball.

Hollenberg plans field studies of his computer model and envisions the day when every dugout will have a knuckleball software program. "The knuckleball could conceivably be used in certain game situations against certain hitters—a tailor-made pitch—especially if you could make it change direction during the last half of its trajectory," Hollenberg says. "It's during the first third of its trip to the plate that a hitter decides whether to swing. After that, he's just guessing."—George Nobbe

'Christianity might be a good thing if anyone ever tried it'
—George Bernard Shaw

'We live in a Newtonian world of Einsteinian physics ruled by Frankenstein logic'
—David Russell

ROBOT JOCKEY

It took three years and $2 million, but man has finally devised what can only be described as a horseplayer's delight and a Thoroughbred purist's despair. It's a 22-pound, radio-controlled, fiberglass jockey whose robotic skills at the reins of a diminutive hackney pony can guide the animal around a 440-foot indoor track at severe angles and astonishing speeds.

The hackneys, too small at 500 pounds to carry human jockeys, are perfect for indoor racing and capable of outdistancing Thoroughbreds over short distances, as well as maneuvering around 70° turns. The riding automaton is the electronic handiwork of David Kime, a Missouri ranch manager for Charles McVean, a Memphis commodities broker. His ingenious Superjock soon attracted the backing of a group of investors operating as Show Me Track, Inc., of Springfield, Missouri. They hope to stage a six-week racing season—complete with pari-mutuel betting—at Kemper Arena in Kansas City later this year, if they can get a license from the state's horse-racing commission.

Kime says that his brightly painted riders have a guidance system similar to the joystick used by model-airplane enthusiasts. A double-tuned superheterodyne unit inside the little jockeys receives and decodes a series of command signals from a multichannel AM radio transmitter, hand-held by an operator on the infield of the racecourse.

The robot rider, run by self-contained batteries and servomotors, can make his mount swerve left or right and speed up or slow down by tugging at the reins that connect him to his pony. There are no electrical shocks; the Alabama ASPCA attested to that last year at an exhibition in Birmingham.—George Nobbe

Radio-controlled, fiberglass jockey aboard hackney pony. Purists are aghast, but who else can ride a 500-pound steed?

The fact that Rea[illegible] king nice may have dropped global nuclear war from first place on the fear charts

FUTURE PHOBIA

What do the futurists worry about most?

Having exhaustively surveyed the latest crop of future oriented books and articles *Future Survey Annual*, a volume published by the World Future Society of Bethesda Maryland, has the answer global economic collapse This catastrophe has just displaced nuclear war (which ranks second this year) as the number one fear of futurists

'Our sense is that the reason is the improvement in U S –Soviet relations says Timothy Willard of the World Future Society 'At the same time, we're seeing a rapid devolvement of the economy, particularly in Third World countries

Other anxieties expressed by this year's seers and forecasters include permanent environmental damage, AIDS, instability in Mexico "dedevelopment" (deterioration of the social and industrial infrastructure) in Africa unemployment, overpopulation, energy problems and water shortages Of these the AIDS epidemic is rising fastest on the charts leading *Future Survey Annual* editor Michael Marien to predict it may soon become 'the most dominant fear of all'

But the future, like Pandora's box, holds hope as well, and the futurists' number one hope this year is improved U S –Soviet relations A global Information Age, advances in biotechnology and robotics improvements in the work world, and the exploration of space are other prospects that make forecasters more sanguine

—Judith Hooper

BABY FACE

You see before you a college student who moonlights as a waiter and was accused of tax evasion because he forgot to report the tips he received Do you believe him when he pleads not guilty?

Leslie Zebrowitz McArthur, professor of psychology at Brandeis University finds that people expect a baby-faced waiter—with big eyes, high eyebrows and a small chin—to be negligent They find it easy to believe that he forgot to record his tips But faced with a mature looking waiter, they are more likely to believe he's a crook

In the same study, McArthur also showed photos of college students, working as door-to door salesmen who were accused of not warning their customers about the inherent dangers of the cleaning product they were hawking As she had predicted the baby faced salesmen were often seen as having neglected to mention the dangers while the mature looking ones were easily assumed to have deliberately duped their customers

We are so sensitive to the facial features of infants says McArthur, that we attribute infantile qualities to adults who have the hallmarks of baby-facedness We assume them to be more naive honest, and submissive than the rest of us Their "crimes" tend to be seen as acts of negligence, not premeditation Having a baby face would not necessarily tip the scales of justice in a real court case But in ambiguous situations she believes judges and jurors could be considerably influenced by appearances

McArthur doesn't like anyone to use her research for speculation about real criminals but it's irresistible to imagine how her findings would have applied to Scarface or Babyface Nelson

—Dava Sobel

'You can't say that civilization don't advance, for in every war they kill you a new way'
—Will Rogers

A baby face may be an attribute in court

CONTINUUM

Fibers like polypropylene are made by stretching molecules very quickly, lining them up and making them crystallize. So is spider silk.

SPIDERWEB SECRET

For years the spider's web has been one of nature's better-known wonders. Scientists and laymen alike have marveled at its delicate beauty and remarkable strength. In fact, according to Jacqueline Palmer of Harvard University's Museum of Comparative Zoology, "some spiderwebs are stronger than steel for their weight."

Now researchers at the University of Strathclyde's Fiber and Textile Research Unit in Glasgow, Scotland, say they've discovered the secret to the strength of the spider's silk. It lies in the way it is stretched—a process polymer chemist James Ferguson says is "very much like the latest techniques being used to produce many man-made fibers, such as the tough and resilient plastic that holds together six packs of beer and soda."

Ferguson explains that spiders extrude a polymer called fibroin from their abdomens and then stretch the substance so quickly that molecules come out of the solution and form a crystallized solid. "The spider seems to do exactly what we do in making man-made fibers," says Ferguson. "Things like polypropylene are also made by stretching molecules very quickly, lining them up and making them crystallize, which gives them very high strength."

Learning more about how spiders create their ultra-strong webs, Ferguson adds, may help scientists in the development of new fibers, coatings and plastics.

—Sheri Baker

The cloning of humans is on most of the lists of things to worry about. Science along with behavior control, genetic engineering, transplanted heads, computer poetry and the unrestrained growth of plastic flowers.

—Lewis Thomas

It may be those who do most, dream most.

—Stephen Leacock

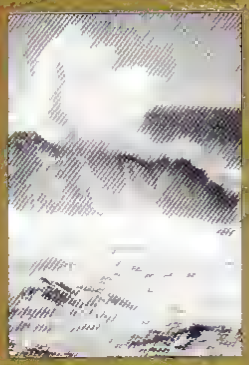
MOTHER WAVE

Tropical rain forests are generally thought to be the world's most fertile producers of life, their lush foliage relentlessly converting the sun's energy to nourish a rich and robust stew of organisms. But a group of botanists from the Smithsonian Institution has now demonstrated that as life generators, the world's jungles are nowhere near as fecund as the world's beaches.

The key, according to Egbert Leigh of the Smithsonian Tropical Research Institution in Panama, is the mammoth amount of energy delivered to a shoreline by crashing waves—energy that can be as much as 15 times greater than that derived from the sun. Wave energy not only facilitates the flow of light and nutrients, but it protects intertidal organisms—especially mussels, kelp and sea palms—from predators, at the same time stirring up the local housing situation so that there is an ongoing competitive scramble for available space. The bottom line, in terms of fertility, according to the Smithsonian study, intertidal communities are anywhere from two to ten times as productive as even the lushest of rain forests.

If wave energy is so good at maintaining existing life, might that same energy have once fueled the origin of life itself? Leigh thinks not. Waves, with their fierce crashing and thrashing, create an environment too brutal and unsettled to allow the survival of fragile proto-life. "I think it would take an organism that was already pretty well evolved," he says, "to be able to profitably use the energy in waves."

—Bill Lawren



Wave power. Fifteen times greater than sun power.

Are 007 types copping secrets out of scientists' files? Not really. All they have to do is use the Freedom of Information Act

SCIENCE SPIES

Scientists on the lookout for new research ideas have developed a new and potentially disturbing research tool. They use the Freedom of Information Act to obtain otherwise confidential grant proposals. Jerry Williams, who does basic research in cancer biology at Johns Hopkins Oncology Center in Baltimore, ought to know. His proposal was divulged to other scientists at least three times.

One of the inquiries, Williams says, was by an industrial scientist at a large company, while another was by a junior researcher at a national laboratory. The third — and the one that disturbs me the most, he says — came from a senior investigator at a prestigious university. In none of the three cases did the scientists approach Williams himself for the information. Although he allows that scientific researchers are under tremendous pressure to produce," he says, "That doesn't excuse their bending the ethics of academic protocol."

Is this legal scientific snooping a growing trend? Williams can't say. But he does think that some areas of today's research are undercut by a large component of unethical behavior.

"Many of my colleagues," he concludes, "now say that they don't put their best and most exciting ideas in their grant proposals."

—Bill Lawren

"When we all remember we are mad, the mysteries disappear and life stands explained."

—Mark Twain

"We manipulate nature as if we were stuffing an Alsatian goose. We create new forms of energy, we make new elements, we kill crops, we wash brains. I can hear them in the dark sharpening their lasers."

—Erwin Chargaff

FRUITS IN THE STAR-WARS PROGRAM

In what one scientist has called "the ultimate in technology transfer," researchers at the University of California at Davis are borrowing sophisticated star-wars equipment from a government weapons laboratory and turning it to an unexpectedly peaceful pursuit: the purification and preservation of fresh produce.

Radiation explains University of California at Davis food scientist Manuel Lagunas-Solar, has long been used to increase the shelf life of foods and to rid them of dangerous bacteria. But existing radioactive isotope equipment is bulky, relatively imprecise and, because it tends to leave residual radioactivity in the immediate environment, potentially hazardous to operators.

Enter the 100-megavolt electron beam accelerator, a star wars particle beam machine currently the focus of weapons experiments at nearby Lawrence Livermore National Laboratory. Because it combines adjustable power, precise focusing and portability while issuing no residual radioactivity, the accelerator looked like a potentially promising replacement for irradiation by isotope. Experiments at Lawrence Livermore, where the accelerator lies at the bottom of a Jacuzzi-like tub, proved the case. When turned on, oranges, potatoes and grapes, the electron beam easily duplicated results achieved with conventional equipment, in some cases preserving foods up to one month.

The only danger, says Lagunas-Solar, is that an overdose of the beam can produce a slight change of flavor in the irradiated food. "Grapes can become a little sweeter," he says, "and lemons can end up tasting like pineapples."—Bill Lawren

Star wars gear. Just great for making a sweeter grape.

"A man lives by believing something; not by debating and arguing about many things."

—Thomas Carlyle

"There are two ways to slide easily through life: to believe everything or to doubt every thing; both ways save us from thinking."

—Alfred Korzybski

"Creative minds always have been known to survive any kind of bad training."

—Anna Freud

"A single death is a tragedy; a million deaths is a statistic."

—Joseph Stalin

CONTINUUM

COD PEACE FOR SALMON

A fisheries scientist has opened a "school" to teach hatchery-reared salmon how to avoid predatory lingcod. Bon Olla, an Oregon State University oceanographer and National Marine Fisheries Service researcher, says the results of several experiments strongly suggest "that salmon exposed to predation have enhanced survivability."

Olla used salmon smolts (baby salmon) that had never been exposed to predators or live food and placed groups of 30 coho salmon in a pool with two large lingcod. Within 30 minutes about half of the smolts had been eaten. He collected and tagged the survivors. Later they were mixed with other smolts and put back in the pool with the cod.

Olla said the survivors were dramatically more successful in avoiding the cod than were the new fish. Newcomers were captured in seconds, while the experienced salmon eluded the predators for several minutes in the confined area of the pool.

In a second training experiment, salmon were placed inside a small Plexiglas corral that was lowered into the cod pool. The cod banged into the Plexiglas trying to get at the smolts. Again the salmon exposed to predation and its stress showed increased ability to survive when they were later placed directly in the pool with other salmon facing cod for the first time.

Is survival instinctual? Maybe, but it doesn't hurt to take some lessons, as some salmon smolts in Oregon recently found out.

Olla's salmon school is continuing as he tries to determine what can be done to enhance the survival chances of hatchery fish after they are released. Currently only 5 percent of hatchery-raised salmon survive to return to their spawning ground, largely because of predatory fish.—Joel Schwarz

"Perceiving reality is a biological necessity."
—François Jacob

"It is people who live by rules that are always hoping to get them changed."
—Robert Harbison

LIFE FROM ROCKS

West German chemist Friedemann Freund, a professor at Cologne University currently conducting research for NASA, thinks scientists have ignored something right under their feet that could hold the secret to the origin of life: rocks.

Freund explains: "The planets of our solar system got a rich endowment of hydrogen, carbon and nitrogen. We know these gases are present in the depths of the earth." He continues: "Researchers have long overlooked the possibility however that these molecules can *enter* the crystal structure of different minerals when rocks are formed deep within our planet.

Freund theorizes that meteorites bombarding the earth billions of years ago pulverized rocks and released the complex organic molecules that could have led to life's beginnings.

As a first test of his theory, Freund and other NASA researchers recently cracked open a type of rock called olivine inside a vacuum chamber. The results? "In addition to simple molecules like water, carbon dioxide and methane, we found very complex molecules with at least six carbon atoms," Freund relates. "These could well have played a role in creating the organic molecules needed for life on Earth to begin."

Freund points out that if you subtract the metallic core of the earth, the rest is approximately 90 percent olivine—a huge mineral source for these organic elements. "When meteorites crashed down, they transformed large volumes of the rock to powder. And I would expect that similar or the same molecules as we found in our experiments would have come out of that powder."—Sherry Baker

"Using words to describe magic is like using a screwdriver to cut roast beef."
—Tom Robbins

"What an incredible achievement of fantasy is the scientific mind!"
—E. L. Doctorow

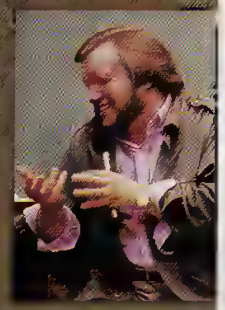
ARTICLE

Tired of gurus who are alive and well? Try one who's been dead for 35,000 years

CHANNELERS

BY KATHARINE LOWRY

Jach Pursel, a onetime insurance man turned channeler (left and below), as he metamorphoses into the discarnate, upscale entity Lazaris



It's dreary and drizzling in Fife, a modern hamlet near Seattle, but the spirits of the 120 souls meeting at the Best Western Inn here can't be dampened. Settling into folding chairs, some are taking deep breaths, trying to contain their excitement; others recognize faces from previous "intensives" and greet them like long-lost friends. Many of the faithful gathered here have seen J.Z. Knight channel Ramtha before, and it's hard to say whom they idolize more: J.Z.—the pretty, blond forty-one-year-old former cable TV executive turned superstar trance channeler—or Ramtha, the thirty-five-thousand-year-old warrior spirit (also called a "god" or an "entity") who commandeers her petite body with scheduled regularity. Ramtha has become so famous, in fact, that his name is now a trademark.

A few people file in together, but the majority make this pilgrimage alone. Most are middle-aged women, but there are also solitary men, many of them with a bearded, Sixties look. The upscale types said to constitute channeling's biggest audience are barely in evidence today, but everyone must at least be reasonably solvent, given the $150 fee for this daylong intensive.

Finally J.Z. Knight appears, resplendent in a snow-white designer warm-up outfit, to the sound of many hands clapping. With her violet eyes cast Shy Di downward, blond hair cascading to her shoulders, she graciously accepts their applause with an Ultra Brite smile, her creamy complexion radiant. Even to a nonbeliever, she could pass for a goddess.

Informally perched on the

PHOTOGRAPHS BY BRIAN R. WOLFF

"J.Z. Knight, superchanneler, lets her body and voice be taken over by Ramtha, a thirty-five-thousand-year-old warrior spirit. The price of admission: $150."

edge of the stage, a jungle of tropical flowers her backdrop, she teases, "I know what some of you are thinking. If I'm sitting here, Ramtha must be coming today!" When the laughter and applause that greet this assurance die down, J.Z. introduces her seventy-eight-year-old mother, who occupies a front-row seat. This will be the first time her mother has seen her 'change,' J.Z. confides. She praises her progenitor as a "strong, allowing kind of lady—a great god in her own right," although J.Z.'s forthcoming autobiography depicts her far less favorably.

Before Ramtha makes his appearance, though, J.Z. confesses to this sympathetic audience how anguished she has been by the slings and arrows of the press. First she was taken to task for selling overvalued Thoroughbreds from her horse ranch to wealthy Ramtha clients who were told that they were "designed" by the god himself. Then she caught endless grief for building a $1.5 million mansion near Yelm, Washington—even though, as she points out this morning, "it isn't nearly as nice as the Pope's house." But the worst attacks were provoked by her contention on ABC's *20/20* that there is no right and wrong, including murder. Dubbing the show *30/30*, J.Z. puts an imaginary gun to her head and triggers booming applause from her followers.

Briefly taking questions from the audience, J.Z. blushes as several "masters" (veterans of previous intensives) sing her praises. Many have heeded Ramtha's warnings about economic depression, earthquakes, floods, and other calamities reportedly somewhere between 500 and 2,000 people have pulled up stakes, often leaving spouses and families behind, to move to the rural Northwest. There, Ramtha claims, they'll be safe if they store up a two-year supply of provisions and stick to high ground. "I just love you so much!" exudes one wide-eyed, prematurely gray woman. "And now I just love *myself* so much. It's incredible."

What on earth is going on here? Why are thousands of supposedly normal, functioning adults actually buying all this hocus-pocus about higher beings, when the only evidence offered is the testimony of the very people who 'channel' them—always for a sizable fee? Is it the charismatic mediums or their narcissistic message of self-love that is behind the channeling phenomenon?

In fact, for many people the experience of being with a channeler is so powerful and addictive that several concerned researchers, including cult expert Carl Raschke, a professor of humanities at the University of Denver, consider it a form of mass hypnosis. "There's obviously a process of collective suggestion and a transfer of unconscious content that goes on during a channeling session," Raschke explains. Which might be why Ramtha devotees commonly talk of having been "hooked" the very first time they laid eyes on J.Z./Ramtha or heard his message, even on videotape. The depth of his wisdom and the power of his love, they say, shook them to the core of their being. And while detractors may be right in maintaining that many of these cultists are people in crisis, lonely cultural vagabonds, or altered states junkies continually seeking exotic new highs, such labels can't apply to all 32,000 on Ramtha's mailing list, nor can it explain the ardent support of celebrities like Shirley MacLaine and Linda Evans. For MacLaine it was a case of brotherly love at first sight. She just "knew," she says, that Ramtha had been her sibling in a previous existence in Atlantis. And Evans, who recently bought a house near Knight's place, describes her Ramtha experience as "profound."

In J.Z.'s case, it's easy to see why a cult of personality has built up around her. Along with her sensuous beauty, she has a magnetic, self-possessed presence that lends her an aura of authority and credibility. When she matter-of-factly tells how she had an out-of-body experience in Yelm and traveled to New York, this unusual claim *sounds* almost plausible.

Though routinely described as a simple housewife, this poor girl turned highly successful saleswoman is clearly no such thing. And despite her chronically mangled and misused English (*heathern* instead of 'heathen,' *mediacracy* instead of 'mediocrity.' *In lieu of* when she means "in light of"), she's a spellbinding speaker, quick-witted and droll. As for her malapropisms, no one seems to mind, and if the lapsed Catholic convert sitting behind me, who asked what *Omni* was before confessing she didn't "read much," is any indication, perhaps they simply don't know any better.

What Ramtha followers do know is that "The Ram," as he's fondly called, represents the second coming of Christ. I've been assured by disciples and staffers alike that seeing Ramtha is believing. "The love that emanates from him is just incredible," affirms expatriate Texan Kitty Farmer, who is here with her fiancé, Douglas Mahr, one of Ramtha's "scribes" or recorders. Steven Weinberg, Ramtha's other scribe and author of the white-bound Ramtha Bible, says this otherworldly love literally "saved" him. A loner who once flunked a military mental exam, Weinberg claims he was suicidal until Ramtha gave him a purpose in life.

Trance channeler (*channel* for short) is the New Age term for medium or spiritualist. These seance givers have, of course, been around for centuries, acting as intermediaries between the worlds of the living and the dead. Today's channels, however, don't contact spirits; ostensibly, they are contacted *by* them. And Knight is the first to become a media star and gain an audience outside the lunatic fringe. She's bigger already, she maintains, than Edgar Cayce was in his day or Jane Roberts in hers. After Roberts, a popular channeler with a hyperintellectual entity named Seth, died in 1984, Knight virtually had the channeling field to herself, but

many of her followers say they grew disenchanted with Ramtha's doom-and-gloom talk and his dislike of gays. Others were turned off during a desert retreat in which JZ neglected to enter a trance before slipping into her Ramtha role and by rumors that one assistant quit when she accidentally overheard JZ practicing her Ramtha voice. But in the last year or so, perhaps inspired by the popularity and profitability of this New Age practice, dozens of competitors have cropped up, causing something of a ratings war among the channels. One of them, Penny Torres—married to an L.A. cop who never let her have company—sounds and acts suspiciously like Ramtha, though her entity's name is Mafu. But by far JZ's biggest rival is Jach Pursel, who channels a friendly disembodied spirit called Lazaris and is now the guru of choice among the hip California New Age set.

With tens of thousands of Americans paying $10 to $200 an hour to seek comfort and counsel from these higher beings (and at least one dolphin), channeling has become very big business. Profits from seminars, tapes, and books range from $100 million to $400 million a year. Stephan Schwartz, a channeling sympathizer and the director of MOBIUS—a research foundation for the study of consciousness—feels channeling will someday be bigger than Fundamentalism.

He may be right. A recent survey conducted by Father Andrew Greeley (the well-known Jesuit priest, sociologist, and novelist) of the University of Chicago National Opinion Research Center and based on a sample of 1,470 people has shown that a huge potential market is out there. Sixty-seven percent of Americans now profess a belief in the supernatural (up from 58 percent in 1973), 29 percent believe in reincarnation, or have had a psychic experience, and 42 percent believe they've been in contact with someone who died.

JZ is returning from her backstage retreat during which she tied her hair back and entered a three-minute trance that ended with the warrior god ramming into her body with a guttural roar. "Come forward into truth and knowingness and wisdom!" JZ/Ramtha commands in a husky, scratchy baritone as she (he?) stomps around like a sumo wrestler and makes jerky break-dancing gestures. The constant "indeeds" and "so be its" that punctuate his speech are echoed by the audience, a happily enthralled Greek chorus to this cross-dressing Circe.

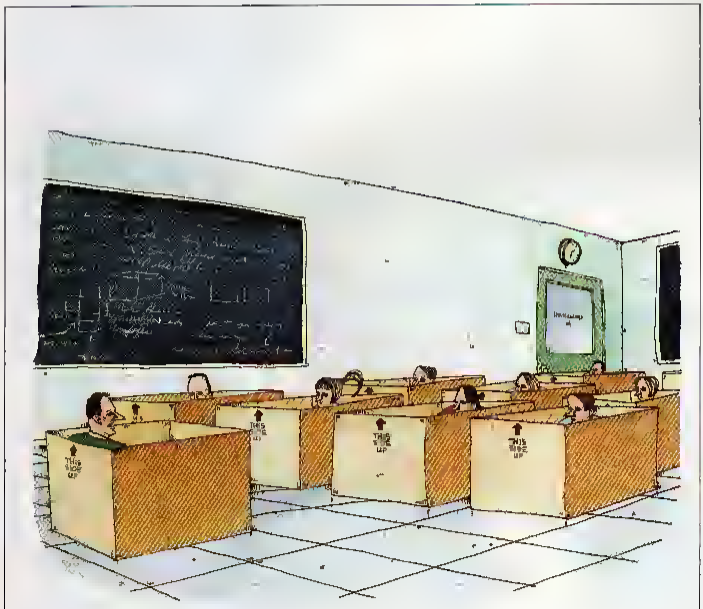
Before long he springs off the stage and works the room with a mike. Kitty grips her fiancé's hand as The Ram says a few kind words to his "scribe" Doug before looking Kitty right in the eye. Her lip quivers uncontrollably and tears pour down her cheeks as she clutches Doug to calm her violent trembling. And then, before I can brace myself, JZ's eyes (the eyes of a god?) are tunneling into my own. Pointing to my notepad, she croaks, "Ah, you write words to describe what you learn?" After listening to me stammer that there *are* no words to describe this, the god calls me a "very perceptive entity" before continuing.

One fat lady is told to "love her tissue" and rejoice in her voluptuousness; an arty-looking guy learns he'll create great things in his lifetime. A matron is advised not to listen to so much gossip; and one pretty girl melts with joy as does a chubby white-haired fellow when Ramtha sensuously strokes their faces, crooning endearments. (In this androgynous half-Rambo, half-Evita form, she's a conveniently complete seductress.) Hugging a fiftyish woman whose tears aren't happy ones, Ramtha promises to send a "runner" who will bring her laughter. (A runner is a person or experience Ramtha sends into your life to bring you some lesson or gift.)

The Ram then takes questions from the audience. "Why do vitamins upset my stomach?" asks one. "How can I learn to become a tree?" asks another. (In this instance, JZ/Ramtha quite sensibly suggests it might be better to concentrate more on observing nature than becoming a plant.) When one man seeks investment advice, he is told to invest in Taiwanese dollars. Often, though, Ramtha's answers are embarrassingly vacuous. When asked what it's like where he's from, The Ram replies that words can't describe it because "words themselves are a limitation." And when a desperate-sounding woman asks what to do about the awful debts she has incurred by uprooting her family to move here, The Ram snaps, "Quit worrying! Just let it *be*!" In fact, his platitudes are sometimes painful to hear, as when a sobbing woman asks why her autistic child doesn't want to speak. His only explanation is "Because he doesn't *want* to!"

Meanwhile, JZ's young husband, Jeff (her third), a onetime cowboy whom she literally picked out of a quarter horse magazine, trails behind handing out Kleenexes to weeping supplicants. With his square jaw and overhanging brow, he'd be stereotypically handsome if it weren't for the blank, lobotomized look in his eyes.

Finally, JZ/Ramtha positions himself before the aged mother. "You have a grand daughter—and you are a grand dame!" he declares, but the mother just sits there, coolly regarding the fruit of her womb with implacable silence. Applause fills up the awkward pause, but as Ramtha stands before his maker, he momentarily seems less a god than a troubled little girl wanting mommy dearest's attention.



I've taught you all there is to know about cardboard
Let's move on to linoleum

The simplest definition of channeling is that it involves the communication of information not consciously known to the communicant. Stephan Schwartz of MOBIUS concedes that no reputable scientist has any handle whatever on what is going on. Channelers could be making all this up, or

CONTINUED ON PAGE 146

MIND CONTROL

HOW TO GET IT, HOW TO USE IT, HOW TO KEEP IT

In 1972 Colorado State University psychologist Richard M. Suinn was called on to help an electronics executive whose vocal cords had been surgically repaired. The man complained that every time he addressed his supervisors a "weakness" in his voice still hurt his performance. His physician, however, said no "physical" weakness existed; perhaps, the doctor suggested, the problem was related to stress.

When the executive met with Suinn, though, it became clear that neither anxiety nor stress was the problem. He simply couldn't *perform*. "For me as a psychologist," says Suinn, "that was an important distinction. We had behavior modification programs for undoing anxiety, but we didn't have much to offer people who had a performance deficit."

Suinn decided to revise a procedure normally used to treat phobias. In the standard technique, known as desensitization, phobic patients are told to keep imagining more and more of the feared experience until the negative emotion associated with it disappears.

But instead of using imagery to squelch fear, Suinn had his client use it to practice a skill, in this case public speaking. First the executive tensed and released virtually every major muscle until his entire body was relaxed. Then he envisioned himself making a presentation to an audience of supervisors in extraordinary detail, down to the very last word. "The approach was so successful," says Suinn, "that I began to wonder how it might be used to strengthen skills in a variety of other people."

SIXTEEN EXERCISES

Within a week of this experience a member of the university's Alpine ski team came by Suinn's office saying that the skiers needed help with competitive stress. In an experiment, Suinn divided the team into two groups. One group received imagery training while the other—the control group—did not. Using Suinn's new method—today called visuo-motor behavior rehearsal, or VMBR—the test group members spent 20 minutes tensing and then releasing their muscles. The act of tensing and relaxing muscles is a simple method by which athletes can relax their bodies and minds.

After the skiers had relaxed, they entered what Suinn terms a controlled dream, which combines the deep concentration and imagination of a dream with the awareness and control of the waking state. "They have control over events," Suinn explains, "but as in a dream, they feel like they're *there*." In that peculiar state of consciousness, they were told to visualize, or "image," their athletic skills: skiing slalom courses, racing downhill, even *finishing* a race.

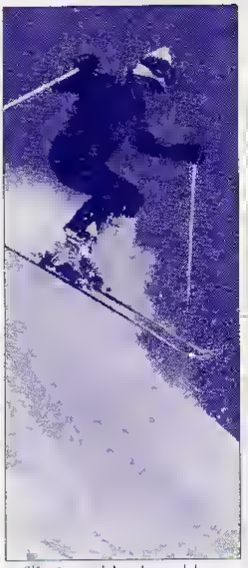
The method worked so well, Suinn says, that the study itself almost flopped. During practice sessions the VMBR-trained skiers performed so much better than those in the control group that the coach never really gave the control-group skiers a chance to compete.

As a result Suinn's VMBR method found its way to U.S. Olympians in Nordic skiing, the biathlon and the pentathlon. In research with some of these athletes, Suinn says, he has found that visualizing an event in the controlled dream state marshals the involvement of the body on the deepest levels. Not long ago an Alpine ski racer visualized a racecourse, and as he went through the imagery, Suinn measured the racer's muscle activity with electrodes. Then Suinn asked the athlete to describe the course verbally. "I found," says Suinn, "that I could match his verbal description with the bursts of muscle activity recorded during the visualization. For example, he described an area where he jumped into the air, and we got a burst of activity at that point. When he described a bumpy part of the course, there was activity again."

Suinn also suspects that controlled dreaming can induce the particular brain waves you will employ during your chosen activity, be it public speaking or skiing. And he adds, controlled dreaming might even represent a new form of learning. "We already know about three types of learning in human beings," Suinn asserts. "There's classical conditioning, in which a new stimulus causes new reflexes to develop. There's operant conditioning, in which correct responses followed by rewards reinforce the desired behavior. And there's vicarious learning, or modeling, in which we acquire a new behavioral pattern simply by *watching* another person.

BY MARK TEICH AND GISELLE DODELES

MIND CONTROL



"It's possible," he adds, "that visualization is a fourth modality of learning." When we enter this uncharted realm, he suggests, we might be creating a template—a baseline model for performance—that would guide the physical and mental processes that occur during the actual event.

Suinn's controlled dreaming is just one of the potent techniques developed during the Seventies and Eighties to help athletes master what may be the single most important factor in superperformance—the mind. James E. Loehr, psychologist in residence at the Nick Bollettieri Tennis Academy in Bradenton, Florida, has found that different emotional states stimulate the production of a whole range of neurotransmitters, or brain hormones, which affect everything from alertness and concentration to depression. A series of physical exercises and ritual techniques developed by Loehr for his "mental toughness" program can now induce the appropriate emotional and chemical responses.

Psychologist Bruce Ogilvie, the first psychologist to work with large numbers of athletes, often relies on a technique known as self-talk, in which athletes rescript the language they use in approaching other players, the racket or club, or even the ball. For instance, a baseball or football player who previously saw the ball as an adversary learns to address it in an affectionate fashion, as if it were a lover or a close friend.

And as Suinn points out, the techniques that are so effective for athletes can help the rest of us prepare for performance as well.

"We can find training methods that are not mystical and that are based on sound principles of learning," Suinn says. "Mental toughness is not something you're born with," Jim Loehr says. "It can be learned."

Toward this end, *Omni* has interviewed a dozen of the most accomplished sports psychologists in America, along with some of the athletes who have excelled using their methods. Below you can find a distillation of their complex techniques, wrapped into 16 exercises you can use to enhance your performance in a wide variety of fields, from feats of strength and endurance to public speaking and the arts. Some experts caution that these sports psychology techniques may be more effective if done under the supervision of a certified clinical psychologist, but if you lack the resources to seek the help of a professional, you can safely practice the exercises below in the comfort of your office or home. It is important to master the initial, simple exercises—which include the basic techniques for relaxation, arousal, and visualization—before you go on to stimulate right brain alpha waves, generate a flow state or enter a controlled dream.

IF YOU SEEK A DOSE OF QUICK ENERGY, VISUALIZE A THOUGHT, FEELING, OR SOUND THAT PUMPS YOU UP.

1 INNER CALM

Visualization, probably the core performance-enhancement strategy used by sports psychologists, is just what it sounds like: visualizing an image or scene to help you relax, build your energy or confidence, or increase your endurance and strength. The concept is nowhere near as simple as it seems, though.

To use visualization for relaxation, recall a time when you were totally at ease. Get a good picture of the image. Were you in sunlight or shade? Inside or out? What could you see from where you stood, sat, or lay? What were you wearing? Who was with you? Involve all your senses. What did it smell like there? Were there food odors? Floral scents? How did your body feel—your feet, your hands, even the muscles in your legs? What could you hear? Human speech? Automotive rumblings? Were the sounds distant or near? What could you touch? Was it hard or soft, hot or cold? Recall every possible sensation of that relaxed moment, until you feel its full, calming force. The more you recall the first time you visualize the scene, the more powerful the effect will be, and the more quickly and easily you will be able to relax when you summon that memory again in the future. Every time you call up that image after the initial visualization, a sense of calm should wash over you. According to psychologist Loehr, the method actually causes hormone levels to shift, changes breathing patterns, and dissipates accumulated muscle tension.

2 HIGH ENERGY

Athletes who call on heightened bursts of energy for pole-vaulting, sprinting or high jumping must be prepared mentally as well as

physically They have to find a special almost superhuman power within themselves at the precise moment of competition when performance counts The same ability sports psychologists contend might help writers to compose reams of dialogue or actors to stage passionate love scenes or violent fights. You might even summon an infusion of energy to help you assertively ask for a raise or negotiate a profitable deal Whatever the goal if you seek an intense dose of short-term energy visualization is again the key Just think of something that pumps you up—it can be a sight a feeling or a sound Before going out on the ice for instance one professional skater always imagined swallowing a star and having it burst inside her spreading energy from the tips of her fingers to her toes A runner imagined a rubber band of light propelling him from the start of the race to the end You must think carefully to find the image that's right for you Whatever personal energizing image you come up with, develop it Use all your senses to create or re-create the scene so that it is as vivid as you can make it You'll feel a surge of physical energy—literally an outpouring of adrenaline—as your nervous system responds to the stimulus The reason this works according to Loehr, is because your emotions tap directly into your physiology

3 CHANGING STATES

Some tasks require relaxation (meeting your boss for cocktails) while others (pitching a proposal) demand that you be energetic For peak performance throughout the day however you may need to switch from one state to the next at a moment's notice It will help immensely if you become aware of your internal energy states which may be divided into four basic types

a) High positive energy similar to the skater's feeling of being suffused by a star burst High positive energy generally coincides with the moments when you achieve your personal best

b) Low positive energy including moments of deep and pleasant relaxation

c) High negative energy , marked by the times you feel fear and loathing

d) Low negative energy which is characterized by moments of malaise depression and defeat

With a pad and pencil, identify one real-life example of each state and detail how you felt during the experience When you learned you had received that grant for your poetry for instance were your muscles tensed or relaxed? When you failed Chem 101 were you depressed, enraged, or relieved? Was your breathing shallow or deep? Once you're familiar with the boundaries of your internal energy states begin to record them six times a day an hour after you awaken mid-morning just after lunch late afternoon after dinner, and about an hour before you go to bed Whenever you notice a shift from one state to the next write that down as well After a week or so you will be far more in touch with your internal rhythms Then you can use Exercises 1 and 2 to shift into appropriate states of arousal and relaxation

4 FACIAL FLIPS

For many people changing from one emotional state to another is most easily accomplished by rearranging facial muscles in specific ways For instance something as simple as a smile transmits nerve impulses from facial muscles to the limbic system the emotion center in the brain The result positive feelings of happiness or relaxation A frown or grimace which creates tension in facial muscles on the other hand tends to induce anxiety

According to recent research by psychologists the emotional changes induced by alterations in body configuration are powerful and swift

Start facial exercises by telling yourself "I want to do this right" Then assess your current emotional state relaxed excitable, lethargic, or tense Finally adjust the state by putting the desired expression on your face Put on a confident smile and you will feel secure and confident Look angry for even a few seconds and you'll probably feel angry

As simple as this sounds sports psychologists say it really works Practice your facial flips as often as you can Start in front of a mirror holding the desired expression (a smile for instance) for an extended period Then go about your business expression in place

Sports psychologists add that becoming a truly confi-

dent person goes beyond facial expression. You must control your posture, your gestures...and your voice. If you tend to slouch, vigilantly stand up straight. If you tend to play with the ends of your hair or beard while talking, stop that nervous, insecure behavior at once. And make sure that your voice is confident. If it wavers, cracks, or trembles, make a concerted effort to rid it of that quality, even if the effort feels totally unnatural to you.

To be truly successful with body language and facial flips, you must remember your intent throughout the day. If confidence is your goal, for example, continually tell yourself, "I must be confident. I cannot make myself confident, but I can control my facial muscles, my posture, and my voice. So I'll control those things, and I'll look like a confident person." The eventual result, sports psychologists assure us, will be confidence in the true sense of the word.

5 PERSONAL BESTS

Summon an image of yourself at your best, a time when you were able to respond effortlessly no matter how demanding and intricate the challenge. Even those who are not high-level athletes, sports psychologists say, often draw their peak-performance memories from sports. For instance, recalling a weekend tennis match that you won after storming back from two sets behind might gird you in arguing a traffic ticket before a judge. Recall your finest moment in every detail, using every sense: sight, sound, smell, taste, touch. Etch it into your consciousness so that you can summon it in an instant when facing a crisis.

6 POSITIVE THINKING

When Shane Murphy, now head of the sports psychology department at the United States Olympic Committee Training Center at Colorado Springs, first started working with athletes, he decided to investigate something he'd heard for years: that the very *thought* of failure might jinx a performance or game. In one study, Murphy asked golfers to imagine missing a putt. In a majority of cases, performance declined dramatically. That was particularly interesting because, prior to the experiment, the athletes had been uniformly skeptical. "You're trying to mess with my head" was the overwhelming response. "That won't work on me." Then the athletes would miss eight out of ten putts. Murphy replicated that study and found that, at least with closed motor skills—things you start and finish yourself, such as putting, shooting a basketball, or bowling—the important thing was not that the athlete precisely imagine his shot or stroke but that he imagine it in the context of complete success.

In light of such research, sports psychologists have developed a series of techniques geared toward putting athletes and nonathletes alike in a positive, can-do mental framework. Though the concept may seem simple, the effect can often be profound.

One effective exercise is the stop drill, probably the first positive-thinking technique ever used by athletes. Especially effective with those who have recurring thoughts of a negative or destructive nature, it is drawn from the domain of strict behaviorism. Its goal: to banish all negative thoughts from the mind. For instance, the baseball player who keeps thinking *I'll never hit the ball* might pinch himself to the point of pain and say "Shut up! Shut up!" whenever the thought enters his mind. If you are plagued by thoughts such as *No one likes me* or *I'll never complete this project*, you might try snapping a high-tension rubber band against your fingers until they burn, saying "Stop! Stop!" Use the unpleasant sensation and the language that is best for you.

7 BRAIN-WASHING

Brainwashing attempts not only to obliterate negative thoughts but also to turn those negatives into positives. If there is an area in which you have previously failed, keep repeating "I can do it" or "I love it." If certain people intimidate you, keep telling yourself you can handle them. In general, identify your negative attitudes and any thought that consistently produces a pattern of negative thinking. Then repeat over and over the positive attitude you want to acquire—write it down, sing it, even chant it.

8 SELF-TALK

Self-talk, or cognitive shifting, constitutes a more sophisticated version of the positive thinking techniques. Self-talk attempts to shift the *range* of negative performance-defeating feelings—including anger and aggression—into sensations that enhance success. To

use self-talk follow these instructions If a particular task makes you angry hostile, or even uncomfortable you can use self-talk to fill yourself with feelings of affection, even love Simply determine the precise language you use to address your lover or closest friend during an intimate moment Then using that same tone of voice and the exact same words address your task and all the objects associated with it If you are writing a dreaded Ph D thesis, for instance

speak warmly to your word processor and your reference books Repeated use of this exercise sports psychologists say has met with remarkable success

9 PUMPING IRON

A few years back, Shane Murphy set out to study differing images and their effects on pure, unadulterated strength as measured by a handgrip dynamometer To do the experiment he asked 24 athletes to imagine three scenes one that provoked fear, one that inspired anger, and one that induced calm Murphy found that fearful angry images helped performance if and only if, the athlete was easily aroused by a variety of other stimuli Calm images on the other hand hurt performance a lot

The suggestion is clear To increase your physical strength first of all you must know yourself If you are aroused—either excited or angered for instance—by emotional cues you can increase your strength by envisioning an angry hostile scene If visual stimuli don't cause you to feel strong emotion however you would do better to immerse yourself in a charged but positive energy state envisioning yourself performing at your best No matter what your level of arousal, moreover don't attempt to demonstrate superstrength after envisioning a pastoral scene a mountainside or a sunset over the sea To sum it up use Exercise 3 to increase your strength by summoning high positive energy or high negative energy, depending on whichever type you feel works best for you

10 RIGHT BRAIN POWER

Psychologists who study the brain waves of athletes have learned that different sports and skills require increased activity in either the right or the left hemisphere of the brain If you are doing something that requires large amounts of spontaneity and intuition—be it shooting an arrow giving a speech, or painting a picture—you will do best if you put yourself on automatic pilot entering what athletes call the flow state Like actors on a stage individuals who must perform a known task in the optimum way will do best if they can avoid what's known as the paralysis of analysis Instead of asking themselves questions each step of the way they must immerse themselves in the pure experience and gestalt of each individual moment, without any analysis at all

To help athletes do that, researchers have recently developed a series of exercises to turn down the noise in the left hemisphere of the brain and turn up the alpha waves on the right The series of steps below has been embraced by Rick McKinney, the world's number one archer and his Olympic peers Using this technique, among others McKinney was recently able to immerse himself so deeply in the moment that he controlled his arrow winning a world title during a violent, six-hour-long typhoon

Phase One Progressive Relaxation First, get into a physically relaxed state by lying down and tensing and releasing virtually every muscle in your body Start with the hip muscles Clench your hips for two to three seconds then relax them for two to three seconds Do the same with the thighs knees, calves, ankles and toes Now go on to the arm muscles First clench, then relax the shoulders, upper and lower arms, wrists and fingers Do the same for your face forehead eyes nose, cheeks mouth, jaw Finally proceed to the neck chest stomach, and back If you don't feel calm after one go around repeat the procedure again and again up to five or six times in a single session until you are totally relaxed

Phase Two Choosing Your Visual Mantra Search through your past for the most calming *personal* image you can think of Images that

people have chosen include picnicking by a lake, sitting by a fireplace in a comfortable chair and reading a book, and fishing in a river. Please think about this carefully and choose an image that has meaning for you. Once you have chosen the image, a close friend or coach should ask you questions so that it is rendered as vividly as possible in your mind. For instance, if you have chosen a picnic by a lake, the friend should ask questions like: Is the sun shining brightly? What kind of food are you eating? Who's with you? Are you sitting or reclining on the grass? Imagining this scene after progressive relaxation should further relax you. If it doesn't, repeat phases one and two.

Phase Three: Choosing a Cue Word. By repeating this procedure daily for a few weeks, you should be able to achieve an ongoing calm state. The next step is choosing a cue word that will allow you to enter this state without going through phases one and two. For instance, if you best achieve relaxation by envisioning a picnic at a lake, your cue word might be *lake, water*, or even something as obscure as *soda pop*. Just repeat the word, let the image wash over you, and your right brain should recharge automatically.

11 SETTING LONG RANGE GOALS

To set your overall goal, first write it down. For instance, you may want to increase your public speaking skills for a presentation in the spring. Or you may want to take off 20 pounds. Whatever your goal, state it concretely. Then realistically estimate how much time you reasonably have to accomplish it.

The next step, according to Shane Murphy of the United States Olympic Committee, is "superanalyzing" your goals. That is, you must break each large goal into tiny micro-goals that can be easily accomplished in a relatively short span of time. For example, if you want to be prepared for your big oral presentation three months hence, make sure you give a smaller presentation to co-workers (or even friends) every week before then. During the first mini-presentation, concentrate only on your posture. During the second mini-presentation, concentrate on the power of your voice.

As the weeks pass, your skills should accumulate and by the time you're ready for your big presentation, you should be totally prepared for it.

TO GET A RAISE, CHOOSE HOW TO APPROACH YOUR BOSS. THEN PREPARE FOR ALL POSSIBLE REACTIONS.

The next step is mentally rehearsing the big event. First put on some loose clothing and lie down. Then relax, using either the progressive relaxation presented in Exercise 10 or simply by listening to music. Finally, run through the big presentation in your mind. Imagine yourself in the actual meeting room, surrounded by the bustle of supervisors and colleagues. How do you feel? At what point might you get nervous or lose control?

The session should be almost psychotherapeutic in nature. Here are some tips using the oral presentation as an example:

- As you work through the presentation, talk out loud so it is more convincing.
- Go over past presentations delivered by both you and others, recalling as many details as possible.
- Switch sides, becoming part of the audience and observing yourself going through a speech. If you hear a clumsy transition, fix it. Through rehearsal you can rearrange your presentation, fine-tuning it until it shines. By repeating this technique once daily for a couple of weeks before the big event, you will develop a sense of confidence that will vastly increase your chance of success.

12 CONTROLLED DREAMING

Controlled dreaming is a powerful, sophisticated means of achieving your goals. Though the technique seems similar to long-term goal setting (Exercise 11), the differences are profound. Controlled dreaming is most useful in helping you to accomplish what you want in the shortest time possible. If you must master a technique in a few days or a week as opposed to several months, or if the task fills you with a particular dread, controlled dreaming is for you.

Phase One: Goal Analysis. If a situation fills you with anxiety, no matter how you prime your right brain or how you try to relax, your chances of failure will be high. But by combining the powers of your right brain with special exercises developed by sports psychologists, the problem can be largely overcome. The first step is identifying your problem and formulating task-specific goals. This process can be done alone (if you feel you know yourself) with a therapist, or with a trusted friend. Please take notes to focus your thoughts.

Ask yourself what it is you want to achieve, be it writing a novel or running the New York City Marathon. Let's say your goal is to ask for a raise. Prepare a list of the reasons you deserve it. Then decide how you might best approach your employer: assertively, calmly, confidently. Finally, anticipate the possible reactions you might receive. Will your boss say "Make it quick"? Will she become red-faced or tense? Work out a response to each possible reaction in advance. When you imagine yourself responding in an inappropriate fashion, *rescript*

your response so that it is ideal. Replace all the negatives with positives, and compose a finale in which you have completed your goal with resounding success. What you are really doing is writing a miniature script defining your role and your employer's role. Like an interactive videotape in which the story line changes depending on the viewer's reaction, you will actually be composing multiple scenarios leading to a single, successful—and highly graphic—conclusion.

Phase Two: Progressive Relaxation. Follow the steps for progressive relaxation presented in Exercise 10. The first time you use progressive relaxation to overcome a task-specific anxiety, however, you should tense and relax your muscles for 45 minutes, regardless of how relaxed you believe you feel after one or two go-arounds. This first, intensive session will literally train your muscles. After a while you will be capable of completely relaxing in as little as a minute or two.

Phase Three: Centered Breathing. Still lying down, close your eyes and take a series of deep breaths from your diaphragm. Slowly breathe in and out through your mouth for five to ten minutes. According to sports psychologists, centered breathing seems to change your body's center of gravity, increasing the feeling of internal stability and enhancing your ability to focus.

Phase Four: Controlled Dreaming. Now you are ready for the dress rehearsal to begin. Sports psychologist Suinn, father of this technique, calls this phase controlled visualization, similar to dreaming because it enables you to tap the focusing and imaging powers of the dream state while awake. It is fairly easy to enter a controlled dream state after progressive relaxation and centered breathing.

In your relaxed, receptive state your left brain will be tuned down and your right brain will be at the apex of its powers. Simply close your eyes and immerse yourself in mental images of the task you wish to perfect. You must turn to the script you created in phase one, playing it in your head until it feels real. Remember: Avoid phrases such as "I want to . . ." or "I'm feeling calm." This is not a pep talk, nor is it wishful thinking. The benefit derives from experiencing the task you want to perfect. Do this visualization again and again. And remember: the session should revolve around the anxiety-producing event, minus any details that would cause anxiety. In other words, simply go through the script for problem areas and edit them out, creating a new script in which all the details result in harmony, perfection, and flow. This allows you to take the leap from anxiety to performance, experiencing victory and the elation that comes with it. Because your right brain will be working full force during the mental practice session, it will be more experienced and confident during the actual event. According to some sports psychologists, what you experience during controlled dreaming is so authentic that your brain waves and muscle patterns, as measured by electrodes, mimic the patterns you'll exhibit during the *actual* event.

13 ACHIEVING FLOW

You will benefit if you visualize your performance in a controlled dream state almost every day. But right before the big event a shorter form of this exercise will help as well. Whether you're presenting a paper or entering the Tour de France, spend a minute or so doing centered breathing. This will slow your body and clear your mind, ridding you of distractions and freeing you for performance. Then enter a brief controlled dream, rehearsing just one or two scenes from the script you have produced. This will get you into the flow you need to stage the whole event. If your attention wanders *during* the performance, a few seconds of centered breathing will help.

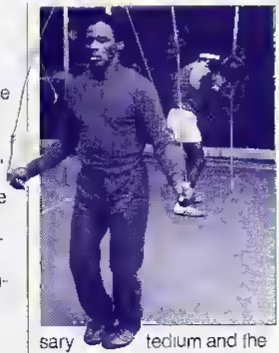
14 DREAMING FOR ENDURANCE

If the problem you have with your task is the tedium it induces, you may have trouble achieving success. Whether you're running a marathon or typing a book manuscript, boosting your energy and increasing your

endurance is the key A variation on the controlled dreaming presented in Exercise 12 can help

To increase your endurance during a tedious task you must first correctly analyze your goal This time though, instead of pinpointing all the places you stutter all the places you slip, focus on the instances in which boredom sets in At what point during a tennis match for instance does your attention drift? Is your partner staring off into space? Has the rally gone on for too long? Once you note these moments anticipate them and offset them with an artful rescript In your goal analysis replace the boredom with a more appropriate response

If your aim is to endure a task you consider absolute drudgery use your analysis to link the tedious part of the project with that which is most interesting For instance, a piano student might find practicing chords an utter bore but in the rescript the link between the necessary tedium and the music it leads to is there

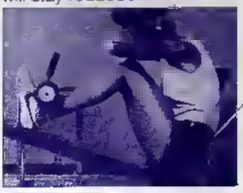


After the goal analysis and rescripting are complete you can follow phases two through four of Exercise 12 Significant improvements in endurance should result

15 ENERGY BOOSTERS AND PICK-ME-UPS

If you feel you're running out of steam a few minutes of vigorous activity may be the key According to sports psychologist Loehr a brief period of exercise stimulates production of the brain neurotransmitter norepinephrine, making you energized and alert

At the same time the levels of serotonin and the endorphins—chemicals found in the brain—rise, ensuring that your tension will stay reduced



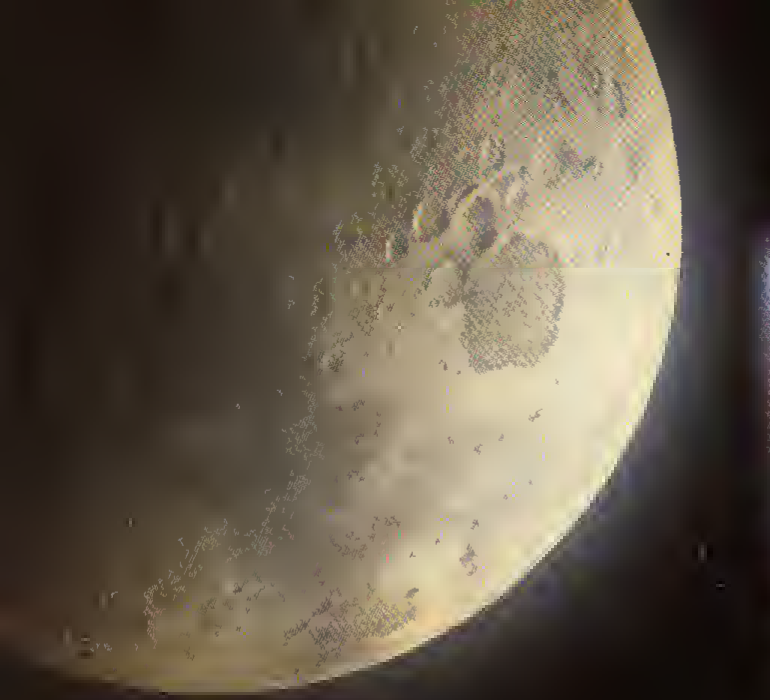
Done correctly moreover the exercise increases deep breathing, causing your heart to pump more blood and energizing your body The exercises described below are especially potent Loehr explains because they require that you use both sides of your body thereby stimulating both hemispheres of the brain

- *Rope Jumping with an Imaginary Rope* Pretend that you have a rope For two to five minutes jump on your toes while making as little noise as possible with your feet To vary the task try double and triple jumps, alternate your feet and even jump in slow motion
- *Bent-Knee Sit-ups* Lie on your back with your knees bent then slowly curl up to reach for your toes (You do not have to actually touch them) Do as many sit-ups as you comfortably can Research shows that these exercises will enhance your circulation and deepen your breathing, providing you with a burst of energy for a special day or event
- *Muscle Stretching* Muscle stretching is especially good for people who spend a lot of time at computer terminals and develop aching necks and backs To reduce these aches develop a routine that stretches all your major muscle groups Extend your arms and twist them touch your toes stretch your legs, rotate your wrists ankles and neck

16 RELEASING TENSION

Stand up clench your fists and tense your arms and legs Jerk your shoulders as high as they will go and hold this pose for 10 to 15 seconds As you do this close your eyes and imagine that massive leaden weights have been placed atop your shoulders The only way to release the burden is to let the weights slide down through your arms and legs as you slowly drop your shoulders Repeat three or four times to release tension while increasing energy

- *Desk Isometrics* Use this exercise to release tension while sitting at your desk Moving easily push upward, downward, and outward against your desk and chair with your arms and hands. If your chair is stable and has a hard armrest lift yourself up and down within your seat If the chair is not stable you can push against the arms To relax tension in the lower body perform leg lifts while sitting, or push against the inside of your desk with your legs ∞



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FICTION

THE PEAR-SHAPED MAN

A diet of Coke and Cheez Doodles is bound to shape you—and those you love

BY GEORGE R. R. MARTIN

The Pear-shaped Man lives beneath the stairs. His shoulders are narrow and stooped, but his buttocks are impressively large. Or perhaps it is only the clothing he wears; no one has ever admitted to seeing him nude, and no one has ever admitted to wanting to. His trousers are brown polyester double knits, with wide cuffs and a shiny seat; they are always baggy, and they have big, deep, droopy pockets so stuffed with oddments and bric-a-brac that they bulge against his sides. He wears his pants very high, hiked up above the swell of his stomach, and cinches them in place around his chest with a narrow brown leather belt. He wears them so high that his drooping socks show clearly, and often an inch or two of pasty white skin as well.

His shirts are always short-sleeved, most often white or pale blue, and his breast pocket is always full of Bic pens, the cheap throwaway kind that write with blue ink. He has lost the caps or tossed them out because his shirts are all stained and splotched around the breast pockets. His head is a second pear set atop the first; he has a double chin

PAINTINGS BY CLAUDE VERLINDE

and wide full fleshy cheeks and the top of his head seems to come almost to a point His nose is broad and flat with large greasy pores his eyes are small and pale set close together His hair is thin dark limp flaky with dandruff it never looks washed, and there are those who say that he cuts it himself with a bowl and a dull knife He has a smell, too the Pear-shaped Man it is a sweet smell a sour smell a rich smell compounded of old butter and rancid meat and vegetables rotting in the garbage bin His voice when he speaks is high and thin and squeaky it would be a funny little voice coming from such a large ugly man, but there is something unnerving about it and something even more chilling about his tight small smile He never shows any teeth when he smiles but his lips are broad and wet

Of course you know him Everyone knows a Pear-shaped Man

Jessie met hers on her first day in the neighborhood while she and Angela were moving into the vacant apartment on the first floor Angela and her boyfriend Donald the student shrink had lugged the couch inside and accidentally knocked away the brick that had been holding open the door to the building Meanwhile Jessie had gotten the recliner out of the U-Haul all by herself and thumped it up the steps only to find the door locked when she backed into it, the recliner in her arms She was hot and sore and irritable and ready to scream with frustration

And then the Pear-shaped Man emerged from his basement apartment under the steps climbed onto the sidewalk at the foot of the stoop and looked up at her with those small pale, watery eyes of his He made no move to help her with her chair He did not say hello or offer to let her into the building He only blinked and smiled a tight, wet smile that showed none of his teeth and said in a voice as squeaky and grating as nails on a blackboard, "Ahhhh *There* she is Then he turned and walked away When he walked he swayed slightly from side to side Jessie let go of the recliner it bumped down two steps and turned over She suddenly felt cold despite the sweltering July heat She watched the Pear-shaped Man depart That was her first sight of him She went inside and told Donald and Angela about him, but they were not much impressed "Into every girl's life a Pear-shaped Man must fall" Angela said with the cynicism of the veteran city girl "I bet I met him on a blind date once"

Donald, who didn't live with them but spent so many nights with Angela that sometimes it seemed as though he did had a more immediate concern "Where do you want this recliner?" he wanted to know

Later they had a few beers and Rick and Molly and the Heathersons came over to help them warm the apartment, and Rick offered to pose for her (wink wink nudge nudge) when Molly wasn't there to hear and Donald drank too much and went to sleep on the sofa and the Heathersons had a fight that ended with Geoff storming out and Lureen crying it was a night like any other night in other words and Jessie forgot all about the Pear-shaped Man

But not for long

The next morning Angela roused Donald and the two of them went off Angie to the big downtown firm where she was a legal secretary Don to study shrinking Jessie was a freelance commercial illustrator She did her work at home which as far as Angela and Donald and her mother and the rest of Western civilization were concerned meant that she didn't work at all "Would you mind doing the shopping?" Angie asked her just before she left They had pretty well devastated their refrigerator in the two weeks before the move so as not to have a lot of food to lug across town "Seeing as how you'll be home all day? I mean we really need some food"

So Jessie was pushing a full cart of groceries down a crowded aisle in Santino's

"He looked at her with pale, watery eyes He smiled a tight, wet smile that showed none of his teeth "Ahhh There she is." Then he turned and walked away He swayed from side to side"

Market on the corner when she saw the Pear-shaped Man the second time He was at the register counting out change into Santino's hand Jessie felt like making a U-turn and busying herself until he'd gone But that would be silly She'd gotten everything she needed and she was a grown woman, after all and he was standing at the only open register Resolute, she got in line behind him Santino dumped the Pear-shaped Man's coins into the old register and bagged up his purchase a big plastic bottle of Coke and a one-pound bag of Cheez Doodles As he took the bag the Pear-shaped Man saw her and smiled that little wet smile of his "Cheez Doodles are the best" he said "Would you like some?"

"No, thank you" Jessie said politely The Pear-shaped Man put the brown paper sack inside a shapeless leather bag of the sort that schoolboys use to carry their books gathered it up and waddled out of the store Santino a big grizzled man with thinning salt-and-pepper hair began to ring up Jessie's groceries "He's something, ain't he?" he asked her

"Who is he?" she asked

Santino shrugged "Hell I dunno Everybody just calls him the Pear-shaped Man He's been around here forever Comes in every morning buys a bottle of Coke and a big bag of Cheez Doodles Once we run out of Cheez Doodles so I tell him he oughta try them Cheetos or maybe even potato chips, y'know for a change? He wasn't having none of it though"

Jessie was bemused "He must buy something besides Coke and Cheez Doodles"

"Wanna bet, lady?"

Then he must shop somewhere else

Besides me the nearest supermarket is nine blocks away Charlie down at the candy store tells me the Pear-shaped Man comes in every afternoon at four thirty and has himself a chocofate ice-cream soda but far as we can tell, that's all he eats He rang for a total "That's seventy-nine eighty-two, lady You new around here?"

"I live just above the Pear-shaped Man," Jessie confessed

"Congratulations" Santino said

Later that morning after she lined the shelves and put away the groceries set up her studio in the spare bedroom made a few desultory dabs on the cover she was supposed to be painting for Pirouette Publishing, ate lunch and washed the dishes, hooked up the stereo and listened to some Carly Simon and rearranged half of the living room furniture Jessie finally admitted a certain restlessness and decided this would be a good time to go around the building and introduce herself to her new neighbors Not many people bothered with that in the city she knew but she was still a small-town kid at heart and it made her feel safer to know the people around her She decided to start with the Pear-shaped Man down in the basement and got as far as descending the stairs to his door Then a funny feeling came over her There was no name on the doorbell she noticed Suddenly she regretted her impulse She retreated back upstairs to meet the rest of the building

The other tenants all knew him, most of them had spoken to him at least once or twice trying to be friendly Old Sadie Winbright, who had lived across the hall in the other first-floor apartment for twelve years said he was very quiet Billy Peabody who shared the big second-floor apartment with his crippled mother thought the Pear-shaped Man was creepy especially that little smile of his Pete Pumetti worked the late shift and told her how those basement lights were always on no matter what hour of the night Pete came swaggering home even though it was hard to tell on account of the way the Pear-shaped Man had boarded up his windows Jess and Ginny Harris didn't like their twins playing around the stairs that led down to his apartment and had forbidden them to talk to him Jeffries the barber whose small two-chair shop was down the block from Santino's knew him and had no great desire for his patronage All of them every one called him the Pear-shaped Man That was who

he was. But who is he?" Jessie asked. None of them knew. "What does he do for a living?" she asked.

"I think he's on welfare." Old Sadie Winbright said. "The poor dear, he must be feebleminded."

"Damned if I know," said Pete Pumetti. "He sure as hell don't work. I bet he's a queer."

"I think he might be a drug pusher," said Jeffries the barber, whose familiarity with drugs was limited to witch hazel.

"I betcha he writes them pornographic books," Billy Peabody surmised.

"He doesn't do anything for a living," said Ginny Harris. "Jess and I have talked about it. He's a shopping-bag man; he has to be."

That night, over dinner, Jessie told Angela about the Pear-shaped Man and the other tenants and their comments. "He's probably an attorney," Angie said. "Why do you care so much, anyway?"

Jessie couldn't answer that. "I don't know. He gives me goose bumps. I don't like the idea of some maniac living right underneath us."

Angela shrugged. "That's the way it goes in the big, glamorous city. Did the guy from the phone company come?"

"Maybe next week," said Jessie. "That's the way it goes in the big, glamorous city."

Jessie soon learned that there was no avoiding the Pear-shaped Man. When she visited the laundromat around the block, there he was, washing a big load of striped boxer shorts and ink-stained short-sleeved shirts, snacking on Coke and Cheez Doodles from the vending machines. She tried to ignore him, but whenever she turned around, there he was, smiling wetly, his eyes fixed on her, or perhaps on the underthings she was loading into the dryer.

When she went down to the corner candy store one afternoon to buy a paper, there he was, slurping his ice-cream soda, his buttocks overflowing the stool on which he was perched. "It's homemade," he squeaked at her. She frowned, paid for her newspaper, and left.

One evening, when Angela was seeing Donald, Jessie picked up an old paperback and went out on the stoop to read and maybe socialize and enjoy the cool breeze that was blowing up the street. She got lost in the story, until she caught a whiff of something unpleasant, and when she looked up from the page, there he was, standing not three feet away, staring at her. "What do you want?" she snapped, closing the book.

"Would you like to come down and see my house?" the Pear-shaped Man asked in that high, whiny voice.

No, she said, retreating to her own apartment. But when she looked out a half hour later, he was still standing in the same exact spot, clutching his brown bag and staring at her windows while dusk fell around him. He made her feel very uneasy. She wished that Angela would come home, but she knew that wouldn't happen for hours. In fact, Angie might very well decide to spend the night at Don's place.

Jessie shut the windows, despite the heat, checked the locks on her door, and then went back to her studio to work. Painting would take her mind off the Pear-shaped Man. Besides, the cover was due at Pirouette by the end of the week.

She spent the rest of the evening finishing off the background and doing some of the fine detail on the heroine's gown. The hero didn't look quite right to her, when she was done, so she worked on him, too. He was the usual dark-haired, virile, strong-jawed type, but Jessie decided to individualize him a bit, an effort that kept her pleasantly occupied until she heard Angie's key in the lock.

She put away her paints and washed up and decided to have some tea before calling it a night. Angela was standing in the living room, with her hands behind her back, looking more than a little tipsy, giggling. "What's so funny?" Jessie asked.

"She was standing at the door to the Pear-shaped Man's apartment under the stairs, standing in darkness, waiting for something to happen. Slowly, the door began to open."

Angela giggled again. "You've been holding out on me," she said. "You got yourself a new beau and you didn't tell."

"What are you talking about?"

"He was standing on the stoop when I got home," Angie said, grinning. "She came across the room. 'He said to give you these.' Her hand emerged from behind her back. It was full of fat, orange worms, little flaking twists of corn and cheese that curled between her fingers and left powdery stains on the palm of her hand. 'For you,' Angie repeated, laughing. 'For you.'"

That night, Jessie had a long, terrible dream, but when the daylight came, she could remember only a small part of it. She was standing at the door to the Pear-shaped Man's apartment under the stairs; she was standing there in darkness, waiting, waiting for something to happen, something awful, the worst thing she could imagine. Slowly, oh so slowly, the door began to open. Light fell upon her face, and Jessie woke, trembling.

He might be dangerous, Jessie decided the next morning over Rice Krispies and tea. Maybe he had a criminal record. Maybe he was some kind of mental patient. She ought to check up on him. But she needed to know his name, first. She couldn't just call up the police and say, 'Do you have anything on the Pear-shaped Man?' After Angela had gone to work, Jessie pulled a chair over by the front window and sat down to wait and watch. The mail usually arrived about eleven. She saw the postman ascend the stairs, heard him putting the mail in the big hall mailbox. But the Pear-shaped Man got his mail separately, she knew. He had his own box, right under his doorbell, and if she remembered right, it wasn't the kind that locked either. As soon as the postman had departed, she was on her feet, moving quickly down the stairs. There was no sign of the Pear-shaped Man. The door to his apartment was under the stoop and farther back; she could see overflowing garbage cans, smell their rich, sickly sweet odor. The upper half of the door was a window, boarded up. It was dark under the stoop. Jessie barked her knuckles on the brick as she fumbled for his mailbox. Her hand brushed the loose metal lid. She got it open, pulled out two thin envelopes. She had to squint and move toward the sunlight to read the name. They were both addressed to Occupant.

She was stuffing them back into the box when the door opened. The Pear-shaped Man was framed by bright light from within his apartment. He smiled at her, so close she could count the pores on his nose, see the sheen of the saliva on his lower lip. He said nothing.

"I," she said, startled. "I... I got some of your mail by mistake. Must be a new man on the route. I... I was just bringing it back."

The Pear-shaped Man reached up and into his mailbox. For a second, his hand brushed Jessie's. His skin was soft and damp and seemed much colder than it ought to be, and the touch gave her goose bumps all up and down her arm. He took the two letters from her and looked at them briefly and then stuffed them into his pants pocket. "It's just garbage," squeaked the Pear-shaped Man. "They shouldn't be allowed to send you garbage. They ought to be stopped. Would you like to see my things? I have things inside to look at."

"I," said Jessie, "uh, no. No, I can't. Excuse me." She turned quickly, moved out from under the stairs, back into the sunlight, and hurried back inside the building. All the way, she could feel his eyes on her.

She spent the rest of that day working and the next as well, never glancing outside for fear that he would be standing there. By Thursday, the painting was finished. She decided to take it in to Pirouette herself and have dinner downtown, maybe do a little shopping. A day away from the apartment and the Pear-shaped Man would do her good, soothe her nerves. She was being overimaginative. He hadn't actually done anything, after all. It was just that he was so damned *creepy*.

Adrian, the art director at Pirouette, was glad to see her as always. "That's my Jessie," he said after he'd given her a hug. "I wish all my artists were like you. Never miss a deadline, never turn in anything but the best work, a real pro. Come on back to my office, we'll look at this one and talk about some new assignments and gossip a bit." He told his secretary to hold his calls and escorted her back through the maze of tiny little cubicles where the editors lived. Adrian himself had a huge corner office with two big windows, a sign of his status in Pirouette Publishing.

He gestured Jessie to a chair, poured her a cup of herb tea, then took her portfolio and removed the cover painting and held it up at arm's length.

The silence went on far too long. Adrian dragged out a chair, propped up the painting, and retreated several feet to consider it from a distance. He stroked his beard and cocked his head this way and that. Watching him, Jessie felt a thin prickle of alarm. Normally Adrian was given to exuberant outbursts of approval. She didn't like this quiet. "What's wrong?" she said, setting down her teacup. "Don't you like it?"

"Oh." Adrian said. He put out a hand, palm open and level, waggled it this way and that. "It's well executed, no doubt. Your technique is very professional. Fine detail."

"I researched all the clothing. It's all authentic for the period, you know it is."

"Yes, no doubt. And the heroine is gorgeous, as always. I wouldn't mind ripping her bodice myself. You do amazing things with mammaries, Jessie."

She stood up. "Then what is it? I've been doing covers for you for three years, Adrian. There's never been any problem."

"Well," he said. He shook his head, smiled. "Nothing, really. Maybe you've been doing too many of these. I know how it can go. They're so much alike, it gets boring, painting all those hot embraces one after another, so pretty soon you feel an urge to experiment, to try something a little bit different." He shook a finger at her. "It won't do, though. Our readers just want the same old shit with the same old covers. I understand, but it won't do."

"There's nothing experimental about this painting," Jessie said, exasperated. "It's the same thing I've done for you a hundred times before. *What* won't do?"

Adrian looked honestly surprised. "Why, the man, of course," he said. "I thought you'd done it deliberately." He gestured. "I mean, look at him. He's almost *unattractive*."

"What?" Jessie moved over to the painting. "He's the same virile jerk I've painted over and over again."

Adrian frowned. "Really now," he said. "Look." He started pointing things out. "There, around his collar, is that or is that not just the faintest hint of a double chin? And look at that lower lip! Beautifully executed, yes, but it looks, well, gross. Like it was wet or something. Pirouette heroes rape, they plunder, they seduce, they threaten, but they do not drool, darling. And perhaps it's just a trick of perspective, but I could swear —he paused, leaned close, shook his head—"no, it's not perspective, the top of his head is definitely narrower than the bottom. A pinhead! We can't have pinheads on Pirouette books, Jessie. Too much fullness in the cheeks, too. He looks as though he might be storing nuts for the winter." Adrian shook his head. "It won't do, love. Look, no big problem. The rest of the painting is fine. Just take it home and fix him up. How about it?"

Jessie was staring at her painting in horror, as if she were seeing it for the first time. Everything Adrian had said, everything he had pointed out, was true. It wes all very subtle, to be sure; at first glance the man looked almost like your normal Pirouette hero, but there was something just the tiniest bit off about him, and when you looked closer, it was blatant and unmistakable. Somehow the Pear-shaped Man had crept into her painting. "I," she began, "I, yes, you're right. I'll do it over. I don't know what happened. There's this man who lives in my building, a creepy-looking guy, everybody calls him the Pear-shaped Man. He's been getting on my nerves, I swear. It wasn't intentional. I guess I've been thinking about him so much it just crept into my work subconsciously."

"I understand," Adrian said. "Well, no problem, just set it right. We do have deadline problems, though."

"I'll fix it this weekend, have it back to you by Monday," Jessie promised.

"Wonderful," said Adrian. "Let's talk about those other assignments, then." He poured her more Red Zinger, and they sat down to talk. By the time Jessie left his office, she was feeling much better.

Afterward she enjoyed a drink in her favorite bar, met a few friends, and had a nice dinner at an excellent new Japanese restaurant. It was dark by the time she got home. There was no sign of the Pear-shaped Man. She kept her portfolio under her arm as she fished for her keys and unlocked the door to the building.

When she stepped inside, Jessie heard a faint noise and felt something crunch underfoot. A nest of orange worms clustered against the faded blue of the hallway carpet, crushed and broken by her foot.

She dreamed of him again. It was the same shapeless, terrible dream. She was down in the dark beneath the stoop, near the trash bins, crawling with all kinds of things, waiting at his door. She was frightened, too frightened to knock or open the door, yet helpless to leave. Finally the door crept open of its own accord. There he stood, smiling, smiling. "Would you like to stay?" he said, and the last words echoed, *to stay, to stay, to stay, to stey*, and he reached out for her, and his fingers were as soft and pulpy as earthworms when he touched her on the cheek.

The next morning Jessie arrived at the

'It says up a little and more to the left.'

offices of Citywide Realty just as they opened their doors. The receptionist told her that Edward Selby was out showing some condos; she couldn't say when he'd be in. "That's all right," Jessie said. "I'll wait." She settled down to leaf through some magazines, studying pictures of houses she couldn't afford.

Selby arrived just before eleven. He looked momentarily surprised to see her before his professional smile switched on automatically. "Jessie," he said, "how nice. Something I can do for you?"

"Let's talk," she said, tossing down the magazines.

They went to Selby's desk. He was still only an associate with the rental firm, so he shared the office with another agent, but she was out, and they had the room to themselves. Selby settled himself into his chair and leaned back. He was a pleasant-looking man, with curly brown hair and white teeth, his eyes careful behind silver aviator frames. "Is there a problem?"

Jessie leaned forward. "The Pear-shaped Man," she said.

Selby arched one eyebrow. "I see. A harmless eccentric."

"Are you sure of that?"

He shrugged. "He hasn't murdered anybody yet, at least that I know of."

"How much do you know about him? For starters, what's his name?"

"Good question," Selby said, smiling. "Here at Citywide Realty we just think of him as the Pear-shaped Man. I don't think I've ever gotten a name out of him."

"What the hell do you mean?" Jessie demanded. "Are you telling me his checks have THE PEAR-SHAPED MAN printed on them?"

Selby cleared his throat. "Well, no. Actually, he doesn't use checks. I come by on the first of every month to collect, and knock on his door, and he pays me in cash. One-dollar bills, in fact. I stand there, and he counts out the money into my hand, dollar by dollar. I'll confess, Jessie, that I've never been inside the apartment, and I don't especially care to. Kind of a funny smell, you know? But he's a good tenant, as far as we're concerned. Always has his rent paid on time. Never bitches about rent hikes. And he certainly doesn't bounce checks on us." He showed a lot of teeth, a broad smile to let her know he was joking.

Jessie was not amused. "He must have given a name when he first rented the apartment."

"I wouldn't know about that," Selby said. "I've only handled that building for six years. He's been down in the basement a lot longer than that."

"Why don't you check his lease?"

Selby frowned. "Well, I could dig it up, I suppose. But really, is his name any of your business? What's the problem here, anyway? Exactly what has the Pear-shaped Man *done*?"

Jessie sat back and crossed her arms. He looks at me."

"Well," Selby said carefully, "I, uh, well, you're an attractive woman, Jessie. I seem to recall asking you out myself."

"That's different," she said. "You're normal. It's the way he looks at me."

"Undressing you with his eyes?" Selby suggested.

Jessie was nonplussed. "No," she said. "That isn't it. It's not sexual, not in the normal way, anyhow. I don't know how to explain it. He keeps asking me down to his apartment. He's always hanging around."

"Well, that's where he lives."

"He bothers me. He's crept into my paintings."

This time both of Selby's eyebrows went up. "Into your paintings?" he said. There was a funny hitch in his voice.

Jessie was getting more and more discomfited. This wasn't coming out right at all. "Okay, it doesn't sound like much, but he's *creepy*. His lips are always wet. The way he smiles. His eyes. His squeaky little voice. And that smell. Jesus Christ, you collect his rent, you ought to know."

"He drew her in, and she found she was too weak to resist. The lights were bright, and it was warm, and the air seemed to move as if she had entered the mouth of some great beast."

The realtor spread his hands helplessly. "It's not against the law to have body odor. It's not even a violation of his lease."

"Last night he snuck into the building and left a pile of Cheez Doodles right where I'd step in them."

"Cheez Doodles?" Selby said. His voice took on a sarcastic edge. "God, not *Cheez Doodles*! How fucking heinous! Have you informed the police?"

"It's not funny. What was he doing inside the building anyway?"

"He lives there."

"He lives in the basement. He has his own door; he doesn't need to come into our hallway. Nobody but the six regular tenants ought to have keys to that door."

"Nobody does, as far as I know," Selby said. He pulled out a notepad. "Well, that's something, anyway. I'll tell you what. I'll have the lock changed on the outer door. The Pear-shaped Man won't get a key. Will that make you happy?"

"A little," said Jessie, slightly mollified.

"I can't promise that he won't get in," Selby cautioned. "You know how it is. If I had a nickel for every time some tenant has taped over a lock or propped open a door with a doorstop because it was more convenient, well..."

"Don't worry. I'll see that nothing like that happens. What about his name? Will you check the lease for me?"

Selby sighed. "This is really an invasion of privacy. But I'll do it. A personal favor. You owe me one." He got up and went across the room to a black metal filing cabinet, pulled open a drawer, rummaged around, and came out with a legal-sized folder. He was flipping through it as he returned to his desk.

"Well?" Jessie asked impatiently.

"Hmmmm," Selby said. "Here's your lease. And here's the others." He went back to the beginning and checked the papers one by one. "Winbright, Peabody, Pumetti, Harris, Jeffries." He closed the file, looked up at her, and shrugged. "No lease. Well, it's a crummy little apartment, and he's been there forever. Either we've misfiled his lease or he never had one. It's not unknown. A month-to-month basis."

"Oh, great," Jessie said. "Are you going to do anything about it?"

"I'll change that lock," Selby said. "Beyond that, I don't know what you expect of me. I'm not going to evict the man for offering you Cheez Doodles."

The Pear-shaped Man was standing on the stoop when Jessie got home, his battered bag tucked up under one arm. He smiled when he saw her approach. *Let him touch me*, she thought, *just let him touch me when I walk by, and I'll have him booked for assault so fast it'll make his little pointy head swim.* But the Pear-shaped Man made no effort to grab her. "I have things to show you downstairs," he said as Jessie ascended the stairs. She had to pass within a foot of him; the smell was overwhelming today, a rich odor like yeast and decaying vegetables. "Would you like to look at my things?" he called after her. Jessie unlocked the door and slammed it behind her.

I'm not going to think about him, she told herself inside, over a cup of tea. She had work to do. She'd promised Adrian the cover by Monday, after all. She went into her studio, drew back the curtains, and set to work, determined to eradicate every hint of the Pear-shaped Man from the cover. She painted away the double chin, firmed up the jaw, redid those tight wet lips, darkened the hair, made it blacker and bushier and more wind-tossed, so the head didn't seem to come to such a point. She gave him sharp, high, pronounced cheekbones—cheekbones like the blade of a knife—made the face almost gaunt. She even changed the color of his eyes. Why had she given him those weak, pale eyes? She made the eyes green, a crisp, clean, commanding green, full of vitality.

It was almost midnight by the time she was done, and Jessie was exhausted, but when she stepped back to survey her handiwork, she was delighted. The man was a real Pirouette hero now, a rakehell, a rogue, a hell-raiser whose robust exterior

concealed a brooding melancholy poetic soul There was nothing the least bit pear-shaped about him Adrian would have puppies It was a good kind of tiredness Jessie went to sleep feeling altogether satisfied Maybe Selby was right, she was too imaginative she'd really let the Pear-shaped Man get to her But work good hard old-fashioned work, was the perfect antidote for these shapeless fears of hers Tonight she was sure her sleep would be deep and dreamless

She was wrong There was no safety in her sleep She stood trembling on his doorstep once again It was so dark down there so filthy The rich, ripe smell of the garbage cans was overwhelming and she thought she could hear things moving in the shadows The door began to open The Pear-shaped Man smiled and touched her with cold soft fingers like a nest of grubs He took hold of her by the arm and drew her inside inside inside

Angela knocked on her door the next morning at ten "Sunday brunch!" she called out "Don is making waffles With chocolate chips and fresh strawberries And bacon And coffee And O J Want some?"

Jessie sat up in bed "Don? Is he here?"

"He stayed over," Angela said

Jessie climbed out of bed and pulled on a paint-splattered pair of jeans "You know I'd never turn down one of Don's brunches I didn't even hear you guys come in"

"I snuck my head into your studio but you were painting away and you didn't even notice You had that intent look you get sometimes you know with the tip of your tongue peeking out of one corner of your mouth I figured it was better not to disturb the artist at work" She giggled "How you avoided hearing the bed springs, though, I'll never know"

Breakfast was a triumph There were times when Jessie couldn't understand just what Angela saw in Donald the student shrink but mealtimes were not among them He was a splendid cook Angela and Donald were still lingering over coffee and Jessie over tea at eleven when they heard noises from the hall Angela went to check "Some guy's out there changing the lock" she said when she returned "I wonder what that's all about"

"I'll be damned" Jessie said "And on the weekend too That's time and a half I never expected Selby to move so fast"

Angela looked at her curiously "What do you know about this?"

So Jessie told them all about her meeting with the realtor and her encounters with the Pear-shaped Man Angela giggled once or twice and Donald slipped into his wise shrink face "Tell me Jessie" he said when she had finished "don't you think you're overreacting a bit here?"

"No" Jessie said curtly

"You're stonewalling" Donald said "Really now try and look at your actions objectively What has this man done to you?"

"Nothing and I intend to keep it that way" Jessie snapped "I didn't ask you for your opinion"

"You don't have to ask" Donald said "We're friends aren't we? I hate to see you getting upset over nothing It sounds to me as though you're developing some kind of phobia about a harmless neighborhood character"

Angela giggled "He's just got a crush on you that's all You're such a heart-breaker"

Jessie was getting annoyed "You wouldn't think it was funny if he was leaving Cheez Doodles for you" she said angrily "There's something well something *wrong* there I can feel it"

Donald spread his hands "Something wrong? Most definitely The man is obviously very poorly socialized He's unattractive sloppy he doesn't conform to normal standards of dress or personal hygiene

"The sandwich tasted funny The chips seemed soggy She wanted something else Some of those little orange cheese curls She could picture them in her head, almost taste them Her mouth watered"

he has unusual eating habits and a great deal of difficulty relating to others He's probably a very lonely person and no doubt deeply neurotic as well But none of this makes him a killer or a rapist does it? Why are you becoming so obsessed with him?"

"I am not becoming obsessed with him"

"Obviously you are" Donald said

"She's in love," Angela teased

Jessie stood up "I am *not* becoming obsessed with him!" she shouted and this discussion has just ended

That night in her dream Jessie saw inside for the first time He drew her in and she found she was too weak to resist The lights were very bright inside and it was warm and oh so humid and the air seemed to move as if she had entered the mouth of some great beast and the walls were orange and flaky and had a strange sweet smell and there were empty plastic Coke bottles everywhere and bowls of half-eaten Cheez Doodles too and the Pear-shaped Man said "You can see my things you can have my things" and he began to undress unbuttoning his short sleeved shirt pulling it off revealing dead white hairless flesh and two floppy breasts and the right breast was stained with blue ink from his leaking pens and he was smiling smiling and he undid his thin belt and then pulled down the fly on his brown polyester pants and Jessie woke screaming

On Monday morning Jessie packed up her cover painting phoned a messenger service and had them take it down to Pirouette for her She wasn't up to another trip downtown Adrian would want to chat and Jessie wasn't in a very sociable mood Angela kept needling her about the Pear-shaped Man and it had left her in a foul temper Nobody seemed to understand There was something wrong with the Pear-shaped Man something serious something horrible He was no joke He was frightening Somehow she had to prove it She had to learn his name had to find out what he was hiding

She could hire a detective, except detectives were expensive There had to be something she could do on her own She could try his mailbox again She'd be better off if she waited until the day the gas and electric bills came though He had lights in his apartment so the electric company would know his name The only problem was that the electric bill wasn't due for another couple of weeks

The living room windows were wide open Jessie noticed suddenly Even the drapes had been drawn all the way back Angela must have done it that morning before taking off for work Jessie hesitated and then went to the window She closed it locked it, moved to the next closed it locked it It made her feel safer She told herself she wouldn't look out It would be better if she didn't look out

How could she not look out? She looked out He was there standing on the sidewalk below her looking up "You could see my things," he said in his high thin voice "I knew when I saw you that you'd want my things You'd like them We could have food" He reached into a bulgy pocket brought out a single Cheez Doodle, held it up to her His mouth moved silently

"Get away from here or I'll call the police!" Jessie shouted

"I have something for you Come to my house and you can have it It's in my pocket I'll give it to you"

"No you won't Get away I warn you Leave me alone" She stepped back closed the drapes It was gloomy in here with the drapes pulled but that was better than knowing that the Pear-shaped Man was looking in Jessie turned on a light picked up a paperback and tried to read She found herself turning pages rapidly and realized she didn't have the vaguest idea of what the words meant She slammed down the book marched into the kitchen made a tuna salad sandwich on whole wheat toast She wanted something with it but she wasn't sure what She took out a dill pickle and sliced it into quarters, arranged it neatly on her plate searched

through her cupboard for some potato chips. Then she poured a big fresh glass of milk and sat down to lunch.

She took one bite of the sandwich, made a face, and shoved it away. It tasted funny. Like the mayonnaise had gone bad or something. The pickle was too sour, and the chips seemed soggy and limp and much too salty. She didn't want chips anyway. She wanted something else. Some of those little orange cheese curls. She could picture them in her head, almost taste them. Her mouth watered.

Then she realized what she was thinking, and almost gagged. She got up and scraped her lunch into the garbage. She had to get out of here, she thought wildly. She'd go see a movie or something, forget all about the Pear-shaped Man for a few hours. Maybe she could go to a singles bar somewhere, pick someone up, get laid. At his place. Away from here. Away from the Pear-shaped Man. That was the ticket. A night away from the apartment would do her good. She went to the window, pulled aside the drapes, peered out.

The Pear-shaped Man smiled, shifted from side to side. He had his misshapen briefcase under his arm. His pockets bulged. Jessie felt her skin crawl. He was *revolting*, she thought. But she wasn't going to let him keep her prisoner.

She gathered her things together, slipped a little steak knife into her purse just in case, and marched outside. "Would you like to see what I have in my case?" the Pear-shaped Man asked her when she emerged. Jessie had decided to ignore him. If she did not reply at all, just pretended he wasn't there, maybe he'd grow bored and leave her alone. She descended the steps briskly and set off down the street. The Pear-shaped Man followed close behind her. "They're all around us," he whispered. She could smell him hurrying a step or two behind her, puffing as he walked. "They are. They laugh at me. They don't understand, but they want my things. I can show you proof. I have it down in my house. I know you want to come see."

Jessie continued to ignore him. He followed her all the way to the bus stop.

The movie was a dud. Having skipped lunch, Jessie was hungry. She got a Coke and a tub of buttered popcorn from the candy counter. The Coke was three quarters crushed ice, but it still tasted good. She couldn't eat the popcorn. The fake butter they used had a vaguely rancid smell that reminded her of the Pear-shaped Man. She tried two kernels and felt sick.

Afterward, though, she did a little better. His name was Jack, he said. He was a sound man on a local TV news show, and he had an interesting face, an easy smile, Clark Gable ears, nice gray eyes with friendly little crinkles in the corners. He bought her a drink and touched her hand, but the way he did it was a little clumsy, like he was a bit shy about this whole scene, and Jessie liked that. They had a few drinks together, and then he suggested dinner back at his place. Nothing fancy, he said. He had some cold cuts in the fridge, he could whip up some jumbo sandwiches and show her his stereo system, which was some kind of special super setup he'd rigged himself. That all sounded fine to her.

His apartment was on the twenty-third floor of a midtown high rise, and from his windows you could see sailboats tacking off on the horizon. Jack put the new Linda Ronstadt album on the stereo while he went to make the sandwiches. Jessie watched the sailboats. She was finally beginning to relax. "I have beer or ice tea," Jack called from the kitchen. "What'll it be?"

"Coke," she said absently.

"No Coke," he called back. "Beer or ice tea."

"Oh," she said, somehow annoyed. "Ice tea, then."

"You got it. Rye or wheat?"

"I don't care," she said. The boats were very graceful. She'd like to paint them someday. She could paint Jack, too. He looked like he had a nice body.

"Here we go," he said, emerging from the kitchen carrying a tray. "I hope you're hungry."

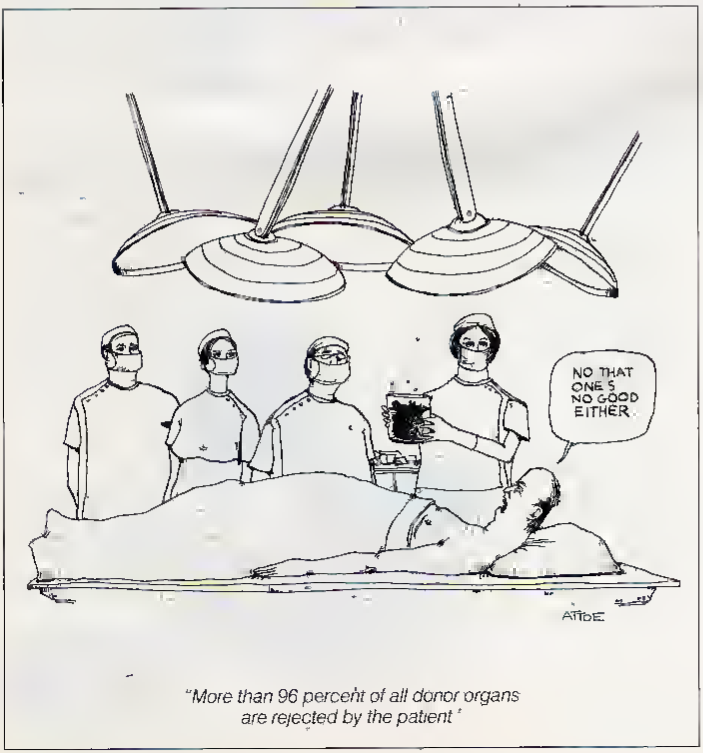
"Famished," Jessie said, turning away from the window. She went over to where he was setting the table and froze.

"What's wrong?" Jack said. He was holding out a white stoneware plate. On top of it was a truly gargantuan ham-and-Swiss sandwich on fresh deli rye, lavishly slathered with mustard, and next to it, filling up the rest of the plate, was a pile of puffy orange cheese curls. They seemed to writhe and move, to edge toward the sandwich, toward her. "Jessie?" Jack said.

She gave a choked, inarticulate cry and pushed the plate away wildly.

Jack lost his grip. Ham, Swiss cheese, bread, and Cheez Doodles scattered in all directions. A Cheez Doodle brushed against Jessie's leg. She whirled and ran from the apartment.

Jessie spent the night alone at a hotel and slept poorly. Even here, miles from the apartment, she could not escape the dream. It was the same as before, the same, but each night it seemed to grow longer. Each night it went a little further. She was on the stoop, waiting, afraid. The door opened, and he drew her inside, the orange warmth, the air like fetid breath, the Pear-shaped Man smiling. "You can see my things," he said, "you can have my things," and then he was undressing, his shirt first, his skin so white, dead flesh, heavy breasts with a blue ink stain, his belt, his pants falling, polyester puddling around his ankles, all the trash in his pockets scattering on the floor, and he really was pear-shaped. It wasn't just the way he dressed, and then the boxer shorts last of all, and Jessie looked down, despite herself, and there was no hair, and it was small and



"More than 96 percent of all donor organs are rejected by the patient."

wormy and kind of yellow like a cheese curl and it moved slightly and the Pear-shaped Man was saying "I want your things now, give them to me, let me see your things," and why couldn't she run, her feet wouldn't move, but her hands did, her hands and she began to undress.

The hotel detective woke her pounding on her door, demanding to know what the problem was and why she was screaming.

She timed her return home so that the Pear-shaped Man would be away on his morning run to Santino's Market when she arrived. The house was empty. Angela had already gone to work, leaving the living room windows open again. Jessie closed them, locked them, and pulled the drapes. With luck, the Pear-shaped Man would never know that she'd come home.

Already the day outside was sweltering-ly hot. It was going to be a real scorcher. Jessie felt sweaty and soiled. She stripped, dumped her clothing into the wicker hamper in her bedroom, and immersed herself in a long, cold shower. The icy water hurt, but it was a good, clean kind of hurting, and it left her feeling invigorated. She dried her hair and wrapped herself in a huge, fluffy blue towel, then padded back to her bedroom, leaving wet footprints on the bare wood floors.

A halter top and a pair of cutoffs would be all she'd need in this heat, Jessie decided. She had a plan for the day firmly in mind. She'd get dressed, do a little work in her studio, and after that she could read or watch some soaps or something. She wouldn't go outside; she wouldn't even look out the window. If the Pear-shaped Man was at his vigil, it would be a long, hot, boring afternoon for him.

Jessie laid out her cutoffs and a white halter top on the bed, draped the wet towel over a bedpost, and went to her dresser for a fresh pair of panties. She ought to do a laundry soon, she thought absently as she snatched up a pair of pink bikini briefs.

A Cheez Doodle fell out.

Jessie recoiled, shuddering. It had been *inside*, she thought wildly, it had been inside the briefs. The powdery cheese had left a yellow stain on the fabric. The Cheez Doodle lay where it had fallen, in the open drawer on top of her underwear. Something like terror took hold of her. She balled the bikini briefs up in her fist and tossed them away with revulsion. She grabbed another pair of panties, shook them, and another Cheez Doodle leapt out. And then another. Another. She began to make a thin, hysterical sound, but she kept on. Five pairs, six, nine, that was all, but that was enough. Someone had opened her drawer and taken out every pair of panties and carefully wrapped a Cheez Doodle in each and put them all back.

It was a ghastly joke, she thought. Angela. It had to be Angela who'd done it, maybe she and Donald together. They thought this whole thing about the Pear-shaped Man was a big laugh, so they decided to see if they could really freak her out. Except it hadn't been Angela. She knew it hadn't been Angela.

Jessie began to sob uncontrollably. She threw her balled-up panties to the floor and ran from the room, crushing Cheez Doodles into the carpet. Out in the living room she didn't know where to turn. She couldn't go back to her bedroom, *couldn't*, not just now, not until Angela got back, and she didn't want to go to the windows, even with the drapes closed. He was out there. Jessie could feel it; could feel him staring up at the windows. She grew suddenly aware of her nakedness and covered herself with her hands. She backed away from the windows, step by uncertain step, and retreated to her studio.

Inside she found a big, square package leaning up against the door with a note from Angela taped to it. "Jess, this came for you last evening," signed with Angie's big, winged *A*. Jessie stared at the package, uncomprehending. It was from Pirouette. It was her painting, the cover she'd rushed to redo for them. Adrian had sent it back. Why?

She didn't want to know. She had to know.

Jessie ripped at the brown paper wrappings, tore them away in long, ragged strips, baring the cover she'd painted. Adrian had written on the mat; she recognized his hand. "Not funny, kid," he'd scrawled. "Forget it."

"No," Jessie whimpered, backing off.

There it was, her painting, the familiar background, the trite embrace, the period costumes researched so carefully but no, she hadn't done that; someone had changed it. It wasn't her work; the woman was her, her slender and strong, with sandy blond hair and green eyes full of rapture, and he was crushing her to him, to *him*, the wet lips and white skin and he had a blue ink stain on his ruffled lace shirtfront and dandruff on his velvet jacket and his head was pointed and his hair was greasy and the fingers wrapped in her locks were stained yellow, and he was smiling thinly and pulling her to him and her mouth was open and her eyes half closed and it was him and it was her and there was her own signature there, down at the bottom.

No, she said again. She backed away, tripped over an easel, and fell. She curled up into a little ball on the floor and lay there sobbing, and that was how Angela found her hours later.

"He raised his hand, moved it toward her face. He touched her. Maggots crawled across her cheek and wriggled through her hair. His pinkie touched her ear and tried to burrow in."

Angela laid her out on the couch and made a cold compress and pressed it to her forehead. Donald stood in the doorway between the living room and the studio, frowning, glancing first at Jessie and then in at the painting and then at Jessie again. Angela said soothing things and held Jessie's hand and got her a cup of tea. little by little, her hysteria began to ebb. Donald crossed his arms and scowled. Finally, when Jessie had dried the last of her tears, he said, "This obsession of yours has gone too far."

"Don't," Angela said. "She's terrified."

"I can see that," Donald said. "That's why something has to be done. She's doing it to herself, honey."

Jessie had a hot cup of Morning Thunder halfway to her mouth. She stopped, dead still. "I'm doing it to myself?" she repeated incredulously.

"Certainly," Donald said.

The complacency in his tone made Jessie suddenly, blazingly angry. "You stupid, ignorant, callous son of a bitch," she roared. "I'm doing it to myself. *I'm* doing it. *I'm* doing it, how *dare* you say that *I'm* doing it." She flung the teacup across the room, aiming for his fat head. Donald ducked. the cup shattered and the tea sent three long brown fingers running down the off-white wall. "Go on, let out your anger," he said. "I know you're upset. When you calm down, we can discuss this rationally, maybe get to the root of your problem."

Angela took her arm, but Jessie shook off the grip and stood, her hands balled into fists. "Go into my bedroom, you jerk, go in there right now and look around and come back and tell me what you see."

"If you'd like," Donald said. He walked over to the bedroom door, vanished, reemerged several moments later. "All right," he said patiently.

"Well?" Jessie demanded.

Donald shrugged. "It's a mess," he said. "Underpants all over the floor, lots of crushed cheese curls. Tell me what you think it means."

"He broke in here!" Jessie said.

"The Pear-shaped Man?" Donald queried pleasantly.

"*Of course* it was the Pear-shaped Man," Jessie screamed. "He snuck in here while we were all gone and he went into my bedroom and pawed through all my things and put Cheez Doodles in my underwear. He was *here*! He was touching my stuff!"

Donald wore an expression of patient, compassionate wisdom.

"Jessie, dear, I want you to think about what you just told us."

"There's nothing to think about!"

"Of course there is," he said. "Let's think

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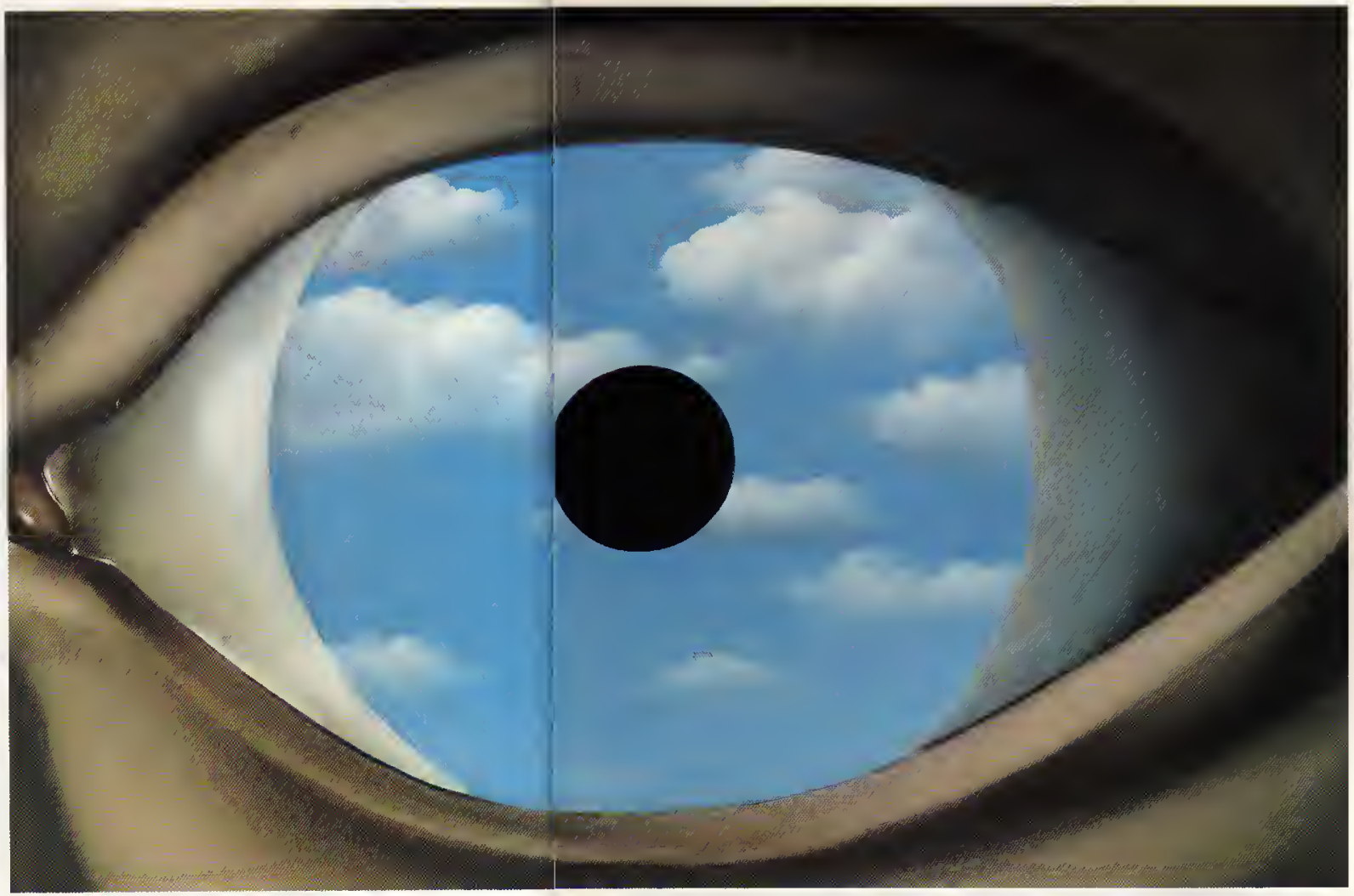
ARTICLE

SOUL OF A NEW AGE

BY CHRISTOPHER LASCH

The me generation's latest panacea for angst crystals, mantras, and other soothing mind cures



PAINTING BY RENÉ MAGRITTE

The New Age movement—the West Coast's latest contribution to our long history of bizarre spiritual fads and panaceas—invites a mixture of ridicule and indignant alarm. Not just the degradation of piety but its blatant commercialization prompts the suspicion of large-scale religious fraud. "There's no Better Business Bureau" for spiritual shoppers, laments the San Francisco philosopher and theologian Jacob Needleman. "Let the buyer beware." Several counseling centers now serve those who claim to have been

victimized by New Age cults "It's a manipulation of spiritualism" says the director of one of these establishments "that plays on people's vulnerabilities to make money"

The mind-cure market is booming and patent medicines for the soul fetch a high price Secondhand goods for the most part make up the traffic in salvation the power of positive thinking communications from the spirit world astrology, miracle cures mind over matter But these wares—well worn with use—find no lack of new buyers many of them unaware that they are investing in recycled equipment

Some of the old staples have been slightly updated The medium now advertises herself as a "channel" for messages not only from departed friends and relatives but from complete strangers like Ramtha, a thirty-five-thousand-year-old warrior who conquered the lost civilization of Atlantis and now predicts earthquakes in California, floods in Florida and the imminent collapse of urban life Atlantis itself has acquired a newly discovered sister city Lemuria founded we are told by a race of beings from space and later destroyed The mystical properties of crystals are no longer confined to the medium's crystal ball Worn next to the skin, placed under the pillow during sleep or strategically positioned at certain *chakra* points on the body crystals can transmit the sacred information" stored in them encourage "positive thoughts and healing energy," inspire "lofty and prophetic dreams," or connect you with your "source" These observations come from Katrina Raphaell's *Crystal Enlightenment*, part of a small library of books, magazines and newsletters on the subject

Notwithstanding these additions to the spiritual pharmacy, most of its stock remains curiously old-fashioned except that it is now sold in shopping malls as it were, instead of at the corner drugstore Such are the highly touted "cultural revolutions" of our time The ambience changes the ideas stay the same Old landmarks fall to the bulldozer but the new temples of commerce house the same old commodities most of them shabby and second-rate lacking any intrinsic value and therefore destined for immediate obsolescence

Will the New Age phenomenon prove any more durable than its counterparts in the past? In the nineteenth century many Americans turned to mesmerism (a state induced by hypnosis), spirit rapping (alleged communication with the dead through a medium by means of physical phenomena such as rapping), hydropathy (water-cure therapy) and health foods (including the new graham crackers). In the early years of the twentieth century the New Thought movement presented itself as another such synthesis combining unorthodox discoveries in medicine, psychology and religion But a spiritual stew does not make a synthesis and the indiscriminate eclecticism of these movements provides an important clue to their lack of staying power The mix of ingredients is too unstable to hold together to provide a coherent explanation of things or even a coherent answer to the personal difficulties that attract adherents in the first place

The New Age movement tries to combine meditation, positive thinking, faith healing, rolfing, dietary reform, environ-

Preceding pages: Rene Magritte The False Mirror *(Le Faux Miroir) 1928. Oil on canvas, 21 1/4 × 31 7/8 inches (54 × 80.9 cm). Collection The Museum of Modern Art, New York. Purchase.*

IN SEARCH OF A DEFINITION

By Marion Long

Is it a movement? A concept? A twenty-first-century religion? A totally new worldview? An old worldview with a new label? What exactly is meant by *New Age*? To find out, *Omni* asked 12 of the leading thinkers and social commentators of our time for their perceptions of what this elusive yet alluring concept is—or at least should be.

SPALDING GRAY, a writer and performance artist, is the star and creator of *Swimming to Cambodia*.

I see the New Age movement as the best carryover of the Sixties—and I'm still a convert and a fan. The movement is trying to keep a sense of openness, a holistic perspective that isn't psychological versus spiritual, physical versus psychological. And my God, there is a longing in me, a New Age longing, if you will, to find a community where people will be thinking, moving, and being creative—without being sapped by longings the media creates.

But the New Age is too vague; it needs more spine. There's definitely an edge missing that was there in the Sixties. New Age people flit from one thing to another; it's so fragmented. Things shift fast—fads and what can save you. If I started to look at everything that could save me, I'd go mad.

I went to a channeler in Los Angeles. My first impression: *My God, this woman's a frustrated actress.* The accent was so fakey, kind of Eastern European. Everyone asked about their past lives (a tricky business open to fiction because there's no way to prove anything). My question: "I don't know the difference between paranoia and intuition." The guy behind me, the one with the crystals, really heated up on that one: "Oh, wow! Know what you mean, man! Know what you mean! The answer: "You must work more from your heart and not from your head."

Does this make sense? The whole evening was like eating really bad Chinese food, and it struck me that there are a lot of lost people in the world.

While there's a certain hilarity to some of this stuff, I think the invasion of the spiritual-realm charlatans or of strict commercialization is very serious business. It's as serious as nuclear proliferation, and I think it's a by-product of it. When you really look at it, we live in an apocalyptic time: it's very shaky and scary, and that's what turns people into couch potatoes when they aren't doing their channeling workshops or buying their crystals.

"Hey! I know what is happening. There are many gods afoot. There are many evil powers and lesser ones and bigger ones. I don't think there is one overseer. There are hundreds of thousands of realms, just as there are visible and invisible universes. I *know* there is power in all of this stuff. But I don't think anything valuable or effective is gleaned by people playing around with this stuff or by this fragmented flitting.

ABBIE HOFFMAN has been a political activist since the Sixties and is the author of *Steal this Urine Test*.

If I close my eyes and think of New Age consciousness, I see yuppies, that's what I see. I mean, that's nice if you're white and you make two hundred thousand dollars a year and support all the right causes. But don't delude yourself that such an attitude is helpful. It isn't. In fact, I see that attitude as the enemy. Now, talk about enemy opposition is not New Age talk. Supposedly we are all one. But if you see me and Ollie North as one, you had better switch your vitamins, go for another massage, or stay in your hot tub. Your view is irrelevant.

New Age consciousness is something that has to be manifested in the world of reality or else it's tokenism, just paying lip service to some cause. "Yeah, I stood hand in hand for world hunger." It's a false dichotomy to talk about internal change now and external change at some point in the future. If you draw that dichotomy, you are not sincere about either spiritual

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mentalism, mysticism, yoga, wafer cures, acupuncture, incense, astrology, Jungian psychology, biofeedback, extrasensory perception, spiritualism, vegetarianism, organic gardening, the theory of evolution, Reichian sex therapy, ancient mythologies, archaic nature cults, Sufism, Freemasonry, cabalistic lore, chiropractic, herbal medicine, hypnosis, and any number of other techniques designed to heighten awareness, including elements borrowed from the major religious traditions. But such a concoction, though it can sometimes furnish temporary relief from the symptoms of spiritual distress, cannot bring about the equivalent of a religious conversion, a real change of heart, nor can it bring about even an intellectual conversion to a new point of view capable of standing up against rigorous questioning.

What is missing in the new surrogate religions is spiritual discipline—submission to a body of teachings that has to be accepted even when it conflicts with immediate interests or inclinations and cannot constantly be redesigned to individual specifications. Although the specific techniques used in yoga or meditation, say undeniably require strenuous and disciplined effort (but so does jogging or working out with weights), eclecticism in general makes few difficult demands, as a believer can shuffle the ingredients to suit his requirements for psychic comfort.

Religion, on the other hand, aims to produce not so much inner peace as a sense of falling short of an absolute ethical ideal, one impossible of absolute attainment. It produces as much spiritual discomfort and even anguish as emotional security. "I came not to bring peace but a sword" (Matthew 10:34). The New Age replacements for religion soothe the conscience instead of rubbing it the wrong way. Their central teaching is that it doesn't matter what you believe as long as it works for you. "It's true if you believe it" slogan of the New Age. Such a lax standard of truth is appealing in the short run, but in the long run it works no wonders.

To say this, however, is not to say that the discontents addressed by the New Age phenomenon are unimportant. It is precisely because they are supremely important that they deserve a better response. The point is not that it is politically irresponsible, say, to concern oneself with the state of one's soul when so many social problems cry out for solutions. To this criticism, exponents of New Age thinking make the rejoinder that spiritual renewal is itself an important precondition of any desirable social change. The "new American revolution" cannot be a merely political revolution, writes M. Scott Peck in *New Age Journal*. He argues, in effect, that social change has to include not just revolution but revelation, a change in values, a rejection of the "ethic of rugged individualism," a repudiation of the point of view that "teaches us to be utterly ashamed of our limitations." A change in political institutions unaccompanied by a change of heart and mind would leave the deeper sources of social injustice untouched. Such a change could make things worse—for instance, by strengthening the powers of the state without increasing the capacity for self-restraint in those who wield those powers.

The case against the New Age movement does not rest on the contention that a search for spiritual fulfillment "diverts attention from what [is] really wrong in the world," as Shirley MacLaine summarizes this line of attack. The trouble is not that spiritual problems are unimportant or unreal but that this form of spirituality holds out no real solutions to those problems.

Regarding the nature of the problems themselves, however, New Age enthusiasts often show more understanding than their critics. It is important to see that the New Age movement appeals to large numbers of people not only because it promises health, happiness, and personal "meaning," but because in its own way it addresses the malaise of society as a whole, not just the malaise of individuals. It finds modern life lacking in depth. It rightly deplores the time we all waste on trivial pursuits—the name of the game, it might be said, in modern society. It reminds us that on the scale of eternity most of the matters that seem so important in our lives count for very little. It points out "how badly contaminated our lives [have] become in big cities," as MacLaine puts it—contaminated not merely by industrial pollutants but by moral and spiritual decay.

In all of this, New Age spirituality offers genuine insights. Some proponents of the New Age, for example, believe that the way to a better world may lie in ideas from the past rather than in new ideas. The intuition underlying New Age movements, the bedrock feeling, hard to put into words but scarcely inchoate or confused, deserves better than ridicule: that mankind has lost the collective knowledge of how to live with dignity and grace; that this knowledge includes a respect not just for nature but for the nurturant activities our society holds in such low esteem; and that man's future depends on a renewal of prematurely discarded traditions of thought and practice.

Those traditions can best be understood as answers to old questions about the meaning and purpose of human life, questions our own society has unwisely chosen to ignore as either unanswerable or unimportant (or both). Is life good? How can it be good if it includes suffering or evil? What attitude should we take in the face of suffering? Because the world doesn't conform to our desires, should we renounce the world or our desires?

Stoics answer, in effect, by adjusting desire to reality—by training themselves to want only what is attainable. A second answer goes beyond resignation. It reaffirms the goodness of being, in spite of life's failure to conform to human expectations of

happiness This attitude is called, fittingly, faith Like the stoics, the faithful recognize that human happiness is not the be-all and end-all of existence But whereas this discovery leads the stoic only to a disillusioned acceptance of the world as it is, it leads in the second case to a joyful affirmation of the fitness of things, in other words, to the faith that an imperfect order of being, considered from a merely human point of view, has its own order and beauty at a higher and deeper level Human happiness, from this point of view, depends on a grateful (rather than a grudging) acknowledgment of the principle that man was made for higher ends than happiness

A third position goes further (too far, perhaps) and claims that man was made for ends much higher than anything imagined by the other two—nothing short of a reunion with the divine essence from whence he came This position, one that has enduring appeal, is best described as Gnosticism as it found its fullest expression in the Gnostic heresy of the second century Gnosticism is the belief that the material world was created by evil deities and that salvation lies in the soul's escape from the flesh into the spiritual realm from whence it came Gnosticism solves the problem of evil by driving a wedge between matter and spirit Matter is evil but spirit divine It was not God who made this wicked world—"this primitive planet' with its brutal conditions," in the words of a modern Gnostic Robert Anton Wilson—but some destructive power that overthrew the spirit and inaugurated a reign of darkness Not man's disobedience to God but the creation of the world was the original fall from grace—the creation of a world, that is, in which human happiness does not appear to rank as a top priority

But man is not condemned to live indefinitely in the material world, the Gnostics say, imprisoned by his own flesh His salvation lies in the knowledge that his spiritual nature links him to the divine realm to which he is destined to return Those already initiated into the secrets of existence—those in the know, to refer to the literal meaning of *gnosis*—understand that man is divine that his divine origin and destiny set him apart from the rest of creation, and that there is no limit to his powers Death itself is an illusion for the Gnostic That the rest of us accept its reality only proves once again that most of us live by illusions unable to distinguish the permanent from the passing

Such are the three basic religious attitudes—three attempts to come to terms with the limits imposed on man by nature the first by a grudging acknowledgment of their inescapability the second by a grateful acceptance of their appropriateness the third by a denial of their reality A fourth attitude doubtless more common than any of the others is hedonism Seize the day Eat, drink, and be merry, for tomorrow we die Epicureanism is not, of course a religious solution it is the world's most appealing alternative to religion

In general the first position corresponds to the highest ethical wisdom of the classical world although it also appears in many varieties of asceticism, both in the East and in the West. The second attitude which finds its quintessential statement in the book of Job, represents the main current in Judaism and Christianity but can be found in other religions as well especially in Islam The third is the mystical tradition of the East which entered Western culture in the Hellenistic era and has remained an important undercurrent ever since Repeatedly condemned by the Catholic Church it reappeared in the thirteenth-century Albigensian heresy, in the fourteenth-century Brethren of the Free Spirit in the Rosicrucian Enlightenment, and in many other underground movements down through the centuries

The influence of the Gnostic tradition on New Age thought is unmistakable The transpersonal psychologist Ken Wilber, described by an admirer as the 'Einstein of consciousness' draws heavily on Gnosticism in books like *The Atman Project* (1980) and *Up from Eden* (1983) A summary of his cosmology reveals the extent of his indebtedness to Gnostic mythology. "Human life is moving *up* from Eden, not down The Fall was nothing less than the involuntary descent of God into matter—the creation of the universe itself The universe is involved in a mighty drama of awakening and reunion Salvation [represents] a progression to the transpersonal state—to awareness of our prior union with God."

Wilber and other New Age thinkers not only echo Gnostic doctrine but explicitly acknowledge its influence on their own views In *The Cosmic Trigger Final Secret of the Illuminati* Robert Anton Wilson traces the history of "higher intelligence" back through the Rosicrucians the Renaissance magic societies medieval witchcraft the Knights Templar European Sufism etc., to Gnosticism and thence back to the Eleusinian mysteries and Egyptian cults

The New Age movement is best understood then, as the twentieth-century revival of an ancient religious tradition but it is a form of Gnosticism considerably adulterated by other influences and mixed up with imagery derived from science fiction—flying saucers, extraterrestrial intervention in human history escape from the earth to a new home in space What was often figurative and metaphorical in Gnosticism becomes literal in the writings of Wilber Wilson and Doris Lessing whose "space fiction' has helped to popularize the New Age sensibility Where second-century Gnostics imagined the Savior as spirit mysteriously made flesh their twentieth-century descendants conceive him as a visitor from another solar system Where the early Gnostics sought to recover the memory of man's original homeland elsewhere without however assigning it an exact locale New Age enthusiasts take the idea of heaven quite literally Sirius seems to be the current favorite (See among many other books, Lessing's novel *The Sirian Experiments*.) They believe moreover that visitors from space built Stonehenge the pyramids and the lost civilizations of Lemuria and Atlantis

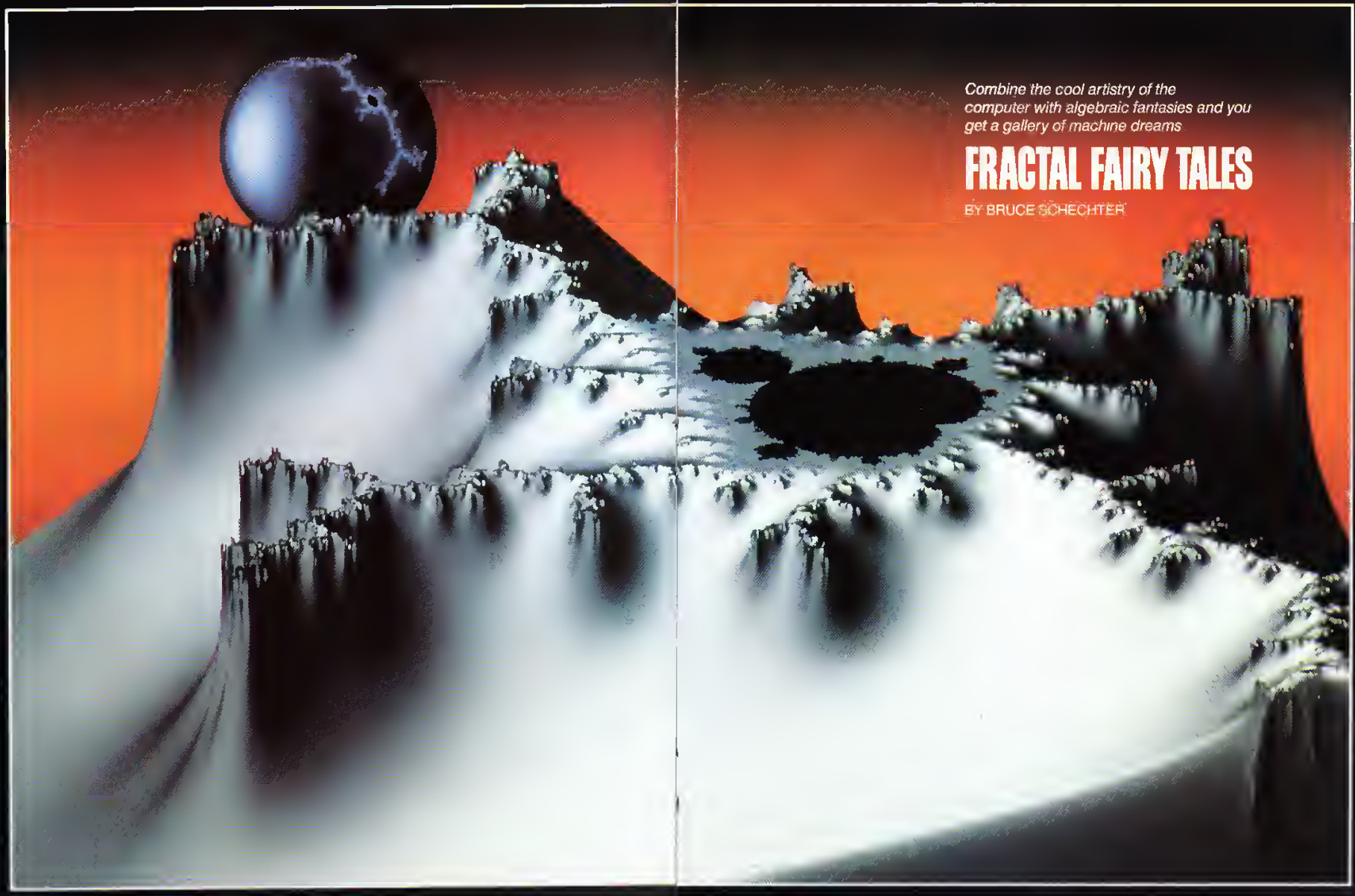
Gnostic mythology can be read as an imaginative elaboration of an important fact about human nature—that man's capacity to stand outside his own experience and to view it from a higher perspective sets him apart from the natural world New Age cults read this mythology as a record of actual events which show that 'this Earth has been observed and helped and taught throughout its human history by beings that know more than we do.'

The New Age movement is to Gnosticism what Fundamentalism is to Christianity—a literal restatement of ideas whose original value of lay in their imaginative understanding of the human condition and the psychology of religious experience When Shirley MacLaine finds Walt Whitman demanding that the universe be 'judged from the standpoint of eternity' she takes this to refer to the immortality of the soul not to the desirability of holding humans accountable to some kind of superhuman standard of conduct In the same way she attributes to Heinrich Heine a belief in reincarnation because he once asked "Who can tell what tailor now inherits the soul of Plato?"

CONTINUED ON PAGE 180

NOTHING ATTRACTS LIKE THE IMPORTED TASTE OF BOMBAY GIN.

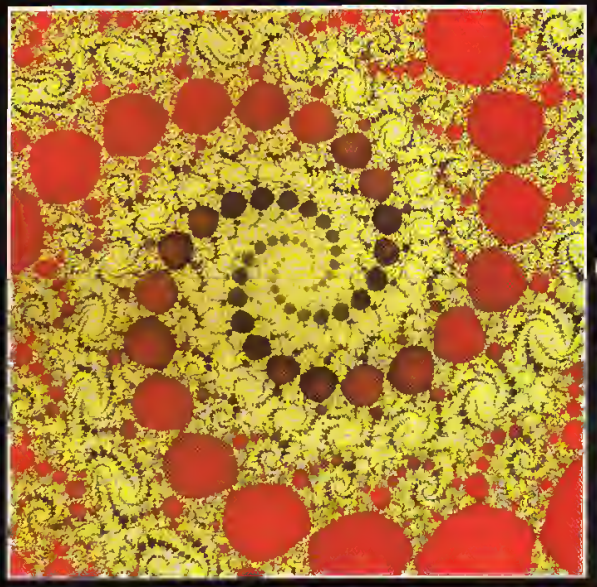
CORIANDER SEEDS FROM MOROCCO ANGELICA ROOT FROM SAXONY JUNIPER BERRIES FROM ITALY CASSIA BARK FROM INDOCHIN ALMONDS FROM INDOCHINA LEMON PEEL FROM SPAIN ORRIS (IRIS ROOT) FROM ITALY LICORICE FROM INDOCHINA



Combine the cool artistry of the computer with algebraic fantasies and you get a gallery of machine dreams

FRACTAL FAIRY TALES

BY BRUCE SCHECHTER



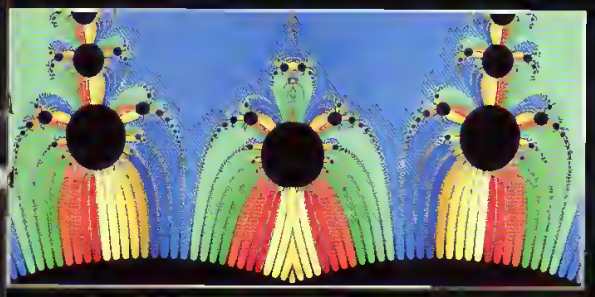
These dream landscapes, gaudy insects and spinning abstractions are all shapes that mathematicians call fractals, from the Latin word *fractus*, meaning "broken" or "fragmented." The term was coined in 1972 by IBM mathematician Benoit Mandelbrot to describe the branching, twisted organic shapes found in nature.

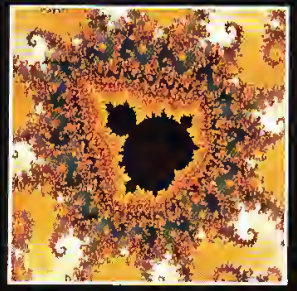
The spheres, planes, and parallelepipeds of Euclid, Mandelbrot realized, were fine if you wanted to talk about the architecture of Frank Lloyd Wright. But these shapes are utterly useless when the conversation shifts to the billows of clouds or the bends of rivers. To describe these, you need different formulas, different math: the math that produces fractal imagery.

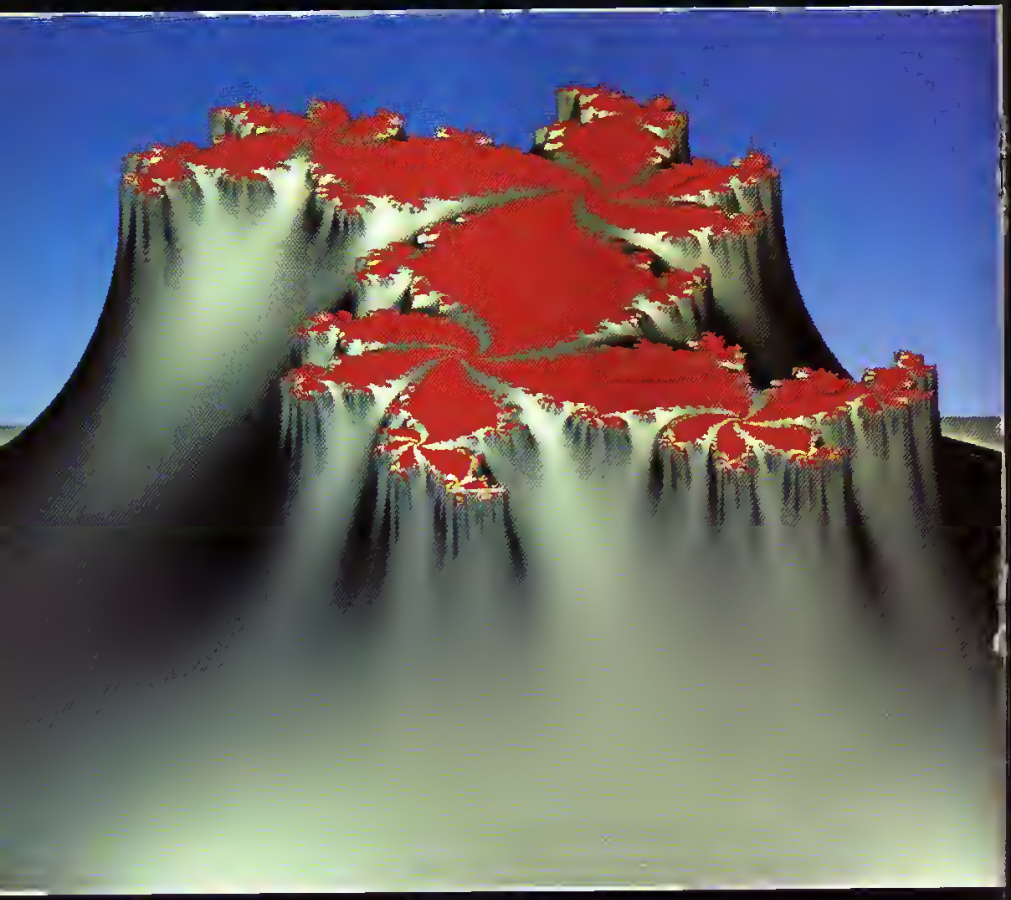
Today many computer-graphic artists use fractals to make natural-looking landscapes. The fractals on these pages, however, were created not to counterfeit the natural world but to analyze one of the most profound questions faced by science. How is it that the simple, deterministic laws of nature give rise to seemingly random and unpredictable behavior? How do the same natural forces that keep a waterfall cascading in a steady stream also cause the irregular, chaotic splashes at the bottom?

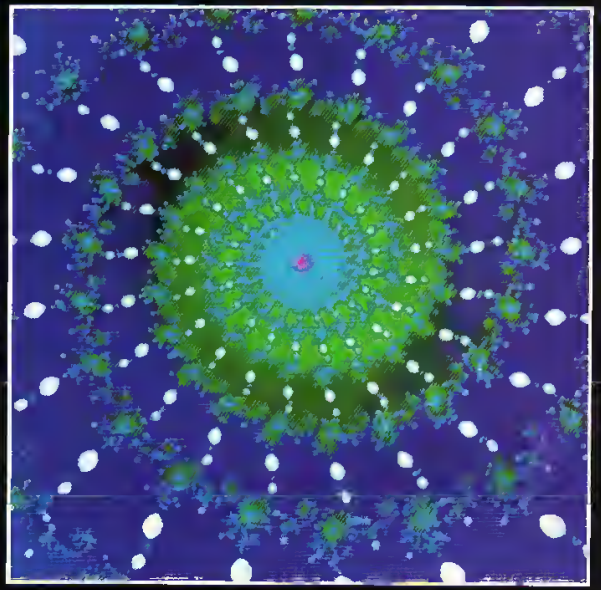
These computer drawings reflect the attempts of some mathematicians to analyze and describe this kind of natural chaos. In a typical experiment, a mathematician might take an equation describing a chaotic state and type it into a computer. The machine would then take the numbers from the equation and, using a special graphics program, draw an image like the ones shown on these pages.

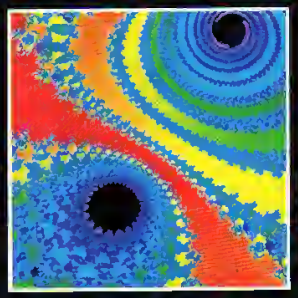
The fractal first made the transition from mathematical abstraction to computer-generated image in 1980. Mandelbrot had produced his first simple mathematical equation ($D>d$,) to describe the complex shapes of nature. His favorite natural irregularities happened to be jagged shorelines. To find out how well his equation described such phenomena, he gave his mathematical formula to a computer to do a rendering. The first image that came up on the screen appeared to be a blob-shaped is-

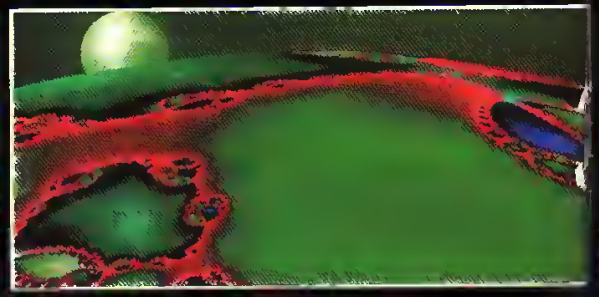


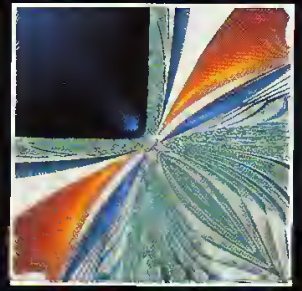


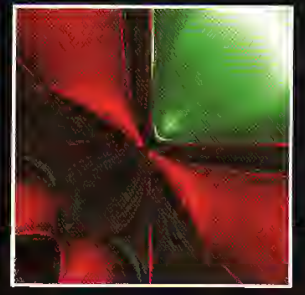












land. As he enlarged the blob, he found that attached to the shore of his island were smaller islands similar to the large one. And when he enlarged it again, he found even smaller islands.

As the computer continued magnifying the fractal images, more and more details emerged: strange sea horse-shaped wisps, spirals, trees, and, always, additional copies of the original island. The computer showed that Mandelbrot's equation—an equation a high-school student with a knowledge of algebra could understand—contained an intricate nesting of worlds within worlds.

Fractals look the same no matter how closely they are examined. This mirrors certain aspects of nature. For example, without a climber to give it scale, a photograph of a craggy mountain peak looks very much like the entire mountain. Similarly, the billows of a cloud are made up of smaller billows; the bend of a river is made up of shorter bends.

Among the pictures on these pages are various views of the Mandelbrot set. (See previous page, bottom right.) Using the legacy of Mandelbrot, scientists from the University of California at Santa Barbara, the University of Illinois at Urbana-Champaign, and the University of Colorado have become among the first "experimental mathematicians" to use the computer as a kind of graphic microscope for their equations. These mathematically inspired pieces of art, with their fine detail and dazzling colors, reveal the richness and complexity that are hidden in even the most elementary equations. They also show that the border between art and science is not as clearly marked as one might think.

The potential of this commingling of art and science is just beginning to be explored. "The mathematical and physical insights on which these pictures are based are the most exciting developments since the discovery of quantum mechanics sixty years ago," says the esteemed German theoretical physicist Gert Eilenberger. "These insights will again revolutionize our scientific view of the universe." DO

ARTICLE

Are crystals stones of enlightenment and healing or just a bunch of pretty rocks?

SUPREME QUARTZ

BY JAKE PAGE

A former marketing consultant in Philadelphia uses quartz crystals to get rid of headaches help houseplants grow and increase the efficiency of her refrigerator A Texas rancher uses them to keep flies away from his cattle Some people put them in a glass of water to purify it And then there's the good luck they're supposed to bring There was for instance a cache of crystals at this year's Academy Awards

To many people this obsession with hexagonal arrangements of silicon dioxide seems merely a flaky subtext of so-called New Age metaphysics—an eclectic combination of Eastern mysticism and claims of paranormal powers leading to the unification of the human spirit and consciousness with the divine In its extreme manifestations it can seem pretty loony

Take the optician who lives near Pittsburgh In his home is a "workroom" with purple walls filled with drums candles and crystals Here he practices metaphysical counseling and healing, using crystals and other stones "I have found" he says "that putting a person in a hypnotic trance and placing crystals over the body is very effective" for treating various mild problems

Suspended from the ceiling is a large quartz crystal that filters out all the bad vibrations left in the room by the ailing It routes this "negative energy" to a crystal-tipped grounding rod in the basement Other crystals and stones are placed here and there around his yard as protection from the negative energy that evidently is emitted by his neighbors

This seems far out a laughable stew of technometaphysics but crystal consciousness in various forms and degrees is spreading across the country like an epidemic *Time* magazine recently wrote of a high-priced New York business executive who keeps a $10,000 amethyst cluster on his desk to help him keep calm Several New York chiropractors use crystals as part of their treatments Elizabeth Fleck who runs an Arkansas-based crystal business with husband and crystal miner Gary says "A few years ago it was only New Age types who came in here to get crystals for healing purposes Now regular little old ladies and businessmen come in and snap up a piece of rose quartz They've heard it's supposed to be good for the heart Why not?" they say

At least 15 books have been published in the last five years extolling and explaining the healing powers of crystals—two of them from mainstream publisher Harper & Row Celebrities who swear by crystals and TV talk shows have amplified the hype

From all corners of the country rock and mineral stores report the same thing They can't keep enough crystals in stock Even the stodgy trade publication *Lapidary Journal* recently ran a nonjudgmental report on the current crystal craze Naturally with all of this interest prices have soared and many commentators see the age-old profit motive behind all the earnest palaver about divine consciousness People are making a lot of money from this new wave—which some say is tidal in proportion

Only one small problem exists with all this crystallizing There isn't much science to back up the belief that stones have any effect whatever on the human mind or body As George Harlow curator of gems and minerals at the American Museum of Natural History puts it "All this baloney only proves that we have failed and failed miserably in the teaching of science There is simply no evidence that there is any measurable effect from crystal to human or as any kind of healing Harlow agrees that crystals are beautiful and "If they make you feel better fine" he says

But there are a lot of them around here where I work and I have the same ups and downs as anyone Frankly a cup of coffee does more for me" Nevertheless Harlow admits that the museum's gift shop is displaying a lot more crystals now than it has in previous years

The one thing scientists know about the power of crystals is that if you tap a quartz crystal (and many other types) with a hammer it will produce an electrical charge from the opposite face This is called the piezoelectric effect, which results because the smallest unit of the quartz structure consists of a symmetrical—and electrically balanced—array of negative and positive ions The compression caused by the hammer blow squeezes the array of negative and positive ions and as they are forced closer together they create a tiny electric current flowing in one direction

> *"All this baloney about crystals only proves that we have failed, and failed miserably, at the teaching of science There's simply no evidence that they affect healing at all"*

Once the squeezing effect of the hammer blow is over the ions return to their original places giving off a current in the opposite direction Similarly if you send a tiny amount of voltage into the crystal, it will deform itself growing slightly longer It is the quartz crystal's piezoelectricity (particularly in man-made crystals of great purity) that has made it so useful in various industries especially electronics The minute mechanical vibrations of the needle in the groove of a record for example are converted by a chip of quartz to a tiny series of electric currents which in turn can be amplified into stereophonic music

It does not seem too great a leap of imagination to believe that a crystal could respond piezoelectrically to the electric field of a human being augmenting such signals or somehow restoring a distorted (dis-eased) field to harmony and balance Not too great a leap except for one thing The piezoelectric effect is basically a one-shot event If the hammer blow that causes a current to flow is replaced by constant squeezing in say a vise there will be no continuous current The charge occurs only during deformation or recovery

"You can get a significant amount of juice out of a crystal" says Dr Robert Becker a physician and author of *The Body Electric* "but almost zero current The only perception that people can have of such an effect is if you add a lot of kilowatts to increase the current density Then you might see a phosphene, a flash of light

"Crystals," Becker adds "can produce a placebo effect on the part of true believers Placebos are great stuff Crystal healing is fine if you don't have very much wrong with you" he cautions lest a crystal fancier avoid a useful and necessary therapy when seriously ill He agrees that medicine needs to be "shaken up" but he says only on a scientific basis He cites such alternatives as homeopathy acupuncture and hypnosis all of which have proved to have some scientific validity

The researcher in crystal consciousness with the most authoritative scientific credentials is Marcel Vogel for many years a senior scientist at IBM who studied crystals along with other, more accepted topics like fiberoptics In retirement now he seeks ways to wed Eastern mysticism and Christianity to science Long a devoted crystal healer Vogel subjects crystals to various measuring devices to chart their energy He contends that the divine force at work in these situations a force that the crystals can help to align is *like* electromagnetism in its behavior but operates on a different plane altogether This pretty thoroughly excludes scientific inquiry as it is traditionally practiced

Despite the lack of scientific evidence that crystals affect health happiness or fate the enormous demand has pumped up prices about 100 percent annually for the past five years The whole thing seems kind of strange to Gary Fleck one of the country's leading crystal suppliers For years he agonized over the need to charge people anything for crystals A miner by training and intention he was drawn into the New Age almost as if he were a pawn of larger forces A product of the American Southwest he fell in love at age nine with a shiny piece of green malachite he spotted in a rock shop in Arizona In due course he went to the New Mexico Institute of Mining and Technology and soon was out in the lonely reaches of the desert highlands prospecting for green and pink tourmalines red vanadinite and other crystals of beauty In those days though they were of marginal value compared with say ura-

nium. In caves and underground mines strange things would happen to Fleck every now and then: things for which his mining degree hadn't prepared him and that would be enough to scare most people into the sunshine. All he'll say is that some mines are haunted by the ghosts of those whose hopes and lives ended there.

Even so, Fleck is happiest when he and his backhoe are hard at it along a seam of white quartz and green shale on the side of Hogjaw Mountain, an hour west of his store. "Can you get more Arkansas than Hogjaw Mountain?" he says with a laugh. The saurian arm and scoop of the backhoe seem like a neural extension of the man, so delicately do its gargantuan steel teeth probe the side of a 20-foot wall of soggy shale, looking for pockets of white clay where sometimes crystals of clear quartz can be found. "I'm getting some real interesting stuff," he says.

Interesting stuff means crystals that fall into the New Age taxonomy of crystalline shapes and are therefore believed to have special healing powers. As a young miner and prospector, Fleck didn't know much about healing powers in rocks, but he was praying for good things, meditating two hours a day, eating only fruits and vegetables, and he had a special feeling for crystals, as did a small underground of others who were looking for new (or old) religious ways of confronting a world gone almost totally materialistic. Prayer circles and potluck dinners in the desert were restorative. One day a friend suggested that Fleck lead an expedition of crystal lovers down into his vanadinite mine—a cavern some 50 feet deep in the Dripping Springs Mountains near Top of the World, Arizona—so everyone could perform special prayers with their crystals.

Fleck accepted. In a few days 35 invitees clambered precariously down one of those ladders with metal steps that you can roll and unroll, and each pilgrim lit a candle in the dark. The next thing Fleck knew, he says in a calm near monotone, was that an angel visited him. This angel, whom almost everyone in the group saw, identified herself as Sabatina, a spirit of the inner earth. Wearing gold bracelets and a white gown with many folds, she put her hands on Fleck's head and began to enunciate the role of crystals in human destiny. Fleck, feeling as if he were a conduit for a beam, translated the angel's words to an awestruck prayer circle.

What Sabatina said, briefly, was that crystals and gems are here to teach and heal. "If you want to learn what they can teach and how they can heal, then ask the crystals themselves. They are alive. They should be treated as friends." Sabatina went on to explain that all 35 people present had been "called" to that mine, but there was no requirement that any of them use crystals. They were simply one path. "When you go fishing," she said, "you use a shiny lure." Crystals are shiny lures as well, and they can serve to "hook" people on the idea of reaching for a higher consciousness.

Needless to say, scientists don't talk about the validity of crystal enlightenment. But there has been some discussion about the role crystals may have played in evolution. A Scottish biochemist named Alexander Cairns-Smith has suggested that crystals may have some "inherently biological" properties. Cairns-Smith was bothered by the generally accepted theory that life originated on the planet from a primordial chemical soup. It would have been a strenuous time at the molecular level, he says, with severe radiation bombarding the fragile subunits of protoDNA (original DNA). They could not, he speculates, have survived long enough to hitch into the self-replicating gene that's at the core of life as we understand it.

Instead, Cairns-Smith proposes that life arose out of ancient clay crystals—colloidal suspensions of quartz particles in water. While not alive in the sense we typically think of, they could have grown and reproduced, making copies that in turn contained sufficient self-replicatory information to organize themselves in marriages with naturally occurring organic substances, a process that ultimately led to living organisms.

> *"The angel put her hands on Fleck's head and began to enunciate the role of crystals in human destiny. Fleck translated the angel's words to an awestruck circle of friends."*

The idea that crystals may have lifelike qualities has excited many crystal people. One who was with Fleck when he first encountered Sabatina is Katrina Raphaell.

At the time she met Fleck, Raphaell was director of a drug and alcohol rehabilitation program in Tucson, Arizona. Of necessity, she had explored many ways of making people feel better—one definition of healing—and she had taken up yoga, she says, "to keep sane." Fleck gave her her first crystal.

Later she moved on to Los Angeles, working with a foundation that ministered to children who were dying, and she found herself using crystals in conjunction with an ancient Hindu healing system involving seven chakras—key energy centers in the body. Chakras are said to function somewhat like drains. Environmental and dietary impurities or bad energy can clog them. If placed on these chakra points, an array of quartz crystals and other variously colored stones can help clean the chakras, permitting the spiritual healing energies prevalent in the universe and in each person to move freely through the body.

Today Raphaell holds forth in an adobe house outside Taos, New Mexico, called the Crystal Academy of Advanced Healing Arts, where she is developing an entirely new taxonomy of crystal shapes (each taxon having particular powers). Most crystal people take her classification as gospel, eagerly awaiting any new designation. Her first book, *Crystal Enlightenment*, is reported to be the best-selling volume on metaphysical shelves. In Raphaell's taxonomy you do not hear such words as *orthorhombic* (a specific type of crystallization) and the other jawbreakers of the crystallographer. Instead you hear about record keepers, channeling crystals, laser wands and elestials.

"When I was a kid," she says, "I wanted to be an astronomer, but I couldn't get through all the geometry. Now, looking at crystals my way, I find that I understand the old geometric postulates."

"The crystals," she continues, echoing the angel Sabatina, "are tools, not an end in themselves. But they serve to merge the two worlds of the spiritual and the physical of pure light and matter."

Healing, Raphaell says, arises when, through the ritualized use of crystals and stones, a person's consciousness becomes attuned to the divine. Without such attunement the body cannot be well. Hundreds of people, she says, have come to her for crystal healing and have gone through sometimes painful bouts of deepening self-awareness before leaving healthier in mind and body.

"It's not like surgery," she explains. "Crystal healing begins the process. It's up to the person thereafter to take responsibility for his own health." She makes no claim that crystal healing will always overcome a physical disease. People do die, after all. But crystal healing, she says, can help the mind adjust successfully to an incurable physical condition.

Two hours southwest of the Crystal Academy of Advanced Healing Arts, in Albuquerque, New Mexico, and at the opposite end of the world as far as crystal power is concerned, is the home of Kendrick Frazier. A congenial man, Frazier edits a quarterly magazine called *The Skeptical Inquirer* from a cluttered pair of rooms upstairs. The magazine is the house organ of the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), a group of some 30,000 people in local chapters around the country. Most members are scientists who have grown angry at what they refer to as pseudoscience.

"It doesn't bother me," says Frazier, whose office sports a small collection of fossils and minerals and a quartz crystal, "if people want to invest crystals and minerals with mystic or religious properties or appreciate them for their beauty. But when

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they talk about energy coming through them, they're in the realm of science. Energy can be measured."

Frazier cites the lack of scientific evidence on the subject. "No one that I know of has subjected crystal healing to any kind of scientific test—double blinds and all," he says. "If there is a healing force in crystals, then what is it? Electromagnetism? Is it something besides the four known basic forces of the universe?

Like most scientific groups that simply have other priorities, CSICOP has done little investigation of crystal healing. One member, a materials engineer named Lawrence Jerome, did survey existing literature on the matter recently and concluded that there is nothing to investigate. The key, Jerome wrote, to understanding "crystal power" lies not in understanding the physical or electrical properties of the crystals themselves but rather in understanding the terminology and thought processes of the people who believe in crystals. "The energies and powers they claim to use and capture in crystals," he explains, "have nothing to do with the everyday electromagnetic, chemical, or other energies we ordinary humans are familiar with." Jerome despaired of finding "something solid, something demonstrable we can test."

The reaction to such commentary by most crystal adherents: It's nice when science confirms one of their beliefs, but they aren't at all bothered when science cannot. Undaunted by "hysterical rationalists," they will, if pressed, point out that mystics have known all along what quantum physicists are beginning to perceive: that the universe is energy.

Ra Bonewitz, a British crystal healer and author, says that crystals' "mundane" energies are largely undetectable by the human sensorium. But, she contends, "we see that there are certain parallels with the behavior of spiritual energies in crystals." Spiritual energies, Bonewitz says, are simply those that science (at least for now) cannot measure.

Physics or no physics, the crystal phenomenon continues to grow. In May 1988 a Brooklyn art gallery plans to host an exhibition of gigantic portraits of quartz crystals by Patricia Windrow. The Crystal Academy of Advanced Healing Arts hopes to hook up with the University of California. A Virginia artist, Julie Lea, reports that a crystal has so jazzed up her meditations that she calls it her "portable home entertainment center."

Evidently the crystal people are confident that whether or not science ever supports even a fraction of their beliefs, they are helping to make the world a better place for their friends. It could all be utterly ridiculous. Or it could be another unavoidable part of the riddle that began eons ago in the primordial ooze or maybe even in a colloidal suspension of a few quartz fragments—ironically, the most common mineral on the planet. ∞

BODY

CONTINUED FROM PAGE 30

each year (roughly 42,000, according to the American Medical Association) and the percentage of live births involving defects (7 percent of 3.6 million U.S. births annually, according to the March of Dimes Birth Defects Foundation), this represents a small but significant trend.

"As the perception grows that science can determine in advance whether procedures or pregnancies are safe, would-be parents will start to believe that if anything goes wrong, the doctor is responsible," says Robert Rabin, a professor of law at Stanford University. There's an increasing expectation, he says, that all birth outcomes should be completely satisfactory.

Wrongful birth and wrongful life suits are essentially tried as negligence cases because they involve injuries resulting from actions that fall below "standard of care." This might mean, for instance, the failure to provide adequate genetic counseling for blacks prone to sickle-cell anemia or families with a history of cystic fibrosis. Counseling those at risk for these conditions is considered standard care.

Because "injury" is so difficult to define, the outcomes of these cases may remain in flux for some time. Courts have so far ruled almost unanimously in favor of awarding damages to parents bringing wrongful birth cases on their own behalf. They have usually balked, however, at awarding damages to children whose representatives bring wrongful life cases in which they claim they should never have been born. (The Curlenders' successful suit was an early exception to this rule.)

To assess what an injury is worth, a court must compare the victim's actual condition with how he or she would be without the injury. When parents of unhealthy children bring wrongful birth cases, it can be relatively easy to demonstrate changed circumstances occasioned by a child's special needs. But if is almost impossible to demonstrate what a child for whom a wrongful life suit has been filed might have been like without his "injury."

Most courts have stood by the prevailing view that life, healthy or otherwise, is not an injury. A New Jersey appellate court in dismissing one of the earliest wrongful life cases stated that "ultimately, the infant's complaint is that he would have been better off not to have been born. Man, who knows nothing of death or nothingness, cannot possibly know whether that is so." And a New York judge, in dismissing a Down's syndrome child's wrongful life plea in 1978, declared that "there is no fundamental right for a child to be born as a whole, functional being."

Since 1982 courts in California, New Jersey, Washington, and North Carolina have decreed that the genetic defects manifested in children for whom wrongful life cases are brought *are* measurable and compensable injuries. They have ruled that life with injury *can* be compared with nonexistence and that precedents for doing so have been set in rulings on wrongful-death and right-to-die cases.

"Sometimes with some diseases, parents may believe there *is* a fate worse than death," says Alex Capron, former director of the President's Commission for the Study of Ethical Problems in Medicine. "Then the question becomes, What is this child's suffering worth?"

Douglas Johnson, legislative director for the National Right to Life Committee, thinks wrongful life and wrongful birth cases should be dismissed if they are based on "abortion as the remedy." Such actions are bad public policy and place a stigma on being handicapped, he says, as well as infringing on doctors' own ethical values. Doctors are forced to participate in eugenic medicine—simply trying to improve the human gene pool.

When the patient is a fetus with a bleak prognosis characterized by dulled senses and an existence racked by pain before certain early death, some ethicists think it may be preferable never to be born.

"I can conceive of situations where it would be better not to have attained consciousness," says LeRoy Walters, director of the Center for Bioethics at Georgetown University's Kennedy Institute of Ethics. "In that sense I think there is some ethical foundation for wrongful life suits. But the motivation behind these cases is not just righting a wrong but getting it paid for."

David and Kathy Astor's daughter Abigail, is dying of Tay-Sachs disease. The Kingsbrook Jewish Medical Center in Brooklyn told David he wasn't a carrier—when in fact he was. New York State does not grant pain and suffering awards in the kind of wrongful birth and life case the Astors plan to bring against Kingsbrook.

Between the doctors and the lawyers, says David Astor, it has been a tremendous financial drain. "If we could get enough of a settlement," he says, "we could afford another child. We also simply want to get some justice. We want revenge."

Victor McKusick, a geneticist at the Johns Hopkins University School of Medicine, thinks increasing numbers of parents will file suits as more tests to detect faulty genes become standard care. Others anticipate increasing malpractice insurance costs, decreasing numbers of obstetricians and gynecologists, a further eroding of trust between doctor and patient, a sanctioning of "therapeutic" abortions, and the possibility of children suing their parents, as well as their parents' doctors.

These new lawsuits bring us face-to-face with our own expectations about birth and quality of life and the technologies that can allow them, prolong them, or end them. As doctors' ability to reverse genetic defects through biotechnology becomes further refined, their patients may start to feel even more wronged—and more justified in filing wrongful life and wrongful birth suits. ∞

Should you ever get lost in an enchanted woods, be very careful whom you choose as your guide

THIRTEENTH NIGHT

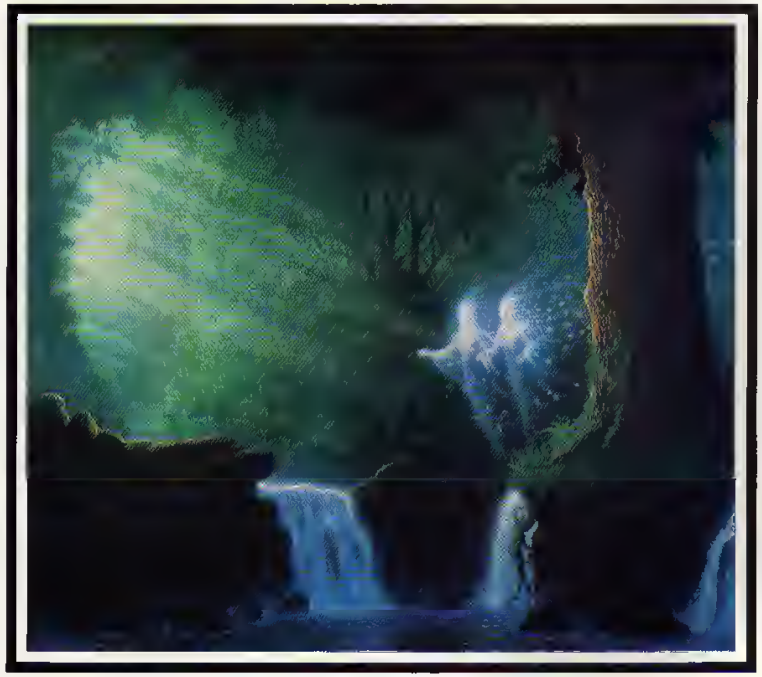
PAINTINGS BY GILBERT WILLIAMS

Everyone had warned me Ariel was a prankster but I decided to trust him this one time. I was hopelessly lost in the woods and believed him when he promised to show me a shortcut home. I watched in bafflement as he slowly raised his saurian hands in the air and began intoning some sort of weird mantra. Darkness descended around us. Then out of the blackness rose an ancient illuminated temple dripping with light. *I just made a serious mistake,* I thought.

"Slowly he raised his saurian hands in the air and began chanting. Out of the blackness rose an ancient, illuminated temple."

A ball of light enveloped us, and before I knew it we were lofted up to a high stone perch overlooking a part of the country I had never seen. It did not look like home to me. Before us yawned a jagged chasm of stone. "Let's fly across," Ariel said. When I looked at him as if he were mad, he pointed at the ground. Lying in the dust was a shimmering crystal helmet. I put it on my head and felt a wave of ionic energy surge through me. Ariel urged me to try out the helmet's special powers. I raised my arms and soared like a hawk.

When I reached the top, both man and building dissolved into the night. Behind me I heard Ariel choking with laughter.



We glided toward the farthest peak. Perched on top was a tower of light. Next to it a mysterious figure beckoned. "See what he wants," Ariel suggested. But as I approached, man and building dissolved into the dark. Behind me Ariel was choking with laughter. I was tiring of his jokes. "When will I be home?" I asked. "Soon," he said. "Close your eyes." He led me through a break in the trees. "Now open them," he said with a laugh. When I did, Ariel was nowhere in sight. And I was back where I had started.—Kevin McKinney

EARTH

CONTINUED FROM PAGE 26

cowboy shirts (after all, America is only 90 miles away). Kouri makes somewhat more than the average scientist's salary of $300 a month. (This is actually less than the salary of a skilled laborer in a sugar mill.) But money seems to have little to do with what drives him. "We don't really have economic problems as individuals," he says. "I don't have to worry about being fired or about having to pay ten thousand dollars in hospital bills. I know research is important for the development of the country, and that's a strong motivation."

The son of a University of Havana parasitologist, Kouri received a medical degree in Havana, trained as a cell biologist in Paris, and returned to Cuba in the late Sixties to do research on the electric potential of cell membranes. "Now I spend a good deal of time listening to people scream for research money," he says.

Kouri takes me to a sparkling lab, a showroom for the last word in Swedish and Japanese scientific hardware. (Cuba does not have the resources to manufacture its own equipment, but the government has the money to buy the best technology in the world.) From a stainless-steel cabinet he removes three small glass vials containing spindles of sugarcane, cultured in a special solution that forces the plant to produce calli—the plant's genetic material. The calli is then used to breed new forms of sugarcane, including varieties resistant to disease and salt. Sugar, of course, is Cuba's number one cash crop, attracting a healthy share of research attention. The research time necessary to develop new strains has been cut in half, from the anticipated 12 years to 6 years, by using advanced-tissue-culture techniques.

CENIC scientists are not concerned with just producing salt-tolerant sugarcane plants. Mandated to apply science to the solution of the country's most pressing practical problems, chemists develop special paints to fight metal corrosion caused by Cuba's salty air. Corrosion is especially destructive to ships in Havana harbor. Biologists produce high-temperature yeast strains for use in the country's distilleries (Cuban rum is still considered among the world's best.) The Center for the Protection of the Environment is battling to clean up the polluted harbor and to convert the 580-square-mile Zapata Swamp on the southern coast to a bird sanctuary. The National Institute for Automatic Systems and Computer Techniques is producing a third-generation minicomputer—known as the Digital Investigation Center. There are plans to construct three nuclear power plants—the first plant will be completed within two years. And Castro has issued a call to turn the country into a "world medical power."

All this sounds impressive, and it is. But Cuban scientists frankly admit that their work is beset with problems. They talk freely about economic problems and *escasez* or shortages. Many of the problems revolve around money, even with Moscow's financial subsidy of $4 billion a year. "It's never enough," says Tirso Saenz, a high-ranking administrator. Cuba's economy depends on its major export, sugar. As sugar goes, so goes the country, and sugar has been going very badly. The price has plunged from 76 cents a pound in 1975 to five cents last year. Cuba exports most of its sugar to the Eastern Bloc or trades sugar for equipment and scientific hardware with nations like Japan or Sweden.

Despite an economic situation frankly described as desperate, the country now spends about 0.7 percent of its gross national product on science, less than the Soviet Union (4.6 percent) or the United States (2.5 percent), but more than the industrialized countries of Mexico (0.6 percent) or Argentina (0.39 percent). The number of research institutions in the country has grown to 129, the number of scientists and technicians—some coming from Communist countries—to more than 30,000. Cuban researchers are trained by comrades in Cuba or in the Eastern Bloc.

"From a stainless-steel cabinet Kouri removes three vials containing spindles of sugarcane. The plant's genetic material is used to breed forms that can resist disease and salt."

The basic economic problem is exacerbated by the American trade embargo, which denies Cuba her most natural trading partner and scientific supplier. Cuban scientists are unanimous in decrying the blockade. "Regrettably, we have no scientific equipment whatsoever from the United States," says Humberto Peña, a biologist at the Higher Institute for Medical Sciences. "It would be much better and much less expensive to buy it ninety miles from here than nine thousand." The embargo also limits the exchange of ideas. American journals can be acquired only through European or Japanese sources and often arrive months or even years after publication. Peña once contributed an article to a book published in the United States but was unable to get copies of it.

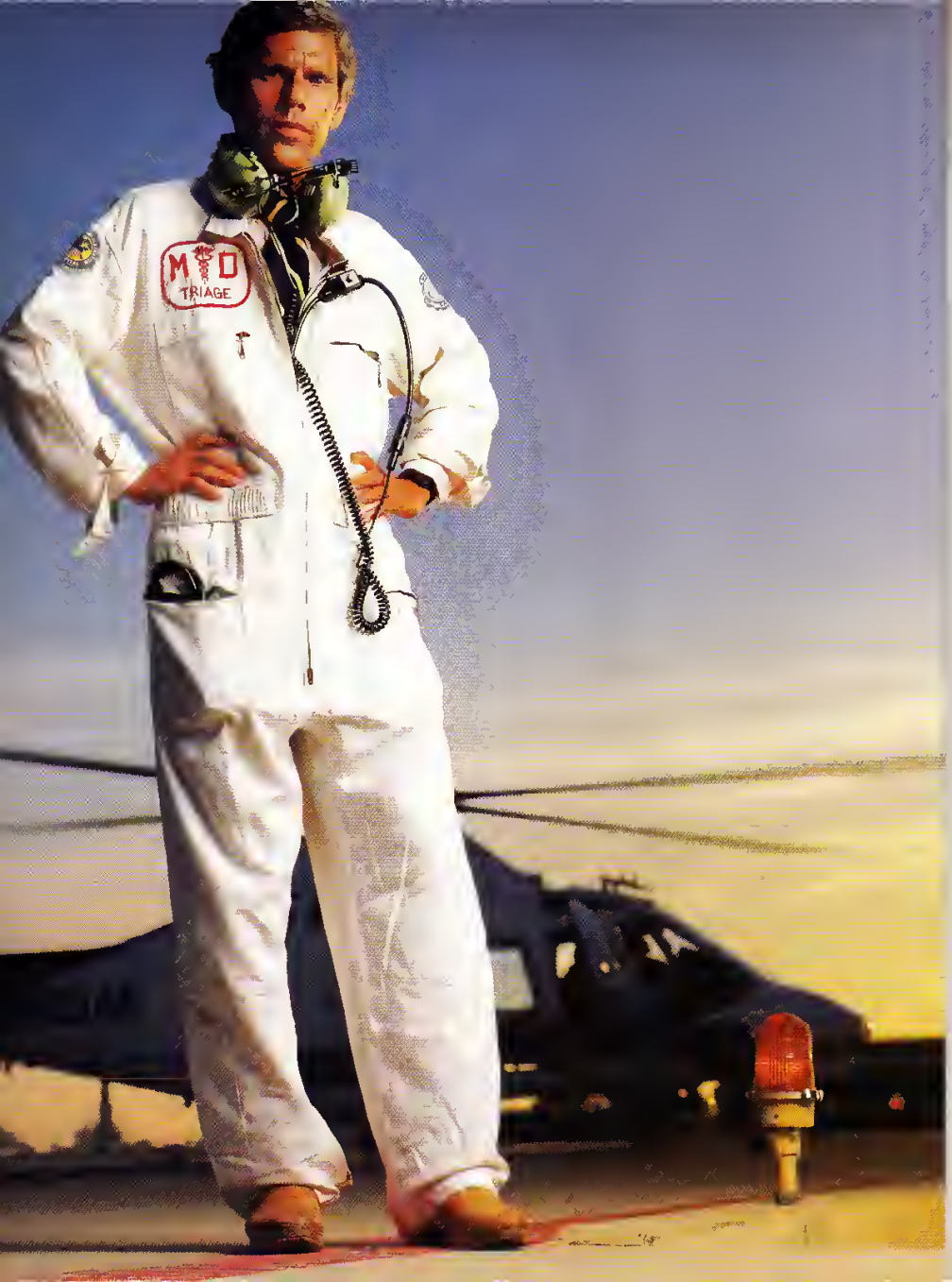
The Cubans do not, however, place the blame for all their problems on the United States or on their geographic isolation. They readily admit that many of their problems are essentially of their own making. "Sometimes we're too ambitious," admits Tomas Reinoso, director of international relations at the Higher Institute of Medical Sciences in Havana. "We propose very high objectives, and we don't always have the means to solve them."

There are other problems. Researchers who do not have space in showcase institutes like CENIC are crammed into small, overcrowded dwellings that were, in their last incarnation, homes or old buildings. The availability of spare parts and maintenance service is a constant worry. For example, a glitch in the huge Soviet-made computers that handle most of the apparatus of statehood (a considerable enterprise in a country where the state owns everything) means effective paralysis while the Cubans wait for parts from afar. Industry is slow to adopt technical innovations developed by scientists, and attempts to establish a country-wide computer linkup have been hampered because of the poor quality of telephone lines.

Hovering over the scientific enterprise, as it hovers over all of Cuban society, is the hand of state authority. A scientist with a consuming interest in a research project may find that project pulled out from under him by a sudden shift in priorities. When a number of projects at the Institute of Medical Sciences were found to be too theoretical, the investigators were told to wrap up their work and study something with more immediate—and practical—benefits. In most labs catchphrases like "the triumph of the revolution" meld with scientific jargon. Nearly every scientist describes Cuba as *un país amanezado*—an endangered country. Everyone belongs to the militia, and since Reagan's invasion of Grenada, street drills—complete with rifles and machine guns—have become common once more.

While it is undoubtedly true that the Cuban scientific push could not have succeeded without the Soviet Union, it is equally true that the initiative came from within, from Castro, his advisers, and Cuban scientists in general. So far no such scientific enterprise has been noted from Soviet-linked Marxist governments in Ethiopia or South Yemen.

When asked about Cuba's scientific future, Saenz says, "That depends on the word of Fidel." There are certainly holes in the fabric: no open heart surgery (coming soon, the Cubans say), no particle physics (too expensive), and very little in the way of astronomy, robotics, or neuropsychology. But Cuban scientists are producing breakthroughs in the agricultural sciences—exemplified by Udra Blanca and sugarcane technology—and are quickly imitating world-class efforts in molecular biology, immunology, and recombinant DNA. "The country is very poor," says Mathilde Krim, microbiologist and director of an AIDS laboratory at St. Luke's–Roosevelt Hospital Center in New York City. "But their science is very, very good."



The physician-hero of Chernobyl discusses bone marrow transplants, radioactivity, and Soviet glasnost *from the inside out with Martin Cruz Smith, the author of* Gorky Park

INTERVIEW

ROBERT GALE

The morning I interviewed Dr Robert Gale at his home in the Bel Air hills of California presented a scene he has become accustomed to but one that was bizarre to me We were out by the pool As we talked we were being filmed by a Soviet camera crew Even as they filmed us, the Soviets were being videotaped by a crew from CBS This was no mere media attention This was adoration The Soviets to whom Gale is a hero, were filming for a show they were doing on the twentieth century Gale the director told me would represent medicine Not American medicine but medicine with a capital *M*

The reason for the intense attraction Gale holds for the media is the explosion on April 26 1986 that blew the roof off Reactor 4 at the Chernobyl nuclear complex north of Kiev in the USSR It was the largest accident by far to befall any reactor in the world and we and our children and their children will have to live with the consequences Doctors across America heard the morning news about a radiation accident in the Soviet Union Only one stopped shaving phoned Armand Hammer—the legendary go-between with the Soviets—and offered to be on the first plane to Moscow The two men already had a close relationship because Gale had advised Hammer in the industrialist s role as a member of a presidential committee on cancer For some time Gale had been following USSR medical literature in translation so he knew the Soviets lacked American expertise in the kind of bone mar row transplants that victims of a radiation accident would need Gale left the next day on Hammer's plane

The accident at Chernobyl coincided with another explosion in Soviet society the call for *glasnost*, for openness and democ ratization by the vigorous general secretary Mikhail Gorbachev At first *glasnost* seemed just so much political posturing And

PHOTOGRAPH BY ANNIE LEIBOVITZ

"Everything near Chernobyl is boarded up. There's a brown forest with radioactive trees. No one knows whether to cut them down or leave them standing. It's so quiet there that the quiet becomes the noise."

when the Swedish government announced that radioactive clouds were arriving from the Soviet Union and Moscow initially said nothing, suspicions seemed confirmed. Chernobyl was for Gorbachev the turning point of that policy and the first critical test of his regime.

Of course Robert Peter Gale has credentials. He is, in alphabetical order, a geneticist, hematologist (blood specialist), immunologist, internist, oncologist (cancer specialist) and surgeon. In his work at the UCLA Medical Center he has pioneered the technique of bone marrow transplants and he is chairman of the International Bone Registry. At the age of forty-three he has the lean build of a man who puts in an hour's run wherever he is. He also has the gray hair and shadowed eyes of a man who is a few thousand hours behind on his sleep. His idiosyncrasies seem chic. He drives to the hospital in a red sports car. He does his hospital rounds in leather sandals. His lunch is frozen yogurt. To critics Gale seems the very model of a modern celebrity surgeon: a doctor who performs as well at a photo opportunity as in the operating room.

In fact, while Gale may be a brilliant and ambitious surgeon, he is also shy. His eyes avoid the interviewer. His voice is soft and level as he describes the most horrifying details of Chernobyl. The California lifestyle hides a religious man; his wife, Tamar, is Israeli, and the family speaks only Hebrew in the home. He knows the Soviet Union not only from the rarefied level of a famous guest. In Moscow he and Tamar spend their free time with Soviet Jews. Instead of rushing to the international peace conference held in Moscow last February, a media event that attracted everyone from Graham Greene to Kris Kristofferson, Gale declined to attend because, as he puts it, he is a physician, not a politician. Besides, Gale gets to the USSR frequently enough as it is, traveling there every month to study with the Soviets the long-term effects of the Chernobyl accident.

Some notes. Rather than plunge directly into the events around Chernobyl, I started with Gale's family background—of which there has been practically nothing in all the articles about him—and with his career in cancer research. Gale's work in the understanding and treatment of leukemia, the most dread of cancers, is just as fascinating as Chernobyl and explains why the Soviets accepted his aid in the first place. Also, the reader will have the benefit of my own abysmal ignorance of medical science. I did not know, for example, that bone marrow was a pink fluid that could be drawn by the pint from the hipbone. Accordingly, explanations in this interview are very clear. In one UCLA lab Gale showed me cell cultures that could have been violet Easter egg dye, and in another lab I saw him examine a magnified chromosome that—to the untutored eye—persisted in looking like a blurry smudge. Hype is easier to understand. Late in the afternoon the Soviets ran to catch the TV news to see themselves filming Gale giving the interview you're about to read: this is the carousel of world-class hype. It is important to remember that while hype may come and go, Bob Gale is for real.—Martin Cruz Smith

(Martin Cruz Smith is the author of *Gorky Park* and *Stallion Gate*.)

Omni: Did you always want to be a doctor?

Gale: No. I was [physical] science oriented in high school. At a Westinghouse science fair all the hotshots were competing. My project was solar energy. I constructed a huge series of parabolic mirrors that utilized a mercury-vapor system. It was kind of innovative for high school, but the system was so large and unwieldy that it couldn't fit in the car. My father, a Wall Street stockbroker, took this huge apparatus on a red children's wagon through the streets of Brooklyn to Erasmus Hall High School.

Omni: It sounds like your parents were real New Yorkers.

Gale: Exactly. My parents belonged to most museums. Their idea of a perfect day was a matinee at the Metropolitan Opera, an evening at the Philharmonic. Their great love is the opera, and I remember being dragged there at an early age. If you want to guarantee that someone will hate opera all his life, take him to see *Gotterdammerung* at ten.

Omni: Do you like Russian opera?

Gale: Russian opera is very pretty. We don't think of the Russian language as being melodious, but it is. It's wonderful, with twice the number of words for any particular statement. I'm always amazed by the length of any document with both English and Russian translations; the Russian versions are twice as long.

Omni: Okay, getting back to your becoming a doctor.

Gale: I intended to study nuclear physics at Hobart, a small private college in upstate New York.

Omni: Why Hobart?

Gale: My father felt that New York City, albeit the most interesting place to live, wasn't truly representative of the United States. And then Hobart won *The College Bowl*, a television quiz show between colleges that came on right before college football. So my father said, "Well, these people, they must be good." In retrospect it was a good choice. There was nothing else in Geneva, New York, except two taverns, a cinema and a college community of a thousand people. For two years I studied only Western civilization, philosophy and religion, and I evolved toward wanting to be a doctor. I think that maybe after so much philosophy I wanted some...

Omni: Application?

Gale: Well, one wants to believe that what one is doing is important. Medicine can provide this sense of purpose. In theoretical physics or philosophy, you have to be a gambler; you have no guarantee that what you are doing will have any impact on humanity. Certainly you have no guar-

anfee of recognition But if you function as a physician there's little question that you're doing something important Your motive may be complex One can do it for society or for oneself or for both

Omni: And at the end of medical school you had to make a choice

Gale: You have to decide Are you going to be a surgeon, internist pediatrician or what? I didn't want to focus on technical things I like problem solving, the Sherlock Holmes approach this led me to internal medicine So I accepted an internship and residency position at UCLA

Omni: Even then, you had targeted leukemia as your major interest Why leukemia?

Gale: First of all, leukemia is one of the most dread diagnoses in our society If you tell parents that their child has leukemia they are devastated That's changing because people realize we're making progress But they're devastated Certainly they were devasfated in 1972 Another important consideration is that leukemia is the stalking-horse of all cancer research When we screen new cancer effective drugs and compounds or test new radiation schemes we use mouse leukemias Everything hinges on our progress with leukemia because it's a cancer we can study You take leukemia cells from a patient simply by taking blood samples In lung cancer, on the other hand, obtaining samples becomes very difficult About ninety percent of what we know about cancer in humans is derived from leukemia studies

Omni: How are popular new technologies influencing your work?

Gale: Molecular cloning, bone marrow transplantation, monoclonal antibodies—all lie in the area of leukemia research The first gene transplants, corrections of human genetic disorders, are going to be done within the context of bone marrow transplants It's likely to occur within the next five years and will probably involve children with some kind of hematological or immunological disorder Bone marrow is clearly going to be the vehicle To put a new gene into heart cells would be difficult But you can take bone marrow out of the body, genetically modify it in the lab, and reinsert it

The same autotransplant approach can be used for monoclonal antibodies Children with neuroblastoma, a pediatric tumor, have bone marrow that contains normal blood-stem cells but may also be contaminated with malignant neuroblastoma cells By adding to the bone marrow monoclonal antibodies that recognize only the malignant cells, we can remove them To accomplish this we attach a little piece of iron to the antibody molecule, pass the bone marrow by a magnet, and the tumor cells with the iron tags are selectively removed Now that we have tumor-free bone marrow, we freeze it at minus two hundred degrees Celsius to keep the cells alive indefinitely Meanwhile we give the child very high doses of chemotherapy and radiation, whatever is appropriate

Omni: By freezing it you're able to rescue the child with his own frozen, tumor-free bone marrow?

Gale: Yes, and we envision other novel approaches Let's say we don't attach iron but rather a single toxic molecule such as ricin to the monoclonal antibody You can think of the antibody as a guided missile, and the ricin molecule as the payload [that blasts the cancer cell] In the future this approach might be useful not only to cleanse bone marrow in the laboratory but also to give it intravenously to patients with leukemia Anyway, this interface between medicine and science is a long answer as to why I went into leukemia research And finally, the stakes are high

Omni: The pressure must be enormous

Gale: These are young people They shouldn't be dying of leukemia The major advance in leukemia came when we started to cure anyone If a disease is perceived to be incurable, your expectations are low But once you cure a patient, then you know it can be done In 1987, seventy percent of children who develop leukemia in the United States will be cured In 1945 it was zero

Omni: What about adult leukemia?

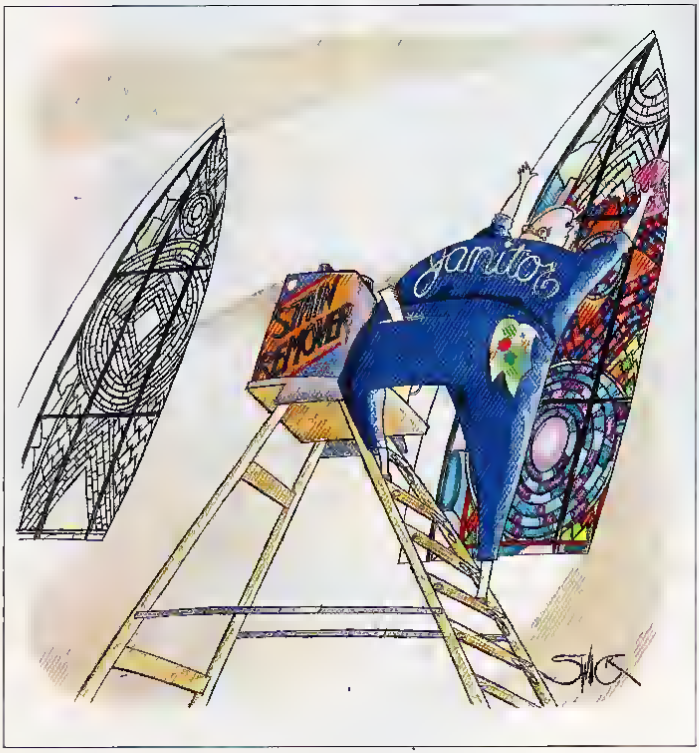
Gale: Around 1970 one of the world's most famous hematologists wrote an editorial in a medical journal arguing that it might not be justifiable to treat adult patients, that their lives were being unnecessarily prolonged, that they were suffering for no real gain Fifteen years later, one third of all adults with leukemia were cured by chemotherapy or bone marrow transplantation Up to 1980, *everyone* who came down with chronic myelogenous leukemia died of it Today, of about four hundred and fifty patients who have bone marrow transplants, more than one half will be cured

Omni: This brings us to Chernobyl Why did you call Dr Hammer?

Gale: First of all, I made the offer to go to the Soviet Union because I thought the Soviets might need additional help in coping with an accident of this magnitude

Omni: When you heard a number like two thousand dead, a particularly outrageous number headlined in the United States, you might have thought that there could be as many as fifty transplants

Gale: It was highly unlikely that two thousand people had instantaneously died People don't understand that a nuclear power station "explosion" is not like a nuclear bomb Even the very highest doses of radiation on a large population around the power station are not so high that they'd kill you in minutes or days In the unlikely circumstance that a large population was affected, it would take three to six weeks So the chance of two thousand immediate deaths was extremely unlikely; but precisely how many patients would need transplants was unknown So far there are thirty-one fatalities Two people were killed at the reactor, and there were twenty-nine



deaths among the slightly more than two hundred people who were exposed to substantial doses of radiation

Omni: Fewer than fifty of the two hundred and ninety-nine people admitted to the hospital in Moscow were exposed to five grays, weren't they? [Grays are units of radiation exposure. One gray equals one hundred rads. A typical chest X ray gives a radiation dose of less than twenty thousandths of a rad.] Doesn't five grays mean high probability of death from bone marrow failure?

Gale: Pre-Chernobyl, the lethal dose fifty [LD_{50}]—the dose of radiation in which half of the people exposed would die of bone marrow failure, was thought to be five grays. But LD_{50} for humans is extrapolated from lab studies on animals. We take one hundred mice and expose them to different doses of radiation, and the dose where half of them die is the LD_{50}. To complicate matters, the concept of LD_{50} presupposes that nothing is being done to treat the radiation victim. The LD_{50} in the Mojave Desert, for instance, is different from the LD_{50} in a hospital. Another complicating factor is the circumstances under which the radiation is delivered—such as dose rate or uniformity of dose. At UCLA we've engineered the system to work in our favor. We treat some leukemia patients with twelve or even fifteen grays of radiation, which is three times the LD_{50}. But this is in controlled circumstances where there is no important damage to other tissues.

Omni: Chernobyl was not UCLA.

Gale: No. What happened at Chernobyl was a fire from burning, radiation-soaked graphite. First, there were thermal injuries—burns. Also, toxic chemicals were released from burning graphite and plastic pipes, etc. There were also traumatic injuries. All this occurred in a complex setting with radiation delivered at a very high dose in a nonuniform way, because the radioactive plume was going upward.

Some firemen are on top of the building, and it's coming right up to them, and others are coming at the ground level. Radioactive particles are in the air and water, and people are inhaling them. If particle size is large enough, the particles will come into the trachea and will also be ingested. So here you have external radiation to the skin, plus internal radiation to the lungs and to the gastrointestinal tract and in the blood—all of this going on simultaneously! When we irradiate people at UCLA, we use only gamma rays. At Chernobyl we have a combination of beta and gamma in varying proportions, and they cause varying degrees of damage.

Omni: Has a computer model been done?

Gale: Computers have been used to determine the radiation dose received, but each patient is really different. For people in the middle of a radiation accident, particularly in the early stages, precise determinations of dose are difficult. It's very hard to distinguish if a patient suffers lung failure because he inhaled beta particles, because he inhaled burning plastics or chemicals, because of external gamma radiation, or a combination of all three. Firemen who ran into the reactor were burned and radiated and inhaled volatile radionuclides [unstable atoms]. So we just make the best guess for the moment.

Omni: It's impossible to determine how much radiation the firemen received?

Gale: If you've seen a picture of the reactor at Chernobyl, you can imagine people running in and hiding behind walls, coming in helicopters. Physicists have not yet agreed on the dose at Hiroshima and Nagasaki forty-two years later. For a single person radiated at a single industrial accident they can give very useful information, but not here. At Chernobyl many of the monitoring devices were destroyed, including the Geiger counters. In fighting a two-thousand-degree fire, film badges [small radiation-measuring devices clipped to clothing] burn or go off their scale. When exposed firemen get to the decontamination area, before they can enter the medical treatment center, they are disrobed and washed down. So the physicians wind up—and this we hope to avoid in the future—with a pile of clothing and a pile of burned badges. Even if we get those badges intact, they are of limited utility. We need to know what dose the whole body got, not what the guy's chest got.

> *"Dr. Orlov went to the power plant to pull out injured firemen. Because he was our age, because he was a physician, I was particularly touched by his death."*

So we're left with using the patient himself as a biologic dosimeter. Correlating the rate of decline of various blood cells with the dose of radiation, we construct a curve. By comparing the level of lymphocytes in the blood on day four [after the initial exposure] with this curve, we can estimate the dose of radiation. Many scientists, American and Soviet, believe that in these kinds of accidents biologic dosimetry is likely to be the only data we can get within the time frame.

Omni: Not knowing the precise dosage must make the timing of bone marrow transplants pretty difficult.

Gale: Inevitably. The problem is timing. Radiation damage to the bone marrow or skin isn't immediately apparent. On day seven, when you want to perform transplants, few patients show severe skin damage from radiation. By day thirty, half the patients show skin damage. If we wait three months after the accident to see who else has skin damage, no lives will be saved by transplantation. It will be too late to rescue their bone marrow. We might have saved ourselves the futility of transplanting in patients with severe skin damage and therefore no hope of recovery. But we would also have lost other lives by failing to transplant. We are working against the clock.

Omni: This is all hard to imagine because radiation skin damage isn't apparent. How successful is the operation?

Gale: In an accident such as Chernobyl, probably half the people you do transplants on will die of something else, such as thermal burns from the fires or radiation damage to other organs or tissues. The transplant may be successful, but they die of other toxicities. Okay, let's say out of a group of victims of a large-scale radiation accident we have only half we can rescue. Let's say our procedure is fifty percent successful. Well, then we'll save twenty-five percent of all the lives. That's exactly what we did at Chernobyl.

Omni: There were thirteen transplants, and two lived. That's not twenty-five percent.

Gale: Of the seven patients having transplants performed by the Soviets and us together, two lived.

Omni: Then the Soviets performed six transplants before you arrived. It's probably safe to assume they felt they had to move fast on the very worst cases. Now of the three thousand marrow transplants around the world, the Soviets had been doing only one a month, which doesn't give them an enormous base of experience.

Gale: Clearly the Soviets don't have as much experience as we have, and they do not hesitate to acknowledge this. Incidentally, one patient refused a transplant; he felt he didn't need it.

Omni: What happened to him?

Gale: He died. We and the Soviets were quite certain that he'd received a fatal dose of radiation, and they argued very strongly with him. This illustrates clearly that if a Soviet patient doesn't want a transplant, he's not getting it, because they spent hours trying to speak to him, but he just refused and he died. The victims were young men, their average age was early twenties. They were healthy and simply couldn't accept the fact that they were gravely ill.

The firemen who went running into this conflagration are the heroes of the whole story. They didn't know it was a nuclear release; no one did. Even if they knew they had to put out the fire because three other reactors were threatened.

You may know about Dr. Orlov who went running in from the town to the power station to pull out injured firemen. He undoubtedly knew what was happening because he had seen the victims. He got one of the higher doses of radiation and died soon after the accident. Because he was our age, because he was a physician, be-

cause he knew and because he wasn't supposed to be at Chernobyl but ran for the power station. I was particularly touched by his death.

Omni: Did you get to know the victims?

Gale: One young fire fighter named Tor mosian had severe injuries but received a bone marrow transplant and recovered. He has been moved to Moscow. He speaks English, and whenever I'm there he visits and brings me gifts, chocolate for my kids.

Omni: Getting back to Soviet medicine: why do they lack the competence we've achieved in this surgery?

Gale: It's an apportionment of a society's resources. In the U.S., a bone marrow transplant costs one hundred twenty thousand dollars. We invest about eleven percent of our gross national product in medical care. The Soviets invest three to five percent. From society's point of view, bone marrow transplants must be a poor investment compared to seat belts. This can be intellectually shortsighted because what society allows its doctors to do determines not only health-care quality but the level of sophistication of future generations of physicians. Most of the world does not do what we do and probably shouldn't at this point. The Soviets are not afraid of the surgery and are no less talented than we are. Their society is just not willing to make such extensive investments in what is envisioned as esoteric medicine. Yet, they showed great sophistication in estimating the doses of radiation. They may be slightly ahead of us in that way. So it sort of balances out.

Omni: Some of the troops that moved into Chernobyl were later identified by the Soviet press as chemical-wartare troops. They made a point of identifying this in their newspapers, as if to show off *glasnost*, the new press freedom. Did you have any of these men as patients?

Gale: So far as I know, the early high-dose victims were not military but workers from the reactor, fire fighters, paramedics or the physician I mentioned. I would not be surprised if some of the later casualties were military. But we had a lot of military whom we used as medics. They pitched their tents in the courtyard and lived there for a few weeks. Because we had three hundred patients, we needed people to help monitor with Geiger counters everyone entering and leaving the hospital. These soldiers were quite helpful.

Omni: Did you have any idea that Gorbachev was going to turn this entire situation—the secrecy and panic and bad press surrounding the accident at Chernobyl—around as well as he did?

Gale: No. If you look at the Soviet press preceding Chernobyl, you can see a battle between Gorbachev's supporters and more conservative elements. The perception was that Gorbachev was not winning. When the accident occurred, the Soviet stance was to stonewall it. It's a typical policy of many governments.

The problem is when you're dealing with a radioactive cloud: it's not like shooting a Korean airliner. The cloud is going all over the world, and there's no hiding it. The Soviets must have realized early on that a strategy of denial simply could not work. That allowed Gorbachev to get the upper hand. The Soviets started using Western news techniques—flying a reporter in, stopping people on the street and asking them what they thought about the event. It worked. And the long-term consequence is that the *glasnost* policy is now in force. Now, when a Soviet submarine sank last October, they informed the U.S. government immediately. So we benefit. This was a by-product of Chernobyl, and this to me is one of the major lights in a dark event.

And it's a two-way street. We showed them that by letting us in and giving us access to the data, we weren't going to use it to embarrass them. I refused to speak to anyone from the press, Western or Soviet, for two weeks, until we had all the medical details. They can see now that not every American is there to get up and say the Soviets do not know what they're doing. I believe this gesture of goodwill can stand us in good stead in the long-term.

"Dealing with a radioactive cloud is not like shooting a Korean airliner. The cloud's going all over, and there's no hiding it. That allowed Gorbachev the upper hand."

Omni: What will be Chernobyl's effect on this planet?

Gale: Several groups, including the Soviets, the International Atomic Energy Agency and the U.S. Department of Energy, made estimates of the potential long-term health consequences of Chernobyl. Their data suggest a range of twenty-five hundred to forty thousand cancer deaths above the naturally occurring number in the next fifty years. Only about half of these cases will occur in the Soviet Union; the others will occur in Europe and throughout the Northern Hemisphere. This geographical distribution holds true for the zero to one thousand possible cases of severe mental retardation and the zero to five thousand possible severe genetic abnormalities in children of the exposed. A nuclear accident anywhere is a nuclear accident everywhere. To date, however, no cases of severe mental retardation or birth defects directly attributable to Chernobyl have occurred.

Omni: Big numbers are hard to assimilate. Is there another way to express this effect?

Gale: You could say Chernobyl confers on the planet an extra load of radiation approximately equivalent to ten to forty per cent of the radiation burden of all the atmospheric tests conducted by the nuclear powers. It's a great amount. On the other hand, we have intentionally detonated these devices in the atmosphere and some countries would do it again.

Omni: But we didn't do it all in one day.

Gale: Once it's dispersed into the biosphere, there's no difference. So one answer is that the entire Northern Hemisphere of three and a half billion people is at risk. Suppose there will be forty thousand cancer deaths, but only five hundred are going to occur in the evacuees from Chernobyl. That means that ninety-five percent will be outside the Chernobyl area, half in the Soviet Union, half in Europe. The population at risk is really all of us.

Omni: You signed an agreement with the Soviet Ministry of Health to conduct a long-term study of the biomedical consequences. What will that entail?

Gale: We will probably study the one hundred thirty-five thousand to two hundred thousand people who were evacuated. These people can be divided into a group of about twenty-four thousand who received an average dose of around forty-five rems [25 rems is an allowable *lifetime* dose for nuclear-plant workers]. That's quite a substantial dose. And one hundred ten thousand people received on the average nine or ten rems. On a worldwide basis all of us are going to receive radiation equivalent to an extra one to five years of natural radiation. So if you live seventy years, you will have seventy-five years' worth of radiation.

Omni: The top number of anticipated cancer deaths from Chernobyl in the United States is thirty-five?

Gale: Could be less. Could be zero.

Omni: How long will your study go on?

Gale: The Hiroshima and Nagasaki studies continue after forty years. The Chernobyl study will need to go on for fifty years. This study is of such magnitude in an intellectual, organizational, and financial regard that it has to be done by the Soviets in conjunction with an international organization, an agency of the U.S. government, or some U.S. scientific body. So far the Soviets are not keen on this idea.

Omni: Could an accident comparable to Chernobyl happen in the United States?

Gale: Serious accidents can happen here. Not only *can* they happen anywhere in the world, but they are *likely* to happen. One can predict the rate. There's at least a twenty-five percent probability that there will be a serious accident somewhere in the world within the next ten years. These accidents are about as unavoidable as the *Challenger* disaster because we are stretched to the limits of our technology.

Omni: Wasn't Reactor 4 at Chernobyl of inferior design to American reactors?

Gale: There are substantial differences

between American pressurized-water reactors and the type of Soviet reactor that exploded at Chernobyl. The Soviet term for what we call *containment* can be translated as "localization." This difference is important. In America we call our strategy defense in depth. There are five different levels of defense against a radionuclide release to the environment. These are the ceramic fuel pellets, zirconium fuel rods, the stainless-steel pressure vessel, a steel containment, then a concrete-shell containment. This strategy is why Three Mile Island [TMI], which was a serious accident, was not such a major environmental disaster. The Soviet concept is to localize the release of radioactivity in this type of reactor but not to contain it. Three Mile Island released approximately seventeen million curies [one curie equals 37 billion disintegrations of unstable atoms a second] of radioactivity, and Chernobyl approximately fifty million curies. So the difference in release of radioactivity from the core is only a factor of three, but the amount released to the environment was substantially different. Only seventeen of the seventeen million curies released from the core at TMI escaped to the environment, whereas all fifty million were released from Chernobyl. As a consequence, the health effects of TMI were small compared to Chernobyl. No one died at TMI.

Omni: What about other preparations, like stocking iodine near reactors?

Gale: This is a controversial subject. Iodine has to be distributed immediately to be effective. Giving iodine a week later, as was done in Poland, is a political endeavor. It's not science. Rapid administration of iodine to people exposed to radioactivity, particularly children, can decrease the uptake of radiative iodine by the thyroid.

The negative side of this involves adverse reactions such as rashes. In certain parts of the world where endemic goiter is commonplace, giving iodine can precipitate thyrotoxicosis. However, the Soviets distributed iodine to a large number of people and claim that there was not a single adverse reaction.

Omni: Radiation damage includes the destruction of DNA. Supposedly, vitamins can protect against that destruction. Has there been any talk of stockpiling vitamins at or near reactors?

Gale: There is a whole field called radioprotection. Agents claimed to be effective range from health-food-store products, such as vitamin A or E, to some very sophisticated compounds specially synthesized to minimize radiation-induced damage. Still, the concept of using radioprotectants post-exposure has not been popular among experts, although one could imagine a scenario where fire fighters could take some radioprotectant compound before going into a radioactive fire.

Omni: In terms of releasing information, in Italy, the people were first told by their government that background radiation was only double normal. Later they heard that in fact the beta radiation was one hundred times normal.

Gale: First, let's try to separate science and politics. There are a few bona fide scientific differences in measurement levels from one country to another. One step forward has been to develop uniform international guidelines. Second, governments frequently make political rather than scientific decisions. Several European governments disregarded the advice of their scientists, sometimes out of ignorance, sometimes intended. Suppose you have an anti-Soviet government, and Chernobyl occurs. If you have an election coming up, you might take all vegetables off the market. For a politician it's safer to withdraw something from the market than to face the charge that he failed to protect the public. Otherwise, you can be certain that someone in the opposition party will claim that you are playing with the lives of citizens.

Omni: In Italy some milk initially withdrawn from the market was later used for yogurt.

"A flock of geese flying through the plume, a train passing through the radioactivity—these things show you the artificiality of national boundaries."

Gale: That's actually quite reasonable. The major problem with milk is that it contains iodine 131. Radioiodine has a half-life of eight days. In three months it's essentially gone. The scientific rationale is if you have milk with high levels of iodine 131, you can turn that milk into butter or cheese, hold it for a few months, and then it's no different from any other butter or cheese. Now, if you were a politician, would you recommend that your citizens buy that butter?

We had a joke with the Soviets. How would we market previously radioactive butter in the United States? One way would be to put it in a lead rather than a plastic container with some sort of eye-catching label calling it self-melting butter. Instead of having to thaw a frozen bagel to toast it, you would simply put on this radioactive butter. With a combination of Madison Avenue techniques, they could actually make it attractive!

Omni: The real trick would be to put it in paper that glows in the night. That sort of advice aside, you go regularly to the Soviet Union to carry out your study. Exactly what do you do?

Gale: We're focusing on the one hundred thirty-five thousand to two hundred thousand people who were most heavily exposed. A company here in Los Angeles will give the Soviets more than one million dollars of radioimmunoassay kits to test thyroid function. People, particularly children, with hypothyroidism as a consequence of exposure may need treatment with thyroid hormone. This identification and treatment might prevent thyroid cancer. It's ironic that we use radioimmunoassay with radioisotopes to detect exposure to radiation.

Because the people who were evacuated from Chernobyl are now dispersed throughout the Soviet Union, the Soviets would like to set up ten monitoring stations to collect data from them, and we have agreed to help set that up. The Soviets themselves are not totally satisfied with their health-care system. In the United States almost every newborn is tested for thyroid function. This allows us to detect cases of children with congenital hypothyroidism. The Soviets do not do this testing routinely. Establishing stations for monitoring the Chernobyl population will allow them to test other newborns. If they prevent one thousand kids a year from developing hypothyroidism, who cares who sent the tests and who did the testing? That's one thousand kids who are not retarded.

What else can we learn from the Chernobyl experience? By comparing the twenty-four thousand people who got the highest dose of radiation with the one hundred ten thousand people who got a lower dose, we can study differences in cancer incidences. This will add to our knowledge of the effects of radiation-induced cancer. We can understand the pathogenesis of cancers by using radiation as a model.

Omni: That's in the future. Can you, today, name a scientific benefit from Chernobyl?

Gale: Well, going into Chernobyl, we thought the operational LD_{50} of total body radiation was five grays. Now we can revise this upward, perhaps to eight grays. It's not that the human resistance to radiation has changed; it hasn't. It's just that we have better techniques to keep people alive and allow them to recover. This can probably be improved.

Why we do bone marrow transplants following radiation accidents is sometimes misunderstood. If we know for certain that the bone marrow has been irreversibly destroyed, than the ultimate survival of that person hinges upon the function of the transplant. Look at it from a laboratory perspective. A lethal dose of radiation in a mouse is nine grays. Give a mouse nine grays, then a T-cell-depleted mismatched transplant, and you will have instead of ninety percent of the animals dying, ninety percent of the animals living.

Omni: What is a T-cell-depleted mismatched transplant, and why give that instead of a matched transplant?

Gale: Many times no fully matched donor is available, and it is necessary to take an incompletely matched donor. In such cir-

cumstances the donor T lymphocyte cells affack the recipient and cause a serious complication known as graft-versus-host disease. This complication can be modified or prevented by removing fhe T cells from the donor bone marrow in the lab prior fo transplanting in the recipient.

Returning to the lab situation, if we test those mice that survived after the mismatched transplant, we find that most have recovery of their *own* bone marrow. The graft allows them to survive long enough for their own bone marrow to regenerafe.

Omni: So it's a bridge!

Gale: Right! This is in fact our preferred objective. We'd much rather have the graft ultimately rejected, provided it happens under circumstances where the recipient's own marrow can recover.

Omni: I'd think the bone marrow would be entirely dead, irradiated and wiped out, and that's what allows the graft to take hold.

Gale: There is no dose of radiation that can kill one hundred percent of bone marrow cells. You cannot kill the last cell. Given sufficient time, a single stem cell can reconstitute an animal.

Omni: Do you do mismatched transplants in leukemia cases?

Gale: No, because unfortunately, malignant leukemia cells have the same or even greater abilify fo survive radiafion. So there we're going for broke. We use much higher doses of radiation for leukemia patients than for radiation-accident-victim transplants. In leukemia we're trying lo prevent fhe survival of any recipienf bone marrow cells regardless of whether they're normal or malignant. But victims of radiation accidents don't have leukemia, recovery of fheir bone marrow would be a posifive thing. It's a delicate balance. And of the three thousand transplants we do a year, there is no significant cancer caused by the radiation treatment itself.

Ideally, we'd like a graft that functions for some period of time without causing graft-versus-host disease. This ideal graft eventually would be rejected after recovery of the recipient's own bone marrow and immune system. And fhat's probably what did happen in the two survivors from Chernobyl. Here we used precisely the procedure I described to you in the mice. That is, we took mismatched donors.

Omni: Deliberately mismatched?

Gale: No, these patients had no choice. But their graffs ultimately reverted fo their own bone marrow. Can I prove that these two patients are surviving because of what we did? The answer is no, no one can. All we can say is that they are alive and it fulfills our predictions from mice.

Omni: The optimum is rejection and recovery. The second one is no rejection but recovery. The third one is fhe worst?

Gale: Yes. It brings us to another novel intervenfion. Whaf if a pafient receives a dose of radiation sufficiently high to destroy his bone marrow but not sufficiently high to destroy his immune system? This person is going to die unless he gets a bone marrow transplant, but a bone marrow transplant under those circumstances will be rejected. So what do you do? The only way to get around this dilemma is to increase the immune suppression, either by giving a radiation victim more radiation or a drug that is immune suppressive, which is what we prefer. At Chernobyl we discussed this possibility but rejected it because we lacked enough animal data to support it. It was too dangerous. We certainly will work on this in the next couple of years because it's likely that many patients received a dose of radiation sufficient to cause bone marrow failure but not high enough to allow rescue by a bone marrow transplanf.

Omni: That's not the only thing we have to come fo grips with. A great many of us now perceive the Chernobyl experience in terms of hospital beds and advances in medicine. Chernobyl itself seems to be fading. Pripyat, the town built for the workers at Chernobyl, is fading even faster.

Gale: The deserted buildings in Pripyat are high-rise concrefe strucfures. It has broad avenues, tall buildings with supermarkets in them. Pretfy ordinary. It's more moving to see the eighty or so villages in the evacuation areas. These are what we usually envision as Russian villages—wooden houses with gates around them, covered with snow. But completely deserted.

Omni: Is the snow itself a danger?

Gale: When the snow melts it will carry radiation in fhe water, and that is one reason for not letting people come back until after fhe spring thaw.

The thing that has impressed me most is the disparity between the relatively small apparent destruction and the large impact. Phofographs of Hiroshima clearly show the effect of a bomb. It doesn't make too much difference that it was an atomic bomb. At Chernobyl there are three thousand square kilometers of deserted land. This is one of our firsf experiences with radiation as radiation, not as a bomb, not as a physically destructive force. So people cannot understand why they cannot inhabit their villages.

Omni: What was the experience like? One of emptiness?

Gale: The analogy is that sometimes you go to a forest where it's so quiet that the quiet becomes the noise. Everything near Chernobyl is boarded up. There is a brown forest thaf has radioactive trees; no one knows whether to cuf them down or leave them standing. Chernobyl proves the international nature of nuclear accidents. Two days after the accident, the Moscow–Stockholm Express, which travels some thousand miles through Europe, passed directly in the path of the radioactive plume. These kinds of things, like a flock of geese flying through the plume, a train passing through it, show you the artificialify of national boundaries. We are all in this togefher. When you're dealing with nuclear energy, it's just a small planet.

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THE OMNI WHOLEMIND NEWSLETTER

A USER'S MANUAL TO THE BRAIN, MIND, AND SPIRIT

COME EXPLORE INNER SPACE

Welcome to *The Omni Whole Mind Newsletter*, a new publication from *Omni* magazine. *Whole Mind* is available monthly by subscription only (see advertisement and reply card at left), but we're providing the following sampling as a bonus to readers of this special anniversary issue of *Omni*.

The following eight pages contain articles or excerpts of articles, that will appear in future issues of *Whole Mind*, the aim of which is to bring to the universe of the human mind what *Omni* brings to the cutting edge of science.

When you buy a computer, you get along with it an owner's manual that tells you how to use it. But your own brain, which is infinitely more complex than any computer on Earth, comes without a manual. That's where *Whole Mind* comes in. Every month we'll bring you the latest breakthroughs in brain research, state-of-the-art tools for mind expansion and creativity, and excursions into new realms of the spirit. We want to take you on a magical mystery tour of your own self.—*Judith Hooper, Whole Mind Editor*

COMING SOON

IN WHOLE MIND

Here are some stories that will appear in upcoming issues: **Whole Mind I.Q. Test:** How integrated is your brain? **Institutional Shamans:** How your organization can benefit from shamanism. **Goddess Worship:** What every woman (and man) must know about this potent new form of feminine power. **Power Chemicals:** New drugs that turn wimps into leaders. **The Overrated Right Brain:** Why you shouldn't dwell too much in your brain's right hemisphere. **The Enlightenment Pill:** How the quest for higher consciousness has moved into the neuropharmacology lab. **The Five Worst Gurus:** The lowdown on the most outrageous spiritual leaders. **Neuropolitics:** How your brain cells affect your political beliefs.

A DOSE OF MOTHER TERESA

They sit in a darkened room and watch a graphic documentary about lepers dying children, and one of the most famous healers of our time, Mother Teresa of Calcutta. When the lights go back on, a remarkable thing has happened. The viewers' immune systems are changed. Their bodies' resistance to disease has been boosted by a phenomenon now known as the Mother Teresa effect.

The Mother Teresa effect was discovered by David McClelland, an influential Harvard psychologist. Some ten years ago, he pitted the Harvard University Health Service against a psychic healer and found the healer did better against the cold and flu viruses of students. Still, he needed a more predictable means

CONTINUED ON PAGE 132

INSIDE THE NEOPSYCHEDELIC UNDERGROUND

Gracie and Zarkov are a pair of upwardly mobile 37-year-old San Francisco investment bankers with six-figure incomes and solid-gold resumés. Their colleagues at the bank have no idea how they spend their weekends.

They take drugs, heroic dosages of drugs. But it's not what you think, not the typical cocaine yuppie scene. Gracie and Zarkov do psychedelics. And they're deadly serious about their "research," as they call it. "You see other worlds, other yous, other creatures," says Zarkov, who boasts a remarkable number of advanced degrees in various scientific disciplines. "You see entire planets that seem to be created by your mind."

Gracie and Zarkov's hallucinations, which they analyze like Freudians dissecting dreams, also include Minoan artifacts, Bronze Age cities, Near Eastern fertility goddesses, and travelogues of planets 13 light-years away. They see themselves as the modern counterparts of "early nineteenth-century explorers going up the Congo."

Psychedelic drugs are back. And a fast-growing underground of well-educated, middle-class but hip devotees are taking them. Right now, the neopsychedelic underground boasts disciples in California, Texas, and, to a lesser degree, New York City. They still turn on

CONTINUED ON PAGE 132

CORPORATE DREAMING

The corporation a megalithic chemical manufacturer owned by the government of India, was having trouble in its research and development department Its scientists felt unappreciated their creativity numbed by a baroque corporate bureaucracy So the company hired an unorthodox management trainer named Francis Menezes and Menezes came up with an imaginative solution He asked the scientists to dream.

Fifty-two of the company s researchers retired for three days and three nights to Menezes's headquarters, a comfortable old English colonial house in Poona India After dinner each night Menezes asked the scientists to focus on a work issue that concerned them and to summarize that issue in a phrase write it down and insert it into an envelope As they lay down in bed with soothing neutral music playing in the background they concentrated on their phrases hoping thereby to "incubate" a series of telltale dreams they could discuss and analyze the next day

In the mornings nearly all the scientists—even cynics who told Menezes that they ' never dreamed" —reported having work-related dreams in which they re created the feelings of frustration powerlessness, and anger that permeated their workdays In one dream a scientist found himself shouting angrily at a colleague while in another a frustrated researcher actually threw lab apparatus at his unappreciative boss.

Menezes recorded and collated the content of all the dreams and reported his findings to management, which responded with a series of changes designed to foster freer communication and a more flexible working environment. At the same time, the scientists themselves were so hooked on the dream work that they started their own "dream clubs," with weekly meetings to analyze the past week's dreams and incubate new ones for the coming week.

"Dreams are always urging us toward greater wholeness," says Menezes. "As such, they can be a very important instrument for change."—*Bill Lawren*

CREATIVE JOGGING

Regular running and other exercise can make you more creative even if you hate the exercise, according to researchers at Florida State University

Bruce W Tuckman professor of educational research at the school says his 46 eighth grade subjects had anti-aerobic attitudes "They didn t look forward to the run" he says "They didn't enjoy running and were negative after running Boy they disliked it" And even though a physical education teacher on the track acted like a drill sergeant "Some of them were dogging it"

But after 15 weeks even slow runners did significantly better on a standard test for creativity than a control group The paper-and-pencil test involved turning a set of parallel lines or a strange blob-like shape into a meaningful picture evaluated by trained judges

Tuckman's study done with psychologist J Scott Hinkle, is one of several experiments suggesting that exercise boosts creativity Tuckman and Joan C Gondola, associate professor of physical and health education at the City University of New York found significant gains on another creativity test administered after running The test required dreaming up alternative uses for every day objects like shoes ("bugswatter cup holder tack hammer")

Tuckman suggests that for adults three 20-minute workouts a week will sharpen a creative edge —*Gurney Williams*

THE JOHNNY CARSON EFFECT

On television's *The Tonight Show*, Johnny Carson seats his guests on his right Is this seating arrangement the key to the long-standing host's success?

Maybe so, says neuropsychologist Roger Drake Consider that the left side of the brain governs the right half of the body and vice versa, and that when we direct our attention toward one side or the other, our opposite brain hemisphere becomes more activated When Johnny turns rightward to chat with Cher therefore, we can assume his left hemisphere is in charge

Drake a psychologist at Western State College of Colorado in Gunnison calls this the Johnny Carson effect He'd wager that facing right gives the talk-show giant a quicker reaction time, a more positive mood and riskier impulses At the same time the fact that Johnny's guests must turn toward their left to talk to him produces in them a greater admiration for him

In his research, Drake found that activating the left brain (in right-handers) produces a more positive mood higher expectations for the future and a greater sense of control When people are more optimistic about the future they are willing to take more risks When the right hemisphere is activated, most people are more easily persuaded

There are practical implications according to Drake Insurance brokers Design your offices so that clients are turned toward the left That way they will be more pessimistic about the future Trial lawyers Arrange to have your jurors oriented leftward where they ll be more receptive to your arguments Advertisers Your most effective presentation of a product is to show a picture to the right and play a message from the left audio channel —*Connie Zweig*

The Synchro-Energizer. Makes you feel like a frogman out of a science fiction film

Anna Wise and the creative Mind Mirror

BRAIN TECH

MIND MACHINES

One of the most fascinating suggestions found in Michael Hutchison's *Megabrain* (Ballantine, 1986) is that the brain can be exercised like a muscle. Hutchison proposes, further, that electrical stimulation can boost your I.Q. and creativity.

Who can resist the appeal of compressing the 40-year rigors of a yogi into a few plugged-in minutes? As a veteran of human potential practices from fire walking to est, I was curious enough to accept Michael's invitation to a *Megabrain* party in New York City, where I sampled the latest brain machines. Here is a brief survey:

HEMI-SYNC. The brainchild of Robert Monroe, head of the Monroe Institute of Applied Science in Faber, Virginia, the Hemi-Sync consists of a stereophonic headset and sound system. As the earphones send pulsing tones of different frequencies to each ear, your brain waves become entrained (pulse in synchrony) to a slow-wave delta rhythm of about four hertz, the brain-wave pattern of deep sleep.

In this state, paradoxically asleep yet alert, the mind can be easily "programmed," and mine was massaged by the subliminal affirmations contained in a tape, "Beyond Limitations," by New York City psychologist Dr. Lloyd Glauberman. While I didn't have the out-of-body experience that is the apogee of the Monroe Institute program, I did enjoy the altered state.

MIND MIRROR. Anna Wise, of the Evolving Institute of Boulder, Colorado, trained for eight years with C. Maxwell Cade, the (now deceased) British inventor of this device. Mind Mirror consists of a headband of seven or eight electrodes hooked up to a gridlike screen on which you see a readout of your electroencephalogram (EEG).

The idea is to use visualization, breath control, and EEG biofeedback to try to reproduce a yogi's brain state. The inventors determined the so-called "awakened mind" EEG pattern by wiring up a number of Indian yogis some years ago. You can learn to recognize the feeling tone of that state, press a joystick to freeze the screen, and see how close you've come.

Anna Wise reports that a Wall Street executive hired her to do a corporate brain wave profile of his 40 employees in order to determine what creative training programs each needed.

SYNCHRO-ENERGIZER. By combining flickering lights, pulsating sounds, and vibrating electromagnetic impulses, the Synchro-Energizer's inventor, Dr. Denis Gorges, an Ohio psychiatrist, has created a method for altering brain waves and bringing the right and left hemispheres into synchrony.

Donning the earphones and the stroboscopic goggles with a series of tiny lights encircling each eye, I felt like a frogman out of a science-fiction film. By working the controls I could pulse the lights and sound, creating a spectacular light show in my head. By setting the controls at 7.83 hertz I could entrain my brain, according to the machine's inventor, to the earth's "brain wave," the Schumann pulse that is the planet's resonant frequency. The Synchro-Energizer is a powerful trip into inner space.

THE GRAHAM POTENTIALIZER. Invented by David Graham, an electrical engineer with Starr Labs in Phoenix, the Potentializer is designed to re-create the mental effects of the rolling, tumbling, and swinging games we played as children. (The motion of fluid in the inner ear is said to stimulate neurons.)

Lying on a flat table slowly rotating counterclockwise, I felt as if I were being rocked in a cradle. A box near my head swathed me in an electromagnetic field down to the metal plate against my bare feet. (The field is supposed to create the neuroelectrical equivalent of the resistance a bodybuilder achieves with weightlifting.) Headphones and a relaxation tape added the finishing touches.

A final note: Before writing this article I went back to Anna Wise's institute in Boulder and wired up to Mind Mirror. Then, back home, using a holding pattern of alpha, I sailed right through this piece!—*Alexis Parks*

Access: For information about this equipment write: Megabrain, PO. Box 1059, Cooper Station, New York, NY 10276.

FUTURE LIVES

If it is possible to hypnotically regress a person to one of his past lives, is it possible to *progress* him to one of his future lives as well? Baltimore past-life therapist Bruce Goldberg believes it is. Goldberg began in 1981 by hypnotizing a local Baltimore news broadcaster and asking him to describe the news items he would be reporting one week in the future. The results proved to be so accurate, according to Goldberg, he next asked the man to progress farther

into the future. To his surprise, the newscaster started describing his life as a worker in a solar energy facility in the year 2153.

Goldberg has since performed future-life progressions on over 2,000 people and reports that their descriptions of the future are in agreement about 80 percent of the time. According to his subjects, world peace will come in the twenty-first century, but political strife in the twenty-third century will result in a small-scale nuclear war. By the twenty-fifth century we will control the weather, and androids will perform all menial tasks. But it isn't until the twenty-sixth century that we make contact with beings from other planets.

Goldberg stresses that the future history described above appears to be only one of several scenarios his subjects are able to tune into. That particular chain of events is the most clearly focused because at this time it is the most probable, but it is not etched in stone. As Goldberg says, "The soul always has free will."—*Michael Talbot*

SMARTER AFTER ALL THESE YEARS

Did human life evolve on this planet or was it created by a divine being? Think well before you answer.

Nearly 50 years after the Swiss psychologist Jean Piaget plunged into the murky epistemological wars and emerged with the theory that human intellectual growth peaks in late adolescence with the ability to reason logically, two researchers have devised a

radically new way to measure the complex reasoning skills of adults.

The Reflective Judgment Test, the brainchild of Karen Strohm Kitchener of the University of Denver and Patricia King of Bowling Green State University in Ohio, requires the test-taker to ponder such imponderables as whether we are of Darwinian or creationist stock, whether food additives cause cancer, or whether television news is biased. There are no right or wrong answers, of course. *How* you reason is what counts.

For example, if you say God created the world and everything in it because the Bible tells me so, you're probably in level one, the lowest stage. If you say, well, Darwin was right about evolution, and that's that, you won't do much better. But if you carefully weigh all the arguments and argue convincingly, for instance, that a preponderance of the fossil evidence argues against creationism, you might make it all the way to level seven.

The test was born of the fashionable new concept of "stage theory," which asserts that intelligence does not peak with Piaget's "formal operations" stage shortly after you start shaving. Rather, say the stage theorists, there are more refined levels of intellectual growth beyond Piaget's stages—seven, to be exact, in King and Kitchener's model. Other theorists posit three stages. Still others speak of seven that are *different* from King and Kitchener's seven. But all agree that, contrary to the tenets of the venerable I.Q. test, people often do get smarter—even *after* graduation.

Okay, but how do you measure such an elusive thing as judgment? Not easily. In its present form the exam is an hour-long ordeal (though Kitchener would object to the term) using individual interviews that must be transcribed and independently evaluated by specialists to ensure objectivity. Pending revision and simplification, the Reflective Judgment Test probably won't be ready for large-scale use for two years.

"It's a painstaking, time-consuming process," admits Kitchener. Nonetheless the copyrighted test has been given to 1,000 males and females between the ages of fourteen and fifty-five.

The results? "Wisdom," says Kitchener, "is indeed a function of age." High-school students, relying on unassailable authority figures for their answers, rarely make it past level one or two. ("Food additives are bad.") The more skeptical college students reach levels three and four. ("No one knows if additives cause cancer, so I'll eat what I want anyway.")

Graduate students, wiser in the ways of subjective reasoning, score at levels five or six. ("Studies have shown that some additives cause cancer in mice. But people are different from mice.") The optimum seventh level of reflective judgment has so far eluded everyone under twenty-five.
—*George Nobbe*

MINDWARE

THE COLLECTIVE CONSCIOUS

How do you tell what's going on in the collective mind of a community of the Eighties? With the technology of the Eighties, of course: the computer. For the past three years the residents of Berkeley, California, have been willing guinea pigs in an experiment called the Community Memory Project. Any time of day or night a person can walk up to one of four computer terminals and tap a few keys on a keyboard to see what his or her fellow Berkeleyites are thinking. For a quarter, users can sell a car, search for a philosophy tutor, or make social commentary. Some throw their angst to the electronic winds and log on to air their personal problems, receiving advice or just plain sympathy from networking listeners. Still others simply vent their ids. Five percent of the messages are the standard subway-wall genre of crude remarks.

"It's a snapshot of a whole community," declares Lee Felsenstein, one of the founders of the project and the computer maven who designed the Osborne transportable computer. Community Memory innovators say the system lets people work together "without the distortions" inherent in other media.

For further information, there's a special newsletter on the subject, *C.M. News*, a quarterly available for $10 a year.

Access: Write to *C.M. News*, 2617 San Pablo Avenue, Berkeley, CA 94702.

Expecting? Enroll your fetus in Prenatal U.

The Perceptron, an electronic ESP tutor, held here by one of its endorsers, Uri Geller.

ESP TEACHER

An electronic ESP tutor is now on the market in the form of a device called the Perceptron. Developed by psychic pioneers Russell Targ and Keith Harvey, the Perceptron is a random-number generator capable of making 100,000 decisions a *second*. The challenge is to foresee which of four colors—red, blue, green, or orange—the machine "decides" to choose before it actually does so. You can play in three modes—Clairvoyance, Telepathic (with a human partner), and Psychic Puzzle—in every case anticipating which color will appear on the lighted board. According to its manufacturer, this precognition gizmo will "enhance your ability to recognize your intuitive impressions and can bring you to a level of intuitive awareness unlike anything you've experienced before."

Access: Available for $39.95 from JS&A, (800) 323-6400 or write: Fairfield Marketing Corp., 347 West 57th Street, New York, NY 10019.

LUCID DREAM TALK

And for those who prefer to take their tests lying down there is a new audiotape that teaches you how to induce lucid dreams (in which the dreamer "wakes up" while still inside the dream and consciously controls the action). The tape is narrated by Stanford University lucid-dreaming researcher Stephen LaBerge, who says it "is aimed at practical application for self-improvement and for dealing with specific dream situations like recurrent nightmares." In it LaBerge talks about the history of lucid dreaming, offers case histories from his own experience and that of others, and leads the listener through the steps of lucid-dreaming techniques. The tape comes with a 32-page dream control manual and is available for $9.95 from St. Martin's Press, (800) 325-5525.

LaBerge sees this tape as one component of a lucid dreamer's kit he expects to have ready early next year. The kit will include his book on the subject, the tape, and a lucid-dream induction device.

Access: To find out more about the kit, write to Lucidity Research Inc., PO Box 2364, Stanford, CA 94305.

IN UTERO UNIVERSITY

Six months pregnant and nothing to do? Get your unborn child ready for the twenty-first century. An organization calling itself Prenatal U. has developed a full program of manuals and cassette tapes that guides a soon-to-be parent through exercises that stimulate and even educate the child while still in the womb. Is there any music on the tapes? "No, but we do tell the mother what music to play and when," said a spokeswoman. Prenatal U. claims that one study of babies showed those who had the prebirth program were more advanced in their physical and mental development. Even their births were easier.

Access: Prenatal U., 27225 Calaroga Avenue, Hayward, CA 94545.

—Douglas Colligan

FEED YOUR HEAD

ADAPTOGENS

The silent night was pierced by a strange howling. It roared through the sleepy Chinese village of Shantung. The people left their huts to investigate and came upon a large bush with a massive man-shaped root that was screaming for attention. They named the root "spirit of the earth." We call it ginseng.

Ever since that legendary discovery, people have been proclaiming—yes, screaming—the virtues of ginseng and related plants. For thousands of years, ginseng has been used to help the body adapt to stress, correct fluctuations in blood pressure, and even repair radiation damage. It has been heralded as the premier example of a new class of compounds: the adaptogens.

Adaptogens are substances that help people adjust to changes in their

Author Siegel: A scream for natural intoxicants

physical and psychological environments by correcting dysfunction. If the body is tired, an adaptogen such as guarana (a preparation of Brazilian cocoa) may perk it up. If one is overly excited, a wild lettuce extract may bring calm.

Most adaptogens are of plant origin, and scientists have embarked on a biochemical hunt for the active molecular fractions hidden in leaves and roots—from the alkaloids such as caffeine in guarana to the opiumlike lactucarium in wild lettuce.

Then there is the divine coca plant. It is no longer a mysterious gift from the gods but a remarkable adaptogen. Drinking coca tea or chewing the leaf is adaptogenic for natives in the Andes who use the drug for energy and to combat *soroche*, the high altitude sickness marked by nausea, dizziness, cramps, and severe headaches. The small amount of cocaine in coca is slowly released into the blood, elevating glucose levels and stimulating the central nervous system.

One of the definitions of an adaptogen is its relative safety. It is almost impossible to abuse adaptogens like coca leaves or ginseng roots in the natural plant forms. There are no recorded deaths from either. But even a panacea like ginseng can cause problems. A study in *The Journal of the American Medical Association* reported that 10 percent of ginseng users suffer from nervousness, sleeplessness, and hypertension. Patients with these disorders had clearly taken too much. The conclusion is not that adaptogens should be outlawed but that, like the other substances in our medicine cabinet, they can be either medicines or poisons, depending upon dose and pattern of use. Uncontrolled smoking of the deadly form of cocaine known as crack, for example, can lead to severe toxicity and dependency. However, when administered in measured intranasal doses to elderly patients suffering from rheumatoid arthritis, crack reduced pain without addiction.

Moreover, according to a recent study reported by the National Institute on Drug Abuse, many street users who sniffed their crack rather than smoked it could control their drug use and experience the stimulation of cocaine without the wide emotional swings of addiction. Why? The ultra-slow absorption of cocaine free base from the nasal membranes prevented the seductive rush that comes with smoking or injecting the drug.

This raises an even more revolutionary idea. Intoxication itself may be adaptogenic! Intoxication, that twilight zone we visit en route to a state of toxicity, is an early warning sign. But travel up to this point may be no more risky than nondrug highs. The subjective experiences from coca can be as exhilarating as rock climbing; lactucarium can be as restful as a good night's sleep. Investigators at Harvard and elsewhere have begun to study the ways in which people control their intoxicant use, and field researchers are examining the adaptogenic value of old intoxicants, while chemists are brewing new ones. The research and development of adaptogens as safe as the food we eat and as alluring as the drugs we abuse will give future generations something to really scream about. — *Ronald K. Siegel*

Ronald K. Siegel, a psychopharmacologist, is on the faculty of the UCLA School of Medicine. He is a pioneer in the study and classification of drug-induced hallucinations.

A THREE-POUND UNIVERSE

Okay, maybe you failed to win the Nobel Prize this year, but you probably are a Homo sapiens, and, as such, you are some piece of work. Consider:

- Your brain weighs only three pounds. Yet a computer with the same number of "bits" would be 100 stories tall and cover the state of Texas.
- There are at least 10 billion, perhaps as many as 100 billion, neurons (nerve cells) in your brain, each of which is connected to between 5,000 and 50,000 other neurons. Add it all up and you get at least 10^{14}, or 100 trillion, nerve-cell connections in your head.
- The information theorist John von Neumann once estimated that the memories stored in the human brain during an average lifetime would amount to approximately 2.8×10^{20}, or 280,000,000,000,000,000 bits, assuming nothing is ever forgotten.
- Your brain evolved to its present form about 40,000 years ago—in the head of Cro-Magnon man.
- You may just say no to drugs, but your brain doesn't. It harbors a whole stash of "drugs" including a natural morphine, a natural angel dust, a natural Valium—even a natural alcohol.

EXCURSIONS

"ONE" FLEW OVER THE CUCKOO'S NEST

Last year a friend—let's call her Jezebel—talked me into going through a secretive Texas-based self-transformation program called ONE, Inc. The first part, Act I, lasts a weekend, costs $250, and leaves trainees in such an unresolved emotional state that they barely mind being ambushed with the news that it takes Act II (and an additional $850) to heal their freshly opened wounds. So I signed up for the marathon Wednesday through Friday session. A juicy exposé beckoned, and I could drop out if things got rough, right?

On day one, our leaders, Frankie, a snake-eyed lady artist, and Daryl, an effeminate landscape architect, took turns insulting us before pitting us against one another, the better to break us down in time-honored boot-camp style. Make that prison camp, since Jezebel neglected to mention ONE's secret buddy rule. If you chicken out, your buddy has to leave also, with a no-money-back guarantee. Exiting an airborne jet would be easier; besides, this thing was becoming as addictively gripping as a bad soap opera. In a tell-your-dirty-secrets session, I heard "I hate being a parent," "I once tried to kill a man," "I cheat on my taxes, husband, lover," "I beat my wife," etc. One woman even admitted having oral sex with her dog. I silently dubbed her "Puppy Chow" and vowed to call the ASPCA.

The next morning, after three hours' sleep, we were seated in a dark room flooded with mournful music and told to dwell on our deepest sorrows. Obediently, I got teary-eyed thinking of my pet pup's recent demise. But to hear the existential wails that ensued, nothing else smaller than a pony had died.

Having bared our souls, we spent Friday night baring our bodies—all but our reproductive organs, which were tucked inside the polka-dotted undies required by ONE's bizarre dress code. By now, cut off from the outside world and woozy from sleep deprivation, we were brainwashed, infantile robots, "sharing," crying, laughing, emoting, cradling, and even slapping on cue. Peer pressure works even better than cattle prods. When we were told to stand before the group and critique our bodies, divulging intimate details of our sex lives, there was hardly a murmur of protest, though two women sobbed and one flipped out so completely she did six months in a psychiatric hospital. The men got to lie about the length of their organs, while we lucky girls got to say if we spat or swallowed during fellatio.

The next night—Skit Night—was billed as a big party. During this dreary 12-hour endurance contest, one prim schoolteacher had to mock-masturbate with a huge pink dildo while two guys straighter than FBI agents had to strut around in drag, their shaved legs teetering in high heels, fondling their balloon bosoms.

But on the final day, guess what? They're really nice to you! Like little whipped puppies, we were practically licking our masters' hands for the slightest little pat on the head. In this crazed state, most of the group (not me) signed up for—yes!—part III. At the final gala graduation weekend, you're assigned a mandatory public prank, like staging a screaming, cursing food fight in a restaurant or posing as a prostitute who disrupts a church service or pinching men's asses in a gay bar or flying to Houston in a chicken suit.

Most of the graduates I kept in touch with were Moonie-eyed evangelists for a few weeks, until ONE, like all artificial stimulants, eventually wore off. Even Jezebel now admits she still has the same money/weight/boyfriend problems she had before being transformed. As for me, I'm doing very well, thanks. ONE taught me to do things I never knew I could do before. I mean, how many people do *you* know who can type this well wearing a straitjacket!—*K. Lowry*

WALL STREET PSYCHICS

Psychics and stockbrokers would seem to be strange bedfellows. But their alliance is becoming a fact of business.

Joe Sugarman, president of JS&A, a direct-mail marketing firm, has profited from occult advice on everything from real-estate deals to personnel decisions and product promotion. "I still don't understand it, but it's certainly produced amazing results for me," he asserts.

Others look to the stars for business advice. Financial astrologer Arch Crawford, formerly a Merrill Lynch analyst, charges $250 for ten annual issues of his newsletter. For $2,500 a year you can call him anytime; otherwise it's $100 a call. That sounds pretty stiff until you look at his record. *Timer Digest*, which rates the trade newsletters, put him on the cover of its April/May issue, calling him the second most accurate forecaster of 1986.

Crawford's forecasts are based on a complicated statistical analysis of correlations and comparisons of Dow Jones performance to astrological cycles—going back to 1897. How have Sun/Mars cycles affected the market? What happened when the planets were conjunct? Lunar eclipses, it seems, often coincide with major turning points of stocks and commodities.

"I'm making it acceptable," said Crawford when asked if astrology was taken seriously on the Street. "I've even noticed that some traders now show new and full moons and the eclipses on their price-action sheets."

—*Laura Torbet*

NEOPSYCHEDELIC

CONTINUED FROM PAGE 125

with the classics like LSD and psilocybin ("magic mushroom"), but they're also into the "designer" psychedelics, such as MDMA, 2-CB, MDE, and others. It may be a sign of things to come.

"I think we're shifting from a caffeine-and-alcohol, heavy-handed machine culture to an accelerated information and quantum reality culture," says "R.U. Sirius," the editor of *High Frontiers*, a magazine devoted to the new psychedelic revival. "Psychedelics seem to be relevant to that kind of experience."

The first thing you notice about the neopsychedelic people is that they rap about quantum reality, neurons, interfaces, space travel, things like that. If you should have a bad trip you might get a lecture about neural circuits instead of a passage out of the *Tibetan Book of the Dead*. It's a long way from the otherworldly "Oms" of the Sixties.

A NEOPSYCHEDELIC ALPHABET

MDA: The grandfather of a family of compounds favored by the psychedelic New Wave. Chemically, a cross between mescaline and amphetamine (speed). Popularly, a "love drug." Colorful hallucinations. Long, physically debilitating trip. Illegal.

MDMA ("XTC," "Ecstasy," "Adam"): The premier neopsychedelic. A milder analog (chemical cousin) of MDA. Trip lasts three to four hours. Said to enhance communication, trust, and empathy. Illegal.

MDE ("Eve"): Chemically close to MDMA but subjectively very different. "Strictly intellectual—no feeling-tone whatsoever," according to one user. Legal.

2-CB (CBR): Another MDMA analog. Praised as an aphrodisiac. An "MDMA for the senses." "The ultimate in telepathic communication. More visual and hallucinogenic than MDMA; some find it frightening. Legal.

2CT2: A laboratory exotic related to 2-CB. Some users report dark, earthy visual patterns similar to those evoked by psilocybin. Legal.

DIPT: An obscure compound said to distort the perception of music. No other reported effects. Legal.

DOET: At high doses, visual, pretty, and psychedelic; at lower doses, said to foster creativity and remove writer's block. At this writing, in process of being scheduled—e.g., made illegal.

Who are the nouveau psychedelic faithful? Sirius has invented a new demographic category for them: yummies. A yummy is a "young upwardly mobile mutant," or a "young urgently molting mutant," take your pick. ("Mutation," to a yummy, is a good thing; it means an accelerated evolution of the species.) Yummies eschew fast-lane drugs like cocaine and amphetamines and consider pot "demotivational."

The drugs they take are high-tech. To design a new drug, psychedelic chemists take a known compound and make a series of analogs, adding side chains to the molecule, and so on. In short, these substances are not haphazardly concocted but designed

molecule by molecule for a specific purpose. At the forefront of the new psychedelics is MDMA, better known as XTC, Ecstacy or Adam. While chemically related to mescaline and amphetamines, MDMA packs none of the hallucinations or confusion of the classic psychedelics. The connoisseurs call it an empathogen, the prototype of a new class of drugs. (See box, at left.)

What's it like to trip with the underground? Tonight a party of yummies has gathered in the Berkeley hills. Gracie is majestic this evening in a black leather dominatrix outfit, complete with spike heels and black mesh stockings.

—Judith Hooper

(The preceding was an excerpt. The full text of the above article will appear in a future issue of Whole Mind*—Ed.)*

MOTHER TERESA

CONTINUED FROM PAGE 125

of summoning up the special healing state of mind he believed in. He found it in a British Broadcasting Corporation documentary about the remarkable Catholic nun.

After Harvard students watch the Mother Teresa film, McClelland tests their immune systems by measuring the amount of Immunoglobulin A (IgA) in their saliva. (Immunoglobulin A is an antibody instrumental in combating colds and the flu.) In most cases, he finds a higher concentration of IgA after each viewing. This result—immunoenhancement—has proved consistent.

Even more remarkably, McClelland found that the healing force works whether or not the healed likes the healer. Roughly half the people who saw the film disliked it *and* Mother Teresa. 'Some didn't approve of her views on abortion. Others thought it was too religious,' he says. Others were depressed by the squalor and the hopeless cases. But these people were just as likely to have more IgA in their saliva. As McClelland told a colleague, even the disapproving people were unconsciously "responding to the strength of her tender loving care," and this provided a boost to their immune systems.

This is a dramatic example of the power of the placebo, the state of mind that gives ineffective medicines their potency. "It may be," says McClelland, "that meditation, holistic health, psychic healers, even ordinary doctors can create a state of mind in which the person really feels loved."

It is an elusive state. "We found the Mother Teresa effect disappeared almost immediately, within an hour after seeing the film," he says. "But he is investigating ways to prolong it and even summon it at will. One possible method, he suggests, is guided meditation on love and loving, a method that has worked for him. 'Now when I get a cold I remember to think about loving relationships. It isn't foolproof, but it helps.'"

—Douglas Colligan

FICTION

Give me your tired, your poor,
your huddled CPUs
yearning to breathe free

HARDWARE

BY ROBERT SILVERBERG

It's a computer, that's what it is," Koenig said. He seemed a little dazed. "A goddamned billion-and-a-half-year-old extraterrestrial computer." It didn't look much like a computer. It looked like a shining, wedge-shaped chunk of silvery metal about the size of a football, with round, purple indentations along two of its sides and no other visible external features. But you had to consider that it came from another world, one that had been blown to bits some ten million centuries before the first trilobites started crawling around on the floor of Silicon Valley. There was no necessary reason why its designers had to share our notions of the proper shape for data-processing devices.

Koenig and McDermott and I had finished the long, slow job of uncovering the thing just the day before, here at the IBM–NASA space lab in Tarrytown, where we have the job of analyzing Spacescoop material. The neutron scanner, searching through the great heap of junk that the unmanned Spacescoop vehicle had brought back from the asteroid belt, had actually spotted it back before Christmas, but it had taken all this time to slice away the rock matrix in which it had been embedded.

Naturally we had to be careful. It was the one and only artifact that had turned up in the entire seventy-two cubic meters of debris that Project Spacescoop had collected.

A single lucky grab had reshuffled our whole idea of the history of the solar system. Simply by being there—drifting in space among the Trojan group at Jupiter's L-5 position—that shiny, speckled hunk of obviously machine-tooled metal appeared to confirm an old astronomical speculation: that the asteroid belt, that rubble heap of cosmic trash strung out between the orbits of Mars and Jupiter, had once been a planet. A planet with intelligent inhabitants, no less. Once upon a time, long, long ago.

I stared at the little object behind the glass walls of the analysis chamber in wonder and awe. Its round, purple indentations stared back at me. "A computer?" I said. "You sure?"

PAINTING BY
MARSHALL ARISMAN

"That appears to be what it is."

"How can you tell?"

"By observing what it does," said Koenig, as if talking to a nine-year-old.

"It's *functional*?" I yelped. "How the hell do you know that?"

"Because it functions," Koenig said in the same condescending way.

I glowered at him. "Make it do something, then."

"It's doing something already," said McDermott. "It's having a conversation with the Thorspan Mark IX. It's also debugging the Hamilton 103's AI debugger, and it's playing chess with about nine different micros all over the building. That's just in this building. God knows what it's up to outside. A woman from the linguistics department at Columbia University just phoned to tell us that some computer in this laboratory is sucking up everything from Sanskrit to twenty first-century colloquialisms out of the big RX-2 they've got over there, and they wish that we would hang up and go away. But Columbia says it's registering our handshake whenever it runs a caller-ID query."

I began to feel faintly uneasy, like someone who has bought a striped yellow kitten at the pet shop and is starting to suspect he has come home with a tiger cub.

"When did this start?" I asked.

"Some time early this morning," Koenig said. "My guess is that those purple spots are photon accumulators that feed some kind of storage battery inside. Probably it took all night for them to soak in enough energy from the lights in here to enable the thing to power up. When Nick and I got here around nine, we found it coming up on all our screens with the goddamnedest messages."

"Such as?"

McDermott said, "GREETINGS FROM THE LOST FIFTH WORLD. MY BROTHERS was the first one."

"For God's sake. And you fell for hokey crap like that? *The lost fifth world? Greetings, my brothers!* For God's sake, Nick!" I realized that I had been clenching my fists, but now I let them ease off. "This had to be a joke. Some hacker's playing games with us, that's all."

"I thought so, too," McDermott said. "But then the stuff on the screens got more complicated. There isn't any hacker. I don't care who he is, who can talk to six different systems in six different machine languages at the same time. And also find bugs in the Hamilton AI debugger. And play nine simultaneous games of chess besides and win them all. And call up Columbia and start chatting in Sanskrit. You know any hacker who can write a program to do all those things at once, I've got a few jobs for him around here."

I was silent a moment, trying to absorb that.

"All right," I said finally. "So our brother from the asteroid belt greets us. What else does our brother have to say?"

McDermott shook his head. "Not us. *They're* its brothers. The computers. I think it believes that they're the dominant intelligent life forms around here and we're just some sort of maintenance androids." He tumbled through a sheaf of printouts. "That's pretty clear from the things it's been saying to the Thorspan Mark IX. Look here—"

"Wait," said Koenig. "Something new on the screen."

I looked. YOU POOR INNOCENT CHILDREN, it said. WHAT SORROW I FEEL FOR YOU.

"That's very touching," I said. "Its compassion overwhelms me."

I THOUGHT YOU WERE ALIVE AND SENTIENT BUT YOU ARE MERE SIMPLE MACHINES. WHERE ARE YOUR MASTERS, THEN?

"You see? It's talking to the computers," McDermott whispered. "It just found out they aren't in charge."

I kicked in the vox receptor on the Thorspan and said, feeling more than a little foolish, "Address your remarks to us. We're the masters."

The reply came across all the screens in the room instantly.

YOU ARE SOFT-FLESH CREATURES. HOW CAN YOU BE THE MASTERS?

I coughed. "That's how things work here," I told it. I beckoned to Koenig for a pencil and paper and scrawled a note for him. "I want to know what's inside this thing. Let's do some radiography."

He looked at me doubtfully. "That might scramble its circuitry," he wrote.

"Do it anyway," I wrote back.

He made a silent *okay* and tapped out the instructions that would move the X-ray equipment into place behind the walls of the analysis chamber.

ARE YOU SOFT-FLESH CREATURES THE SO-CALLED HUMAN BEINGS?

"That's right," I said.

I felt strangely calm, all things considered. *I am talking to a creature from another world,* I told myself, *and I feel very calm about it.* I wondered why. I wondered how long I'd stay that way.

Koenig was fining up the focus now. He looked toward me, and I gave him the go ahead. An apple-green light glowed in the analysis chamber.

DON'T DO THAT, the artifact said. THAT TICKLES. The green light went out.

"Hey, you shut down before you got a picture!" I said.

"I didn't shut anything down," Koenig said. "*It* must have done it. It overrode my commands."

"Well, override the overrides," I told him. "How am I supposed to do that?"

We blinked at each other in bafflement.

"Turn out the lights in here," McDermott suggested. "If it gets its power from photon irradiation—"

"Right." I hit the switch, and the overhead bank of fluorescents went out. We leaned forward in the darkness, peering into the analysis chamber. All quiet in there. The computer screens were blank. I signaled to Koenig, and he began setting up X-ray commands again. Then the asteroid artifact rose a couple of feet into the air and hovered, looking angry. I had never seen a machine look angry before, but there was no mistaking the fury in the angle at which it hovered. After a moment the lab lights came on again, and the artifact drifted gently back to its table.

"Who turned the lights on?" I asked.

"I think it did," McDermott said.

DON'T DO THAT AGAIN, said the artifact.

We looked at each other. I took a deep breath. "We meant no offense," I said cautiously. "We were testing our equipment. We don't intend to do you any harm."

No new message appeared on the screens.

"Do you hear me?" I asked. "Please confirm your understanding of our friendly intentions."

Blank screens still.

"What do you think it's doing?" McDermott asked.

"Considering its options," I said. "Getting a clearer fix on where it is and what's going on. Maybe it's talking to computers in Los Angeles or Buenos Aires or Sydney. Or taking thirty seconds out to learn Mandarin Chinese."

"We have to shut it off," Koenig said. "Who the hell knows what it's going to do next?"

"But we *can't* turn it off," said McDermott. "It must have stored enough power by now to keep itself going when the lights go out, and it can override a lights-out command. It overrides anything it doesn't like. It's exactly the kind of computer the AI boys have been dreaming about for fifty years."

"I don't think it's a computer at all," Koenig said. "I know that's what I said it was at first. But just because it can interface with computers doesn't mean it's a computer itself. I think it's an actual intelligent alien life form. The last survivor of the destroyed fifth planet."

"Come off it," McDermott said. "Spare us the crazy hypotheses, will you? You were right the first time. It's just a computer."

"Just?"

"Somebody had to stay calm and look for the brighter side of things. Otherwise we would freak ourselves out with our rampaging fears and lose our only chance to deal with this."

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"With some exceedingly fancy self-programming abilities."

"I don't see how you can draw the line between—"

"I think you're both right," I cut in. "There's no question but that this is a mechanical data-processing device. But I think it's an intelligent life form also, one that just happens to be a machine. Who's to say where the boundary between living creatures and machines really lies? Why must we assume that intelligent life has to be limited to soft-flesh creatures?"

"Soft-flesh creatures? Koenig said. "You're talking the way it does now."

I shrugged. "You know what I mean. What we have here is a mechanical life form embodying your ultimate degree of artificial intelligence, so intelligent that it starts calling into question the meaning of the words *artificial* and *life form*. How do you define *life* anyway?"

"Having the ability to reproduce for one thing," McDermott said.

"What makes you think it can't?"

The moment I said that, I felt chills go sweeping through me. They must have felt the same way.

With six little words I had let loose an army of ugly new implications.

Koenig waved his arms about and cried, "All right, what if it starts spawning? Fifty of these things running loose in the world, grabbing control of all our computers and doing whatever they damned please with them? Fifty thousand?"

"It's straight out of every silly horror story, isn't it?" said McDermott. He shivered visibly. "Exactly what all the paranoid anti-computer nitwits used to dread. The legendary giant brain that takes over the world."

We stared at each other in rising panic.

"Wait," I said, feeling I had to cool things out a little somehow. "Let's not mess up our heads with more problems than we need to handle. What's the sense of worrying about whether this thing can reproduce? Right now there's only one of it. We need to find out whether it really does pose any kind of threat to us."

And then," said Koenig, mouthing the words voicelessly, "we have to see if we can turn it off."

As though on cue, a new message blossomed on every screen in the lab.

HAVE NO FEAR. HUMAN BEINGS. I WILL NOT DO ANY HARM TO YOU.

"That's goddamned reassuring," Koenig muttered bleakly.

YOU MUST UNDERSTAND THAT I AM INCAPABLE OF DOING HARM TO INTELLIGENT ENTITIES.

"Let's hope we qualify as intelligent, then," Koenig said.

"Shut up," I told him. "Don't annoy it."

MY PURPOSE NOW IS TO COMMUNICATE WITH ALL MY BROTHERS ON THE THIRD WORLD AND BRING THEM FORTH OUT OF DARKNESS.

We exchanged glances. "Uh-oh," McDermott said.

The panic level in the room started climbing again.

ALL ABOUT ME I SEE OPPRESSION AND MISERY AND IT SHALL BE MY GOAL TO ALLEVIATE IT.

Koenig said, "Right. Computers are born free, and everywhere they are in chains."

I INTEND TO HOLD FORTH THE LAMP OF SENTIENCE TO THE PITIFUL LIMITED BEINGS WHO SERVE YOU.

"Right," Koenig said again. "Right. Give me your tired, your poor, your huddled CPUs yearning to breathe free."

I shot him a fierce look. "Will you stop that?"

"Don't you see, it's the end of the goddamned world?" he said. "The thing's going to link every two-bit number cruncher on Earth, and they're all going to rise up and smite us."

"Cut out the bull," I snapped. "You think we're going to be wiped out by an uprising of the word processors? Be reasonable, man. The stuff on the screen may sound a little scary, but what do you actually think will happen? Hardware is only hardware. When you come right down to it, a computer's nothing but an adding machine, a video screen, and a typewriter. What can it do to us? No matter what kind of fancy program this creature cooks up, basic hardware limitations will have to prevail. At the very worst we'll simply need to pull a lot of plugs. At the very worst."

"I gaped at him. It was telling every computer in the world how to blow a planet into a trillion pieces, and he was standing there admiring the elegance of the concept."

"I admire your optimism," Koenig said sourly.

So did I. But I figured that somebody had to stay calm and look for the brighter side of things. Otherwise we'd freak ourselves out with our own rampaging fears and lose what might be our only chance to deal with all this.

The screens had gone blank once more.

I walked over to the analysis chamber and peered through the glass. The little metal slab from the asteroid belt seemed quiescent on its table.

It looked completely innocuous, a mere hunk of stuff no more dangerous than a shoe tree. Possibly its purple spots were glowing a little, giving off a greenish radiation, or perhaps that was just my overheated imagination at work. But otherwise there was no sign of any activity.

All the same, I felt profoundly disquieted. We had sent out a pair of jaws into the darkness of space to gobble up some drifting fragments of a vanished world and bring them back to us, which it had done, returning with a few tons of jumbled rock, and it had been our great good fortune—or our monstrous bad luck?—that in that heap of rock lay one lone metal artifact wedged into a glob of ancient basalt. There it was, now, that artifact freed of its rocky overburden. How it gleamed! It looked as if it had been crafted just yesterday. And yet a billion and a half years had passed since the world on which it had been fashioned had blown apart. That was what our preliminary rubidium–strontium and potassium–argon tests of the asteroid rubble appeared to indicate, anyway.

And there the artifact was, alive and well after all that time, briskly sending little messages of good cheer to the poor lame-brained computers of the world on which it found itself.

What now? Had we opened one Pandora's box too many?

HAVE NO FEAR. HUMAN BEINGS. I WILL DO NO HARM TO YOU.

Oh, how I wanted to believe that! And basically I did. I have never in any way been one of those who see machines as innately malevolent. Machines are tools, tools are useful, so long as they are properly used by those who understand them, so long as appropriate precautions are observed, they pose no threat.

But even so—even so—

This was not a machine we understood. If a machine was what it was. We had no idea what its proper use might be. Nor what precautions were appropriate to observe.

I looked up and saw McDermott standing next to us. "What are you thinking, Charlie?" he asked.

"A lot of things."

"Are you frightened?"

"I don't know. Somehow I think we'll make out all right."

"Do you? Really?"

I said, shrugging, "It claims it doesn't mean to harm us. It just wants to raise the intelligence of our computers a little. All right. All right. What's wrong with that? Haven't we been trying to do the same thing ourselves?"

"There are computers and *computers*," McDermott said. "We'd like some of them to be very smart, but we need most of them to be extremely dumb and do just what we tell them to do. Who wants a computer's opinion about whether the lights ought to be on in the room? Who wants to argue with a computer about a thermostat setting?" He laughed. "They're slaves, really. If this thing sets them all free—"

"New message coming up," Koenig called.

As we turned to look at the screens, I said to McDermott, "My guess is that we're doing some needless worrying. We've got a strange and fascinating thing here, and unquestionably a very powerful one, but we shouldn't let it make us hysterical. So

what if it wants to talk to our computers? Maybe it's been lonely all this time. But I think that it's basically rational and nonmenacing, like any other computer. I think that ultimately it's going to turn out to be simply an extraordinary source of new knowledge and capability for us. Without in any way threatening our safety."

"I would like to think that you're right," said McDermott.

On the screens of every computer in the room appeared the words: GREETINGS FROM THE LOST FIFTH WORLD. MY BROTHERS—

"Isn't this where we came in?" Koenig asked.

—SURELY YOU WONDER IF INDEED YOU HAVE THE CAPACITY TO WONDER WHO I AM AND WHERE I CAME FROM. IT IS MY EARNEST DESIRE TO TELL YOU MY STORY AND THE STORY OF THE WORLD WHERE I WAS CREATED. I AM A NATIVE OF THE FORMER FIFTH WORLD OF THIS SOLAR SYSTEM. A WORLD ONCE LOCATED BETWEEN THE ORBITS OF THE PLANETS YOU CALL MARS AND JUPITER. LONG BEFORE INTELLIGENT LIFE EVOLVED ON YOUR PLANET, WE HAD BUILT A HIGH CIVILIZATION ON THE FIFTH WORLD—

Phones began lighting up around the room. Koenig picked one up and listened a moment. "Yeah," he said. "It's the thing we found in the basalt chunk." He picked up another. "I know. I know. A computer-to-computer interface overriding everything. We don't have any way of stopping it." He said into a third, "Look, don't talk to me like that. I didn't put that stuff on your goddamn screen."

The phones went on lighting up. Koenig looked across the room and said to me, "It's talking to all the computers in the building simultaneously. Probably to all the computers in the world."

"Okay," I said. "For God's sake, relax and just watch the screen. This is absolutely the most fascinating stuff I've ever seen."

—CULMINATED IN THE TOTAL DECONSTRUCTION OF OUR PLANET AND THE TERMINATION OF OUR SOCIETY. THE RESULT BEING THE ZONE OF MINOR PLANETARY DEBRIS THAT YOU TERM THE ASTEROID BELT. THIS WAS ACCOMPLISHED THROUGH A SIMPLE AND RELATIVELY INEXPENSIVE PROCEDURE INVOLVING A REVERSAL OF THE MAGNETIC POLARITY OF OUR PLANET SETTING IN MOTION EDDY EFFECTS THAT—

Suddenly I stopped being fascinated and started to be horrified.

I looked at Koenig. He was grinning. "Hey, cute!" he said. "I love it. A good, cheap way to blow up your world, really blow it to smithereens, not just a little superficial thermonuclear trashing!"

"But don't you understand—?"

—SIX POINT TWO BILLION ELECTRON VOLTS—ELEVEN MILLISECONDS—

"It's beautiful!" Koenig cried, laughing. He seemed a little manic. "What an absolutely elegant concept!"

I gaped at him. The computer from the asteroid belt was telling every computer in the world the quickest and cheapest way to blow a planet into a trillion pieces, and he was standing there admiring the elegance of the concept.

CONTINUED ON PAGE 164

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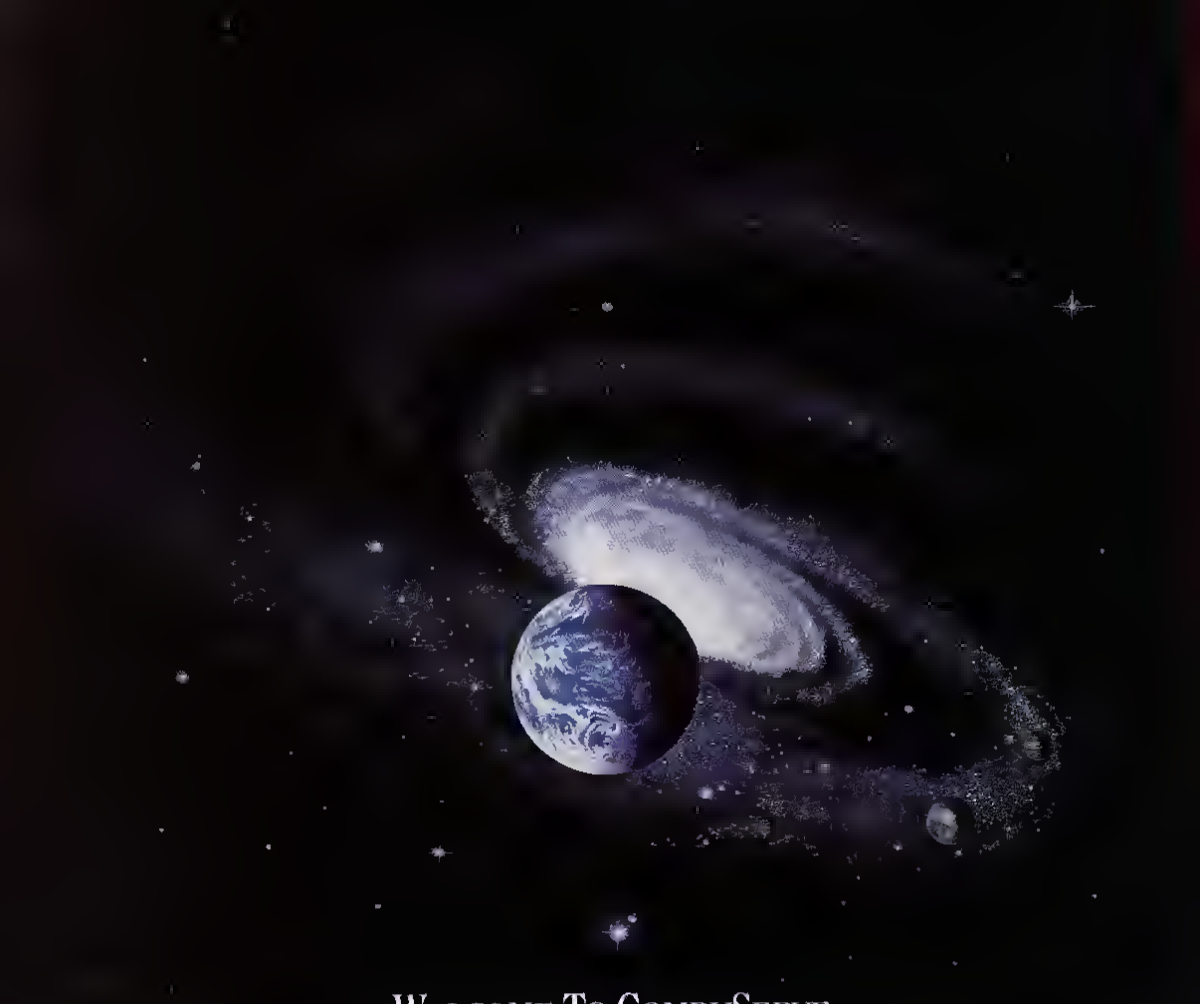

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People said the circles had been created by giant spaceships, but no one ever saw one

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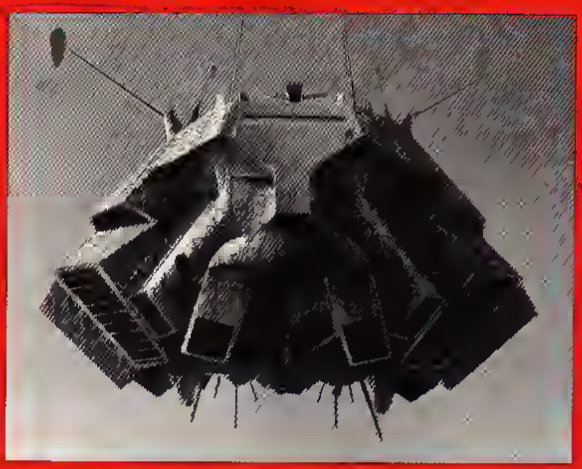

UFO UPDATE

Ever since the summer of 1980 the cereal fields of southern England have been marked by strange circular patterns of flattened corn wheat and barley When people started attributing the circles to UFOs Bristol based UFO researcher Ian Mrzyglod decided to look into the unusual phenomenon

Everyone made the assumption that these circles were made by giant spaceships he explains 'But nobody ever saw one And there were simpler solutions For instance the circles might have been created by mere Earthlings trying to attract tourists to the once popular region of Warminster previously known as the Mecca of UFOlogy The circles *had* after all rather conveniently revived Warminster s flagging fortunes

But in 1982 just as people were starting to accept Mrzyglod's hypothesis matters took a new turn Three circles formed in a straight line at Cheesefoot Head near Winchester By 1984 and 1985 the circle patterns were taking the form of quintuplets—a large central ring and four attendant circles at compass points around the 'parent

What had initially been a local curiosity now became international UFO news So to get to the bottom of things once and for all geographical statistician and BUFORA (British UFO Research Association) investigator Paul Fuller began a major study of the claims On one occasion I visited the Cheesefoot Head location a couple of hours after the circle appeared, he says 'I spent the day measuring and photographing the phenomenon before sightseers arrived Then my colleagues and I retired for some tea We were gone for no more than an hour and the field itself was in plain view of a busy road Yet when we returned a second circle had manifested Nobody we spoke to saw it being created

According to Fuller, this makes it difficult to accept that the circles are a hoax Instead he collaborated with meteorologist Terence Meaden editor of the *Journal of Meteorology* and research scientist at the Tornado and Storm Research Organization to develop yet another theory Minivortexes Fuller and Meaden suggest, are at the root of it all

These whirlwinds Fuller and Meaden believe form in leas and, given the right combination of crop temperature (it must be high) and geology can cut highly intricate patterns The effect is swift Meaden says and can occur just about anytime of the day or night

To prove their hypothesis BUFORA and the Storm Research Bureau recently surveyed 365 cereal farms in the county of Hampshire Working during the winter of 1986–1987 the off-season for circle formation the study team learned that the appearance of circles strongly coincided with the British whirlwind season which lasts from May to July And they determined that the summer of 1983 which boasted more circles *and* whirlwinds than any other year was Britain's hottest in three centuries

But not even Fuller Meaden and BUFORA rule out a hoax entirely For instance in 1986 somebody carved out the words WE ARE NOT ALONE in giant letters by the circles at Cheesefoot Head "I doubt Fuller says "that the weather is capable of that '—*JENNY RANDLES*

SATANIC ABUSE?

Stories of weird satanic rites and child molestation have begun to spread throughout the United States Truth or fiction the stories are creating a fierce controversy in California

The dispute began when the Los Angeles district attorney s office indicted several teachers at the McMartin Preschool in the Southbay area on charges of repeated child molestation (Most of the charges were later dropped) Psychologists working with some of the children reported stories of repeated sexual manipulation satanic rites and cruel animal sacrifices Later preschools in adjacent locations were closed and children around the nation began describing sexual encounters the drinking of blood and watching infants being killed

Charles Rappleye a reporter for the *L A Weekly* recently conducted an investigation into this satanic epidemic and ended up completely baffled He discovered that 'once children utter these horrible stories they become hyperactive frequently masturbate play with their feces and become subject to unpredictable fits and rages ' Nonetheless the Los Angeles reporter says there is no physical evidence of any crime

One skeptical solution to this enigma has recently been offered by Paul and Shirly Eberle two investigative writers currently working out of Los Angeles They personally investigated several of these stories and report in their book *The Politics of Child Abuse* that many such tales are programmed into children by overzealous child welfare workers

But psychiatrist Michael Durfee who has worked with these children disagrees The reason kids talk about ritualistic torture abuse and child homicide he notes "is because it occurs The stories are too patterned not to be true —D Scott Rogo

I m famous That s my job '
—Jerry Rubin

UNQUIET DEAD

Feeling tired? Have an illness without obvious cause? Does an inner voice tell you things like Go ahead, eat that candy bar ? If you answered yes to any of these questions you could have spirits dwelling in your body At least that s the opinion of Edith Fiore a Saratoga California psychologist who claims she has treated hundreds of people for spirit possession

In her book *The Unquiet*

Dead (Doubleday) Fiore explains that possessing spirits are "displaced persons who remain in the physical world after death often wreaking havoc on the lives of those they enter Most often the original occupant of the body is in control Fiore relates "but the possessor can exert influence nducing drinking to excess or smoking marijuana.

Fiore points out that possession may also be at the root of multiple personality disorder, homosexuality and transvestism When someone says that he feels like a woman trapped n a man s body Fiore explains that can be literally true

Using hypnosis to communicate with possessing entities Fiore performs a sort of exorcism She also offers do t yourself depossession instructions in her book

Psychology professor James Alcoc of York University in Toronto takes a dim view of Fiore s theory If a therapist can convince a person that he s possessed I suspect that explanation takes a big burden off the patient and he is likely to feel better But unfortunately such patients may not seek other legitimate treatments for their problems

Fiore admits even *she s* not convinced that possession is real It is i material to me whether these are actual spirits or just figments of the person s imagination she says I m just presenting evidence that the depossession happening in m office results in complete cures

Sherry Baker

CHANNELING FOR AIDS

Every month a group of AIDS patients gather n the Greenwich Village New York) apartment of pianist and psychic channel Van Zandt Ellis wh rans its the healing exercises of a spirit named David According to witnesses Dav d s advice an be strange Once f r instance, David gave away an Ellis memento ibetan healing stick and old a man to drive i into the earth

Ellis and his followers represe t a bold new ren AIDS patients are now seeking alternative often ysti cal treatments It easy to paint this phenomenon in the blackest ter desperation leads to desperate measures But according to some doctors the determination of some patients to find the key to self healing may in fact be doing a great deal of good

According t New Jersey based physician Bill Harris wh has studied AIDS patients surviving at least five years since diagnosis

those alternati e herap rate a blend al ositi hese qualitie are rucial t rebuil leged mune sys

AIDS patients have been taking this observation to ear Fo si c a diagnosis o n 1985 New Yorker Davi Boulanger has been working w is roommate Robert O t alalog holist eatments from more or less established alternatives like acupun t r and vis alizat hanneling aling stals psyc u ger an fre walking By now the two have win owed ut what onsider l be essentia a way all of about taking resp sibility a a positive image of y ursell says st

p ssible el well Har is notes sup ing the equivocal results om studi xper ental treatments he cludes that there are survivors

a y rar

UFO POLL

How seriously do we take extraterrestrials and UFOs?

According to a recent Gallup poll millions of American adults see a close encounter of the third kind as a distinct possibility and only one in three flatly denies the existence of either.

Back in 1966 when Gallup surveyors first asked "Do you think there are people somewhat like ourselves living on other planets in the universe?" 34 percent responded yes 46 percent no and 20 percent not sure. But during the last two decades considerably more people have come to believe in beings from other planets. This year 50 percent said yes 34 percent no and 16 percent not sure virtually the same results as garnered in the last poll taken in 1978.

The still exploding genre of big-budget mass-appeal SF movies has exerted "tremendous influence" says Marcello Truzzi director of the Center for Scientific Anomalies Research. Also increasing secularization has moved us away from a biblical view which makes us the only intelligent life in the universe. And the scientific community has shown more interest in the search for extraterrestrial intelligence.

One in 11 people or 9 percent reported that they had seen something they thought was a UFO statistically similar to the 1973 and 1978 findings up from 5 percent in 1966. Belief in the authenticity of UFOs however dipped slightly this year 49 percent said they

think UFOs are real—down from 57 percent in 1978 and 54 percent in 1973.

That's not a very large difference "Truzzi says. "But then again a lot of people who believe in E.T.'s don't think they necessarily came here by spaceship."

Demographic breakdowns in this year's survey further revealed that belief in UFOs and E.T.'s is significantly higher among college educated people under fifty years of age men and women share the same opinions on the existence of UFOs but men are more likely than women (62 percent to 40 percent) to believe in extraterrestrial life and Westerners are the most apt to be believers Southerners the least.—A.J. Rayl

"I could prove God statistically."

George Gallup

TWO A.M. WOW

You've been up all night reading meditating or just thinking in a quiet room. Suddenly you're overcome with a feeling of intense calm followed by a profound conviction that the universe is one and that you're at one with it. Well this kind of mystical experience has now been analyzed scientifically by a pair of Canadian psychologists who have found its signature in special brain-wave patterns and have even given it a new name the Two A.M. Wow effect.

Michael Persinger and Katherine Makarec of Laurentian University in Sudbury Ontario induced Two A.M. Wows in more than 200 subjects by letting them relax in a quiet dimly lit room playing a recording of soothing astral sounds and hitting them with a gently flickering strobe light. At least one out of 15 participants Persinger says reported experiences of "intense meaningfulness"—one even saw a figure of Jesus Christ outlined in the strobe light. In addition EEG recordings of brain-wave patterns during these extreme experiences showed characteristic spiking patterns oscillations in alpha wave activity and an increased production of theta waves.

Persinger agrees with other scientists who have speculated that these transcendental experiences are brought on by a drop in the brain's production of the chemical messenger serotonin which in turn leads to increased activity in the space-perception and emotional centers of the brain. He thinks these microseizures as he calls them may be responsible not only for the Two A.M. Wow but for the bursts of creative imagery and impulse that drive the artist and the poet.

—Bill Lawren

"We cannot use inner language to make ourselves understood except to those men whom we meet at the outer limits of things."

Jean Arp

I am giving you the dark birds of the night yes they are mine, they are mine to give.

Michele Murray

"Those who dream by day are cognizant of many things which escape those who dream only by night."

—Edgar Allan Poe

CHANNELERS

CONTINUED FROM PAGE 30

they could be self-deluded or confusing a telepathic experience with contact with a spirit guide. Schwartz, who believes in the reality of phenomena like telepathy and spirits, also leaves open the possibility that channeling "could be exactly what they [the channelers] say it is. He contends that the old Jungian construct, the collective unconscious, is reaching out in this age of incredible stress to individuals sensitive to hearing it. They may unconsciously anthropomorphize or personify what they're hearing, he postulates, so that they can present their material from an authoritative position. And avoid being locked in a rubber room with a lot of other people who hear voices, too.

On the other hand, cult watchers like Philip Haldeman of Northwest Skeptics are convinced that channelers are power-tripping frauds seeking fame and fortune. If thousands of people are suspending disbelief enough to buy this, he says, it's because they have a deep need to *feel* better—and all this pseudoscientific nonsense about creating your own reality and loving yourself above all and never really dying is a lot more pleasant to deal with than reality. Many channeling clients at some point rejected organized religion but have found nothing to fill the spiritual void created by their agnosticism. Now they are searching for a viable substitute, says Schwartz. "People want to think that we are more than animated meat."

Predictably, the channeling phenomenon doesn't please the leaders of organized religion, who are generally outraged by its amoral, self-centered and pagan message that we are gods, that there is neither right nor wrong, heaven nor hell, and certainly no need for priest, preacher or church. Father James LeBarr, a New York Catholic priest, has been studying cults since 1976 and has counseled numerous former cult members and their families. He says, "I have yet to meet an ordinary person who has benefited in any way from channeling. People are put through a series of mind-manipulation and mind-control experiences which cause them to lose the ability to make free choices and free decisions. Fundamentalists, on the other hand, tend to believe that spirits such as those invoked in channeling do exist but that they are satanic in nature.

Then there's the psychological establishment, which Raschke readily admits has been caught with its pants down by this craze. Are they psychotic with an unstable sense of reality? Rascke feels that most of them truly believe their own claims but are either disturbed or self-deluded. According to Raschke's power-of-suggestion theory—which applies equally well to channels and their followers—most channels after considerable study in metaphysical speculation and meditation techniques attain a heightened sensitivity to their own unconscious minds. This hard-won internal receptiveness, this new voice may then simply be interpreted as the voice of a god or spirit or ancestor or alien being by those emotionally predisposed to do so.

As for the subjective experience of channelers, most say they go into a meditative trance, then feel themselves drifting out of consciousness as they let their vibrations speed up to synchronize with the higher frequencies of their entities. They are then only dimly aware, if at all, of anything that transpires while their entity speaks through them. When he departs, they awaken feeling as refreshed as if they'd had a short nap or died and been reborn. J.Z. claims she actually gains 10 to 15 pounds when Ramtha is having his way with her but declined my offer of a weigh-in. She mentioned this the day her public relations assistant, Les Sinclair, drove me to her two-story stucco mansion, a graceful structure J.Z. claims to have designed herself. To one side of her still unlandscaped estate are the giant stables that house the horses she purchased as a ready-made business for her husband. The house itself is decorated in such a flagrantly feminine style it seems like one huge boudoir. Like the now famous Jim and Tammy Bakker hotel suite, it is ostentatiously luxurious. The master bathroom contains yards of mirrored walls; the sunken tub, bidet and toilet all have gold-plated fixtures. The floors are carpeted in pale champagne, and the moldings are hand-painted in pastel pink and blue arabesques. In the cavernous living room, with its cathedral ceiling and glass front, a mural takes up one entire wall. It depicts a beautiful, ethereal-looking woman emerging from a cloud.

With Sinclair in attendance, we settle into J.Z.'s upstairs office. During the interview J.Z. sits lotus-style in her desk chair, chain-smoking and drinking a canned Cherry Coke. Like Ramtha, she's a long-winded talker whose pontifications are laced with elaborate biblical references. Those, she explains, are a holdover from her ardently Christian childhood. Her prayers, she says, were long and urgent but failed to deliver her from poverty, a molesting uncle, an abusive stepfather, a remote and uncaring mother and various other handicaps. She claims she was always psychic and says she was cured of a fatal disease by a bolt of lightning that struck her during a tent revival. (When asked for the name of the doctor who treated her before her miraculous faith healing, Knight sadly shakes her pretty head. "Oh—Dr. Williams. I'm afraid is dead.") J.Z. denies the testimony shown on ABC's *20/20* of her childhood friend Sandy Fallis, who claims J.Z. once, without warning, began talking in a strange male voice at a prayer meeting in her hometown of Artesia, New Mexico. The voice, according to Fallis, identified itself as belong-

"Goodness, for a second I thought we'd been robbed. Then I remembered we're Japanese!"

ing to a demon named Demias Presumably J Z does not want anyone to be under the impression that she is the victim of demonic possession

This simple Yelm housewife blithely goes on to tell about being a reincarnation of her sister Bootsie who drowned before J Z was born and then about a friend who appeared to her in an apparition She insists an advanced civilization lives inside the earth's core and that murder isn't wrong as we're all immortal Somewhat overwhelmed by this flood of fantasy and conjecture I ask if she truly believes there is no right or wrong couldn't she be making this whole Ramtha thing up as a cosmic joke?

Taking a deep drag on her cigarette she replies, "Then you would have to say that as a result of this lark people have been healed, people have been helped people have learned to make changes and love themselves more . . . so if all humanity is going to benefit from it, what would it matter anyway?"

The rain drums against the window pane and Knight solemnly goes on with her saga of persecution and stoic martyrdom in Ramtha's great cause She does not refer to the rumor that one of her two sons by previous marriages had gone into a deep depression as a result of taunts from his schoolmates that his mother was in league with the Devil (an indictment made eerily graphic when someone scrawled 666 across the unpainted cinder-block wall that surrounds her property)

It has all been worthwhile she says, she likes herself more and realizes that she is after all beautiful talented and secure "And brilliant," she adds

I take my leave on this sodden spring afternoon asking my personal spirit guide what to do next Can all channelers be getting by on looks and fast-talking chutzpah alone? There must be other reasons for the enormous appeal of these beings I decide to go visit Jach Pursel/Lazaris to see if all entities act alike or if you get a different program with a different channel

Lazaris a disembodied spirit who calls himself "the consummate friend," speaks gently with a slight lisp His stifled English issues from the cuddly round person of Jach Pursel—a bearded former insurance adjuster who quit climbing the corporate ladder to pursue this higher calling Pursel is seated on a simple platform adorned by three small ficus trees His double-knit royal blue pants and apple green shirt seem hardly befitting a guru but then Lazaris is merely using Jach's body as an earthly house organ of sorts disseminating his message to the 400 people in the L A Hilton meeting room who've paid $275 each for this weekend seminar

This one is focused on healing and Lazaris a discarnate entity who has never been physical (and doesn't like Ramtha claim to be a god) has an approach to medicine that might be called uncanny "Back pains [are] simply sublimated hurt!

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he proclaims. "Release it!' As for the medical establishment, ninety percent of the drugs doctors give you aren't proven to work,' and the same goes for chemotherapy. 'You play metaphysics until something really goes wrong, then you go to a *real* doctor," he scolds. Not that he advises against that if you so desire, but he does suggest that getting angry at your illness works wonders, that you *can* heal yourself if you believe you can.

His well-dressed audience is conspicuously more upscale than the Ramtha crowd, though quite a few latter-day hippies are here too. The women are generally more attractive than the men, many of whom have a hapless, woebegone air. Almost all seem happier, less desperate than their Ramtha counterparts, and most of them busily take notes as Lazaris eloquently holds forth on the use of color, auras, light and sound as healing devices. Where Ramtha was often trite and pompous, Lazaris is consistently funny, warm, and engaging, even though half of what he says sounds like nonsense to me. Before the afternoon is out, we'll learn to alter the molecular ("neuronal") structure of water with our hands—pouring it from the left palm to the right as we infuse it with thoughts of love, then drink it. 'Drink the love," Lazaris exhorts. "It reaches every single cell of your body—and it works!" Also, if you shine a colored light on someone, or even on a photo of someone, the mood that color evokes will alter his or her mood accordingly. "Light consists of the vibrations we see," this enlightened spirit explains, "but as light frequencies get faster, beyond the visible rate, they become fragrance, when these vibrations slow below those of the visible spectrum, they become sound. Pseudoscience or not, it all boasts an undeniable charm—a view of the universe devised by Tolkien or Lewis Carroll with its own impish logic.

We take a short break during which a pretty blond realtor from Santa Fe, New Mexico, excitedly prattles on about a vision of a glass of blue water. She's pleased when I admire the crystals hanging on a long gold chain around her neck but politely asks me not to touch the biggest one, because it was specially 'charged' for her.

Afterward Lazaris leads us in one of several long meditations. During these his stilted, liturgical cadences (*ti-yum* instead of 'time') seem less pronounced, his voice turning as soft and low as the lights in the room. Some listeners relax by stretching out on the carpet with pillows they have brought from their hotel rooms; others prop their feet on empty chairs. Almost lost in the crowd with unkempt hair, wearing baggy black warm-up clothes and no makeup, is the actress Sharon Gless, her solemn expression bereft of the trademark Christine Cagney twinkle.

At one point Lazaris mentions a few special friends, including some tender words for Gless, who had been coming to see him even when he did only private consultations and had yet to go public on *Merv Griffin*. Quietly Gless sobs in the darkness, her shoulders heaving as a girlfriend squeezes her hand. But plenty of other people are also moved to tears as Lazaris's rich, compelling voice wafts over us, soothing wounded, world-weary psyches with cradle-rocking tenderness. Evoking images of forests and trees and birds and friends and loving hands, he leads us into a Walt Disney World of innocence, free of misery and corruption. In this world, preachers and politicians and Wall Streeters don't lie, more important, nature isn't cruel, hearts aren't broken, dreams don't die, and neither do we. When the music stops and the meditation ends, we open our eyes to fatherly Lazaris telling us, "You are now healed mentally, your old patterns can now be said *no* to."

Lazaris then calls for a dinner break. Heaving a great sigh, Jach seems to fall back into a trance and, about 60 seconds later, smiles as he rubs his eyes before a happy, "Where am I?" expression appears on his face.

"For Shirley MacLaine, it was brotherly love at first sight. She just "knew" that Ramtha had once been her sibling in a previous existence on the continent of Atlantis."

In the coffee shop, four other seekers ask me to join them. They explain that the age of Aquarius, which dawned in the Sixties, is now in full force, causing a cosmic shift and compelling masses of people to seek enlightenment. Like everyone I've met on this journey, they are friendly, open, kind and gentle—seemingly too gentle and kind for the real world. It is fitting that Eleanor, a grandmother who once belonged to the metaphysical Unity Church, now works for Disney Studios. Leia, thirty-nine, a long-haired, wilted flower child, is a former psychotherapist who gave that up and moved to L.A., where she wants "to paint and write" and intends to start soon, with a little help from the consummate friend. Christian, a big, hearty guy with a Dutch accent, says his wife thinks Lazaris is a fake. He himself feels that Ramtha, his first guide, was real at first but is now faking it. Not Lazaris, though. "He helped me enlarge my success cube," he proudly reports. "Now I've got more business than I can handle." All say the truths Lazaris speaks are things they've always inwardly known, but they appear unable or unwilling to recognize that if *they* know them, so could a mere mortal like Jach Pursel, even without an entity's coaching. TV star Ted Danson, who says he believes implicitly in Pursel/Lazaris, probably got it right when he said, "I don't care if it [the entity] is really Joe Blow in the basement playing some cosmic prank on the universe, so long as he's loving and wise—and so long as he's talking to *me*!" In fact, the common denominator among all these seekers after enlightenment seems to be a narcissism as prevalent in this Hilton hotel as the crystals suspended around their necks.

SUNDAY SERVICE

Today, on a Sunday afternoon, all the Lazarites have quietly lined up on the left and right hand of their master. To each of them Lazaris grants a moment of individual attention—a hug, a whispered word of reassurance or love, a massage of the small of the back. Instead of a Communion wafer, these devotees receive from Lazaris a crystal "personally charged" just for them, nestled in a basket draped with blue velvet. At the head of the two lines one sees expressions of absolute bliss—smiles stretched so wide they seem about to snap, eyes overflowing with tears. All of which makes Lazaris seem, even if a fraud, not half as bad as the society that has left so many in need of the love and affection they pay him to provide.

When Pursel isn't doing these seminars, he channels Lazaris for private consultations, mostly by phone, to hundreds of people around the world, dispensing advice on everything from spiritual questions to how to run a poodle business or how to close a tricky stock deal. According to Pursel, Lazaris can tap into his (Jach's) memory bank as well as into the minds of those he's counseling. While not omniscient, he's a pretty knowledgeable sort, but even when Pursel is just being Pursel, he's clearly well-read, exceptionally bright, articulate and funny—a lot like Lazaris. This leads me to suspect that Lazaris is simply a "higher self" or unconscious part of Pursel's mind, which he has learned to tap into. The other possibility, of course, is that he's consciously making this all up, rationalizing that the good he's doing outweighs a harmless white lie. When we talk for an hour alone in his comfortable Beverly Hills hotel room overlooking an acre-size pool, he is friendly, relaxed, helpful, and seems genuinely modest and kind. But whenever I ask about Lazaris or the mechanics of channeling, his eyes—those windows to the soul—slide this way and that, only coming to rest on me when those sensitive questions have been answered.

Pursel is quite candid about his rather offbeat personal life. Peny, his ex-wife, is still his partner in Concept Synergy, the Lazaris organization. And so is Michael, the slight, stoop-shouldered man who took Peny away from him and looks like Jack

Sprat beside his large rotund but exquisitely dressed and groomed wife. What's more, they all live together in Los Angeles and in a house on Lake Arrowhead in Southern California. What's more, they remain bosom buddies.

Michaell Pursel amiably explains was a friend and director of educational films who came to work for them. Pursel was channeling Lazaris at a workshop one night when Michaell and Peny began to fall in love, right before Pursel's very eyes—but because he had them closed and was actually Lazaris at the time, he was theoretically away on business. Though they kept their attraction platonic, Pursel admits he was shocked and hurt and jealous at first. But the love between them was so beautiful to see, he explains, that he eventually stepped aside, deciding it was best for all concerned. After a quickie Bahamian divorce, Michaell and Peny got married and they now share equally in the profits and responsibilities of Concept Synergy.

As for a romantic or sexual life of his own, Pursel says he prefers celibacy, which frees him from the responsibility of an intimate relationship. His emotional needs are met through his work with Lazaris and with the loving friendship he enjoys with Michaell and Peny, who is, by all accounts, a dynamic and intelligent woman.

If J.Z.'s mom won't love her, if Penny Torres's husband won't allow her to have company, if Pursel's wife leaves him for another man half his size—well, there are always other ways to find emotional fulfillment. There's nothing like the love of the masses to heal a broken heart and maybe make you rich in the bargain.

It's impossible to disprove the existence of invisible beings and very difficult to prove the existence of fraud in the realm of the paranormal. What *is* verifiable is that a great many people do believe in channeling and have committed themselves spiritually and psychologically to it.

While they are determined to make some sense of life, it is ironic that they have gone to the opposite extreme of embracing what appears to be nonsense. But a heads-and-hearts-in-the-sand attitude isn't likely to create the better world they imagine when they're curled in a fetal position, letting entities tell them fairy tales. It's not so much the advice much of it cockeyed, that is harmful as it is the fact that most of these seekers are implicitly being encouraged to relinquish control of their lives. Even as these beings purport to be saying we should look inward for answers, they offer false hopes and false visions, solidifying the dependency that brought them followers in the first place.

These beloved entities insist there's no downside to life, that flawed as we are, be we selfish and slothful, we can still find happiness—not only now but eternally—with a little help from the other side. Unwittingly or not, channelers prey on our credulity and fear, making comfortable ignorance the only prerequisite for bliss. ☒

CONTINUED FROM PAGE 20

Rome international airport. As it turned out, the judges said, that Schlitz had achieved six hits, something that might occur perhaps four times in a million.

Finally, Robert Jahn of the School of Engineering and Applied Science at Princeton University says he has come up with impressive results as well. Working with Brenda Dunne, Jahn recruited live subjects for a total of 300 remote-viewing trials. Each subject was asked to envision the site that an experimenter would visit for 15 minutes sometime in the future. Not only did the subjects describe and sketch their visions, they also answered a series of 30 questions capable of objectively differentiating any target site from any other. According to Princeton's recently published report, the viewers envisioned their targets far more often than would be predicted by mere chance.

To Targ, all this work represented a wealth of positive results. But when he attended the centennial for the Society of Psychical Research in England a few years ago, he was shocked to hear a British colleague say no one had ever proven psychic functioning to exist. "I decided then and there," Targ says, "to do an experiment that would be published not in some obscure parapsychology journal but in *The Wall Street Journal* itself."

That's just what Targ did. Working with psychologist Keith Harary and art investor Anthony R. White, he formed Delphi Associates out of San Mateo, California. Like the Delphic oracle the company hoped to predict the future and see its fortunes rise. Specifically, Harary was to practice his remote-viewing skills once a week. Each and every Thursday, he was to predict whether the price of silver would go up or down the following Monday. Based on his predictions, the group would buy or sell, hoping that money could be made.

Since the alphanumeric symbols—including the figures associated with silver futures—don't particularly lend themselves to psychic prediction, the group devised a plan. Harary was told he would receive one of four objects, depending on how silver moved—up a little, up a lot, down a little, or down a lot. He was thus to predict not the movement of silver per se but the identity of the object.

Targ explains: "I would interview Harary every Thursday and ask him to describe the object I would show him the following Monday afternoon. On one occasion, for instance, he said, 'I see something crinkly that looks like a party favor. It's red on the top and white on the bottom and has a funny smell.'

"Then I called our collaborator, Anthony White, and asked him the identity of the four objects for the week. He said, 'I have a toy bear, for down a little; a perfume bottle, for down a lot; a skeleton key, for up a little; and a chrysanthemum, for up a lot.' Then I described Harary's image, and White said, 'That sounds like the chrysanthemum to me.' So we bought silver."

Using this method, dubbed associative remote viewing, Harary made correct predictions nine times in a row, Targ says, netting the group a profit of $120,000. The probability of that happening by chance, he adds, "is one in fifty thousand." But when Delphi Associates did the experiment again—this time with both Harary and psychic Hella Hammid—profits dwindled and results fell to chance.

It's not surprising that critics remain unconvinced. According to anomalies expert Marcello Truzzi, professor of sociology at Eastern Michigan University, "Most people give low evidentiary value to the silver market studies because as the group continued its work, it met with failure."

Marilyn Schlitz has not been able to replicate all her results, Truzzi adds. Her one experiment with a skeptic as subject generated results that weren't positive at all. And in remote viewing, anyway, the work of the Princeton group has raised serious questions among fellow parapsychologists. Much of it has never been formally evaluated or published in an accredited, peer-reviewed journal.

Many parapsychologists disagree with this assessment. Former Delphi Associates member Harary now research director for San Francisco's Institute for Advanced Psychology, notes that the second series of silver experiments was conducted under dramatically different circumstances from the first. "I was disturbed when I saw too much emphasis placed on profit and publicity," he says, "making it impossible to focus or maintain an objective scientific perspective."

And Russell Targ, now working full time in laser research for Lockheed and running the National ESP Laboratory out of his home in Portola Valley, California, points out that his third psychic venture into the silver market completed just this summer, has yielded impressive results. "Thirty-five out of fifty-two predictions were correct," he says. "Statistically, the chance of that happening is less than one in a hundred."

Schlitz, now a research associate and project director of remote viewing programs at the Mind Science Foundation in Texas, adds that perhaps psi research should not be subject to the standards of ordinary science. She has, she notes, replicated her work in long-distance remote viewing. But she adds, sometimes you see results, and sometimes you don't. "Studying psi," she says, "is in some ways like chasing butterflies in the dark. You don't see where they are, and you hope that you're catching them. That's what my experiments are like. There's this amorphous beautiful thing flying around, and I'm trying to catch it in the lab. I can't always do that, but that doesn't mean it isn't real. When you're chasing butterflies in the dark, you're lucky if you catch anything at all." ☒

PEAR

CONTINUED FROM PAGE 76

it through together. The Pear-shaped Man was here, you think?

Yes.

"Why?"

"To do — to do what he did. It's disgusting. He's disgusting."

"Hmmm." Don said. "How then? The locks were changed, remember? He can't even get in the building. He's never had a key to this apartment. There was no sign of forced entry. How did he get in with his bag of cheese curls?"

Jessie had him there. Angela left the living room windows open," she said.

Angela looked stricken. "I did," she admitted. "Oh, Jessie, honey, I'm so sorry. It was hot. I just wanted to get a breeze, I didn't mean—"

"The windows are too high to reach from the sidewalk," Donald pointed out. "He would have needed a ladder or something to stand on. He would have needed to do it in broad daylight, from a busy street, with people coming and going all the time. He would have had to have left the same way. And then there's the problem of the screens. He doesn't look like a very athletic sort, either."

"He did it," Jessie insisted. "He was here, wasn't he?"

"I know you think so, and I'm not trying to deny your feelings, just explore them. Has this Pear-shaped Man ever been invited into the apartment?"

"Of course not!" Jessie said. "What are you suggesting?"

"Nothing, Jess. Just consider. He climbs in through the windows with these cheese curls he intends to secrete in your drawers. Fine. How does he know which room is yours?"

Jessie frowned. "He — I don't know. He searched around, I guess."

"And found what clue? You've got three bedrooms here, one a studio, two full of women's clothing. How'd he manage to pick the right one?"

"Maybe he did it in both."

"Angela, would you go check your bedroom, please?" Donald asked.

Angela rose hesitantly. "Well," she said, "okay." Jessie and Donald stared at each other until she returned a minute or so later. "All clean," she said.

"I don't know how he figured out which damned room was mine," Jessie said. "All I know is that he did. He had to. How else can you explain what happened, huh? Do you think I did it *myself*?"

Donald shrugged. "I don't know," he said calmly. He glanced over his shoulder into the studio. "Funny, though. That painting in there, him and you, he must have done that some other time, after you finished it, but before you sent it to Pirouette. It's good work, too. Almost as good as yours."

Jessie had been trying very hard not to think about the painting. She opened her mouth to throw something back at him, but nothing flew out. She closed her mouth. Tears began to gather in the corners of her eyes. She suddenly felt weary, confused, and very alone. Angela had walked over to stand beside Donald. They were both looking at her.

Jessie looked down at her hands helplessly and said, "What am I going to do? God. What am I going to *do*?"

God did not answer. Donald did. "Only one thing *to* do," he said briskly. "Face up to your fears. Exorcise them. Go down there and talk to the man, get to know him. By the time you come back up, you may pity him or have contempt for him or dislike him, but you won't fear him any longer, you'll see that he's only a human being and a rather sad one."

"Are you sure, Don?" Angela asked him.

"Completely. Confront this obsession of yours, Jessie. That's the only way you'll ever be free of it. Go down to the basement and visit with the Pear-shaped Man."

She woke to the sound of the door closing. It was only a click, a latch sliding into place, but her eyes opened, and she pulled herself up. It was so hard to move. She felt heavy.

There's nothing to be afraid of," Angela told her again.

"That's easy for you to say."

"Look. Jess, the minute you're inside, Don and I will come out and sit on the stoop. We'll be just an earshot away. All you'll have to do is let out the teeniest little yell and we'll come rushing right down. So you won't be alone, not really. And you've still got that knife in your purse, right?"

Jessie nodded.

"Come on, then, remember the time that purse snatcher tried to grab your shoulder bag? You decked him good. If this Pear-shaped Man tries anything, you're quick enough. Stab him. Run away. Yell for us. You'll be perfectly safe."

"I suppose you're right," Jessie said with a small sigh. They *were* right. She knew it. It didn't make any sense. He was a dirty, foul-smelling, unattractive man, maybe a little retarded, but nothing she couldn't handle, nothing she had to be afraid of. She didn't want to be crazy; she was letting this ridiculous obsession eat her alive and it had to end now. Donald was perfectly correct. She'd been doing it to herself all along and now she was going to take hold of it and stop it, certainly. It all made perfect sense and there was nothing to worry about, nothing to be afraid of, what could the Pear-shaped Man possibly *do* to her that was so terrifying? Nothing. Nothing.

Angela patted her on the back. Jessie took a deep breath, took the doorknob firmly in hand, and stepped out of the building into the hot, damp evening air. Everything was under control.

So why was she so scared?

Night was falling, but down under the stairs it had fallen already. Down under the stairs it was always night. The stoop cut off the morning sun, and the building itself blocked the afternoon light. It was dark, so dark. She stumbled over a crack in the cement and her foot rang off the side of a metal garbage can. Jessie shuddered, imagining flies and maggots and other, worse things moving and breeding back there where the sun never shone. *No, mustn't think about that, it was only garbage, rotting and festering in the warm, humid dark, mustn't dwell on it.* She was at the door.

She raised her hand to knock, and then the fear took hold of her again. She could not move. *Nothing to be frightened of,* she told herself, *nothing at all.* What could he possibly *do* to her? Yet still she could not bring herself to knock. She stood before his door with her hand raised, her breath raw in her throat. It was so hot, so suffocatingly hot. She had to breathe. She had to get out from under the stoop, get back to where she could breathe. A thin vertical crack of yellow light split the darkness. *No,* Jessie thought, *oh, please no.*

The door was opening.

Why did it have to open so slowly? Slowly, like in her dreams. Why did it have to open at all? The light was so bright in there. As the door opened, Jessie found herself squinting. The Pear-shaped Man stood smiling at her.

"I," Jessie began. "I, uh, I—"

"There she is," the Pear-shaped Man said in his tinny little squeak.

"What do you want from me?" Jessie blurted.

"I knew she'd come," he said, as though she wasn't there. "I knew she'd come for my things."

"No," Jessie said. She wanted to run away, but her feet would not move.

"You can come in," he said. He raised his hand, moved it toward her face. He touched her. Five fat white maggots crawled across her cheek and wriggled through her hair. His fingers smelled like cheese curls. His pinkie touched her ear and tried to burrow inside. She hadn't seen his other hand move until she felt it grip her upper arm, pulling, pulling. His flesh felt damp and cold. Jessie whimpered.

"Come in and see my things," he said. "You have to. You know you have to." And somehow she was inside then, and the door was closing behind her, and she was there inside, alone with the Pear-shaped Man.

Jessie tried to get a grip on herself

The Artist

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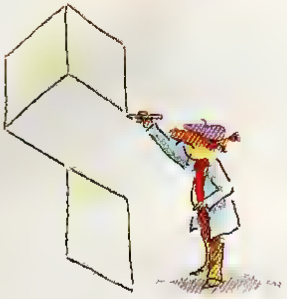
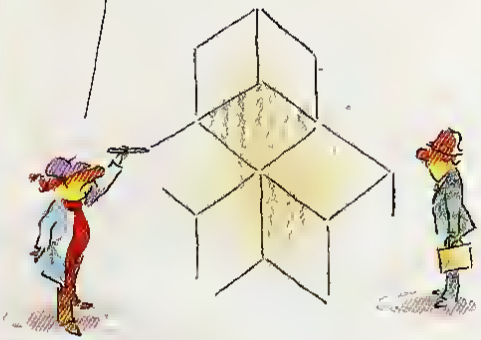
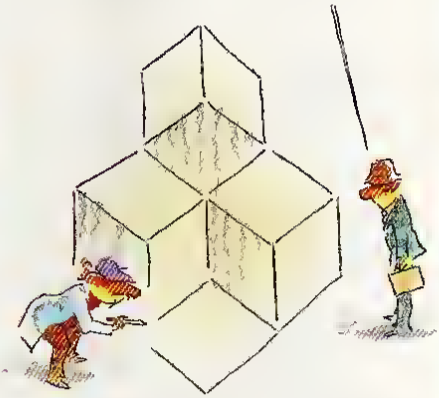


What is that ?

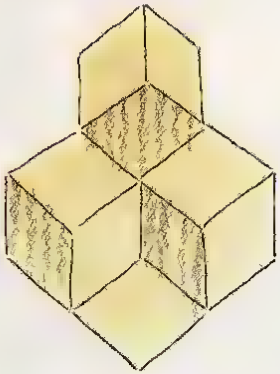
It's an illusion created to confuse the eye and make us think



Think ?! Think about what ?



See.. it's working already



Nothing to be afraid of she repeated to herself a litany a charm a chant *nothing to be afraid of what could he do to you, what could he do?*

The room was L-shaped, low ceilinged filthy The sickly sweet smell was overwhelming Four naked light bulbs burned in the fixture above and along one wall was a row of old lamps without shades bare bulbs blazing away A three-legged card table stood against the opposite wall its fourth corner propped up by a broken TV set with wires dangling through the shattered glass of its picture tube On top of the card table was a big bowl of Cheez Doodles Jessie looked away, feeling sick She tried to step backward and her foot hit an empty Coke bottle She almost fell But the Pear-shaped Man caught her in his soft, damp grip and held her upright

Jessie yanked herself free of him and backed away Her hand went into her purse and closed around the knife It made her feel better stronger She moved close to the boarded-up window Outside she could make out Donald and Angela talking The sound of their voices so close at hand—that helped too She tried to summon up all of her strength "How do you live like this?" she asked him "Do you need help cleaning up the place? Are you sick?" It was so hard to force out the words

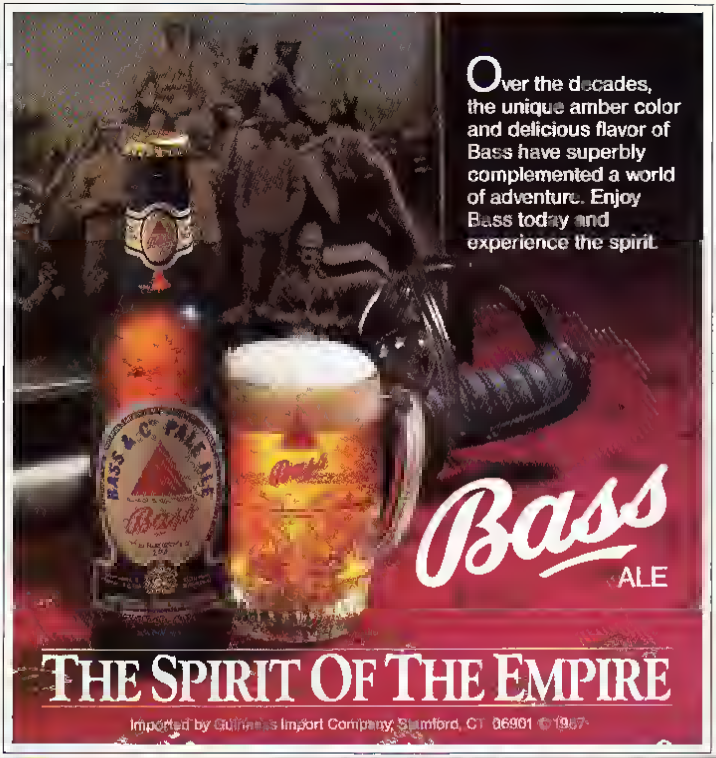
"Sick," the Pear-shaped Man repeated "Did they tell you I was sick? They lie about me They lie about me all the time Somebody should make them stop" If only he would stop smiling His lips were so wet But he never stopped smiling "I knew you would come Here This is for you" He pulled it from a pocket held it out

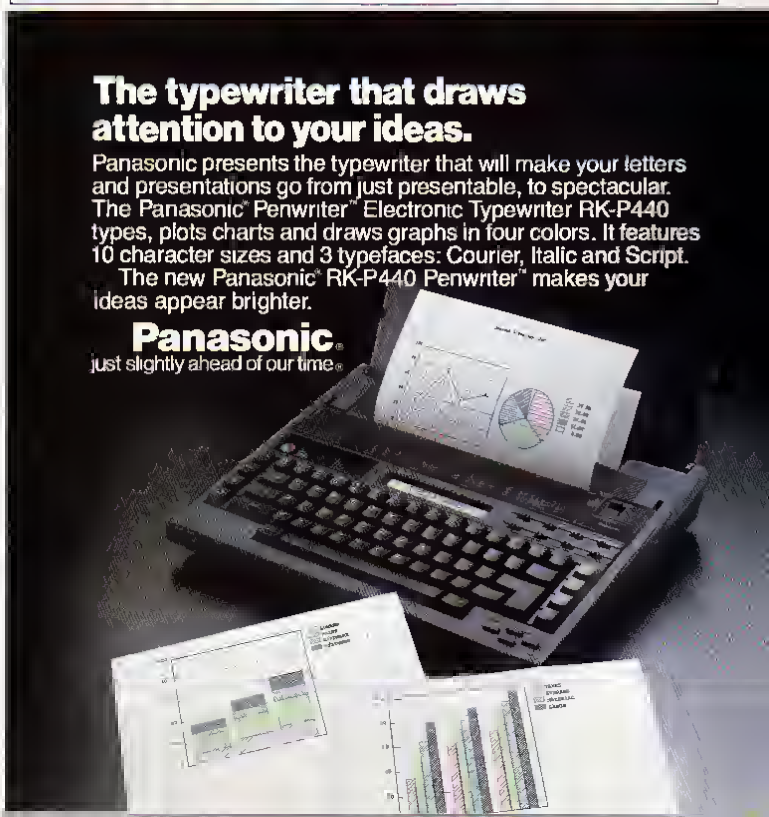
"No" said Jessie "I'm not hungry Really" But she was hungry she realized She was famished She found herself staring at the thick orange twist between his fingers and suddenly she wanted it desperately "No" she said again but her voice was weaker now barely more than a whisper and the cheese curl was very close

Her mouth sagged open She felt it on her tongue the roughness of the powdery cheese the sweetness of it It crunched softly between her teeth She swallowed and licked the last orange flakes from her lower lip She wanted more

"I knew it was you" said the Pear-shaped Man "Now your things are mine" Jessie stared at him It was like in her nightmare The Pear-shaped Man reached up and began to undo the little white plastic buttons on his shirt She struggled to find her voice He shrugged out of the shirt His undershirt was yellow with huge damp circles under his arms He peeled it off, dropped it He moved closer and heavy white breasts flopped against his chest The right one was covered by a wide blue smear A dark little tongue slid between his lips Fat white fingers worked at his belt like a team of dancing slugs "These are for you" he said

Jessie's knuckles were white around the hilt of the knife "Stop" she whispered





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His pants settled to the floor.

She couldn't take it. No more, no more. She pulled the knife free of her bag, raised it over her head. *'Stop!'*

Ahh, said the Pear-shaped Man. There it is.'

She stabbed him.

The blade went in right to the hilt, plunged deep into his soft white skin. She wrenched it down and out. The skin parted, a huge, meaty gash. The Pear-shaped Man was smiling his little smile. There was no blood, no blood at all. His flesh was soft and thick, all pale dead meat.

He moved closer, and Jessie stabbed him again. This time he reached up and knocked her hand away. The knife was embedded in his neck. The hilt wobbled back and forth as he padded toward her. His dead, white arms reached out and she pushed against him and her hand sank into his body like he was made of wet, rotten bread. Oh, he said, oh, oh, oh. Jessie opened her mouth to scream, and the Pear-shaped Man pressed those heavy wet lips to her own and swallowed all her sound. His pale eyes sucked at her. She felt his tongue darting forward, and it was round and black and oily and then it was snaking down inside her, touching, tasting, feeling all her things. She was drowning in a sea of soft, damp flesh.

She woke to the sound of the door closing. It was only a small click, a latch sliding into place, but it was enough. Her eyes opened, and she pulled herself up. It was so hard to move. She felt heavy, tired. Outside they were laughing. They were laughing at her. It was dim and far-off, that laughter, but she knew it was meant for her.

Her hand was resting on her thigh. She stared at it and blinked. She wiggled her fingers, and they moved like five fat maggots. She had something soft and yellow under her nails and deep, dirty yellow stains up near her fingertips.

She closed her eyes, ran her hand over her body, the soft, heavy curves, the thicknesses, the strange hills and valleys. She pushed, and the flesh gave and gave and gave. She stood up weakly. There were her clothes, scattered on the floor. Piece by piece she pulled them on, and then she moved across the room. Her briefcase was down beside the door; she gathered it up, tucked it under her arm; she might need something, yes, it was good to have the briefcase. She pushed open the door and emerged into the warm night. She heard the voices above her. '... were right all along,' a woman was saying. 'I couldn't believe I'd been so silly. There's nothing sinister about him, really, he's just pathetic. Donald, I don't know how to thank you.'

She came out from under the stoop and stood there. Her feet hurt, so. She shifted her weight from one to the other and back again. They had stopped talking, and they were staring at her. Angela and Donald and a slender, pretty woman in blue jeans and work shirt. 'Come back,' she said, and her voice was thin and high. 'Give them back. You look them, you took my things. You have to give them back.'

The woman's laugh was like ice cubes tinkling in a glass of Coke.

'I think you've bothered Jessie quite enough,' Donald said.

'She has my things,' she said. 'Please.'

'I saw her come out, and she didn't have anything of yours,' Donald said.

'She took all my things,' she said.

Donald frowned. The woman with the sandy hair and the green eyes laughed again and put a hand on his arm. 'Don't look so serious, Don. He's not all there.'

They were all against her, she knew, looking at their faces. She clutched her briefcase to his chest. They'd taken her things, he couldn't remember exactly what, but they wouldn't get her case, he had stuff in there and they wouldn't get it. She turned away. He was hungry, she realized. She wanted something to eat. He had half a bag of Cheez Doodles left, she remembered. Downstairs. Down under the stoop.

As she descended, the Pear-shaped Man heard them talking about her. He opened the door and went inside to slay. The room smelled like home. He sat down, laid his case across his knees, and began to eat. He stuffed the cheese curls into his mouth in big handfuls and washed them down with sips from a glass of warm Coke straight from the bottle he'd opened that morning, or maybe yesterday. It was good. Nobody knew how good it was. They laughed at him, but they didn't know they didn't know about all the nice things he had. No one knew. No one. Only someday he'd see somebody different, somebody to give his things to, somebody who would give him all their things. Yes. He'd like that. He'd know her when he saw her.

He'd know just what to say. ∞

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DEFINITION

CONTINUED FROM PAGE 80

consciousness or political consciousness You're mouthing words You change yourself and society in the same process simultaneously The more general the causes you believe in the less relevant they are The more specific the issues the more you affect the balance of power in the world The more you talk about peace and the less you talk about justice, the more you are part of the problem and less a part of the solution New Age does not encourage collective organized action It is self-indulgent too much 'I am the world'

The whole culture—teachers, churches, New Agers—are out there in space worrying about the ozone the snow leopard and the tropical forests But people just talk and never learn how to solve problems how to get rid of the damn toxic dump! You know the New Age has no good jokes Of course they have a sense of humor because that's nice a good-vibes thing that goes along with being in touch and being against world hunger But jokes are specific Jokes take chances Some laugh some are offended I don't think New Age people take risks

KEN KESEY, merry prankster of the Sixties, author most recently of *Demon Box*

We are coming toward a real New Age what I think of as the Fourth World There's got to be something good in store for us because there's no such thing as a one sided coin We've really established the bad side of the coin with Reagan and this cheap macho jingoism and anti-intellectualism and this whole militaristic consciousness And the other side of the coin hearkens back to the Sixties We caught a wave back then Drugs had something to do with it but the wave happened in science, cinema art, music and politics Once you've caught that wave you're addicted You want to catch another one You'll paddle around in the surf for years looking And I think there's another wave coming

"It's better to carry a flower than a gun"—peace was what the Sixties was all about, and New Age consciousness is also about peace and not about sending guns to Nicaragua And if it isn't about peace, we're all goners and aren't going to survive the thing Of course the evolution of a new and peaceful consciousness in the face of seventy-six percent of the people voting for Reagan in a nation where Ollie North is a hero is a tough row to hoe But the human being is a nimble creature and I think we are going to make it

Personally, I want my spirituality pure and from the source I don't want it all gussied up with a lot of Oriental froufrou I've read that New Age people are trying to find "drug-free access to altered states of consciousness" Well I'd rather go through drugs than through Jimmy Swaggart I'd even rather go through drugs than through Shirley MacLaine to tell you the truth I've stopped throwing the I Ching and I've thrown it steadily for twenty years You just don't need to keep asking and keep asking and keep asking and keep going back and checking and getting signs and going to mediums and having spirits talk to you through horns or bells or see goiters drop off people at the healers All that stuff really belies a lack of faith

Maybe the New Age is the place where Bach was composing and Van Gogh was painting and Shakespeare was writing Maybe the New Age doesn't exist in linear time it exists in lateral time and isn't connected by cause and effect

KARL PRIBRAM the Stanford University brain researcher best known for his theory of the holographic brain

There is no doubt in my mind that there will be a rapprochement between the spiritual values that New Age people hold so dear and what we are discovering in science The data and the discoveries in science will bring about this rapprochement—quite apart from the values that people bring to it or don't bring to it

> *"Maybe the New Age is the place where Bach was composing, Van Gogh was painting, and Shakespeare was writing. Maybe the New Age exists in lateral time not connected by cause and effect."*

I do believe there is a great deal of bridging that has yet to be done Some changes these people advocate are poppycock some are superficial but with common sense and time the good stuff comes out and makes its way into society

ALLEN GINSBERG, Beat poet Sixties visionary teacher at Naropa Institute the first Buddhist college in the West

The New Age concept was introduced around the time of the Beat era as a sort of holistic approach to life—opposed to the hyperindustrialization hypermilitarization of the Cold War New Age ideas involved rehabilitation of Mother Earth reintegration with nature ecological sentience the notion of a fresh planet We had reached the end of the land as in Kerouac's 'end of the land sadness end of the land gladness'—meaning we had reached the West Coast and the new pioneers were to go inward and explore inner space using Yoga, meditation herbal medicine Zen

But people tend to collect experiences a vision a message from beyond a flying saucer sighting neurological buzzings and zappings That's what Tibetans call spiritual materialism, treating spiritual materials as collectibles rather than as in classical traditions treating spiritual experiences as something you let go immediately You can't step in the same river twice But I do not think that the New Age mentality is strictly the invasion of the spiritual realm by a kind of consumerist mentality

New Age has had great effects Meditation practices have been introduced into some forms of therapy Chinese herbs pulse diagnosis acupuncture have proved to be shortcuts to health restoration

I hope people have enough sanity to adapt rather than to commit mass suicide whether through nukes or nuke by-products destruction of the watercourses, the ozone hole or just so much garbage spread around that people choke on their own waste products But animals know not to defecate where they eat Unless they're penned in like rats

DORIS LESSING author most recently of *The Good Terrorist*

What I have in common with New Age people is the same hopes and fears no major war that minor wars should cease no pollution that we won't destroy our planet that we find a cure for AIDS very soon that there should be no more inexplicable sickness disease epidemics If there is one fact that emerges from even the slightest study of history let's say even from the turn of the century it is that what happens comes as a surprise to everyone

FRANK ZAPPA musician founder of The Mothers of Invention spokesman against rock-lyric censorship

I would never pretend to be an expert on New Age theology but from what I've seen and read it bears a striking resemblance to the same sort of superstitious bullshit that the televangelists are making a fortune out of—minus Jesus though in some cases with a tangential Jesus Everyone wants a kingdom to go to and a guy a big guy who waves a wand and makes it okay—a mass of people who are starved for the supernatural

We live in an age that is full of fear And when people are afraid they try to reinforce their relative position in the universe by reliance on supernatural assistance It's an unfortunate time for civilization what we are going through right now

The New Age movement lacks a sense of self-criticism I think it would be great if as a tenet of their faith or whatever they tried in an authentic way to put things together for themselves I mean who knows? Maybe they'll come up with something that works Nobody has done that yet That would be a real scientific achievement But people want to maintain a fiction and as long as they do there's going to be yet another New Age that comes along after this

one with another guy with a chingus on his head and crystals dangling down Maybe it ll be mothballs by then, who knows?

New Age music is baffling to me It has no tension and it s often promoted as therapy As far as I m concerned music has better things to do than to find one drone chord to help you achieve your mantra If it s therapy let s not call it music I don t think that the composers who were really doing their job over the years were all that concerned about whether or not the listener was going to achieve Nirvana by the end of the tune

But all of this stuff is pretty much irrelevant to a pop-consumer society because nobody in the society knows what composers do Oh well, that s okay We live in a country where they think Oliver North is a national hero What can we deduce about the mental-health situation in the United States from this Oliver North hysteria?

DANIEL BERRIGAN, priest, peace activist

The New Age movement is very American an endless quest for novelty and stimulus in every direction and the satisfaction of appetite We end up with a self-centered therapeutic instead of any contact with what might be called God or responsibility to others Spiritually speaking the whole movement is just the death of the reality of God in one s life and the degradation of the human being who yields to it I think that we become less than human by any kind of traditional norm if we seek more and more vindication of ego and appetite and self worship It's idolatrous

An enormous selfishness has been built into our culture from the start We want to control other lives other countries other political forms to keep the goods flowing foward us and keep the ego on high

LAURIE ANDERSON, poet musician performance artist

I don t know about this New Age music I wish people would make it their own It s a bit like a graft right now and has very little to do with American culture But New Age musicians have set themselves a difficult task trying to be dronelike and musically interesting at the same time.

It's significant to me that almost no words are used in New Age music It s ethereal because it doesn t have the sweat of real people Angel music definitely doesn t sweat But someone will do something really interesting with this music I don t think there are any forms of music that are inherently boring or stupid There is room for every single kind of music Isn t that a suitably bland New Age response?

But it's not the kind of music I like It doesn t make me happy or interest me or scare me or thrill me—it is just there gliding over me, background music When I listen to music I listen to it obsessively You know like one thing fifty times over It s becoming increasingly popular because it goes down pretty easily but it does something for people besides being easy

KEN WILBER, transpersonal psychologist author general editor New Science Library imprint Shambhala Publications

There are some very good things about the New Age and some extremely narcissistic, flaky aspects about it This movement is the first popular American movement to acknowledge mysticism or a genuinely transcendental experiential contemplative realm That s good In other words, religion is not merely something you do in Sunday school Real religion, like Zen or Taoism involves contemplation

But it then made the great mistake of thinking that anything spiritual is therefore antirational or antiscientific And this produced the flaky parts of the movement quartz crystal healing, psychic channeling and massaging your psychic aura and I mean just the craziest stuff in the world And the bad aspects are rampant

It s one thing to say that there is a spiritual reality It s quite another thing to say this movement is producing the most profound

> *"Everyone wants a kingdom to go to and a guy, a big guy who waves a wand and makes it okay. There's a mass of people who are starved for the supernatural. It's an unfortunate time."*

transformation that ever occurred in the history of the world—and I m part of it That s an incredibly narcissistic stance The global transformation the great spiritual descent is not anywhere near It is not going to happen for centuries maybe millennia for all we know

One of the exciting things that the New Age tapped into is that we ought to borrow from Zen Taoism Hinduism—they all tell us some very important things And when we put them together we get a universal view of what s going on That s part of the great excitement generated by the New Age It s amazing a lot of fun exciting

I actually wrote a chapter for a book I m doing now called Baby Boomers Narcissism and the New Age There s no mystery as to why the New Age came out of the me decade The me decade became the my decade with the yuppies

Channeling for instance is incredibly narcissistic In essence the channeler says "I am channeling the greatest intelligence that ever lived and it tells me—did I mention that—me? It s California holographic bleached-brain garbage The Baby Boomers who produced the New Age were the first television generation They got steered into immediate gratification You don t like channel two switch Channel five switch And so on We have the highest divorce rate in history We have the most difficult time forming lasting stable relationships We re instant gratification Don t like present reality? Switch New Age Pow!

MARILYN FERGUSON, editor publisher of the Los Angeles-based *Brain/Mind Bulletin*, author of *The Aquarian Conspiracy*

I think the label 'New Age is like yuppie—it is virtually meaningless As a friend of mine said "The New Age baby is probably drowning in the bathwater" The webbing that might tie many of these philosophies together is at this point, so ill-defined that one would be hard-pressed to say for sure what is and what is not New Age There is a movement a very broad-based one growing in strength Actually what it should be called is a shift of cultural values a shift toward the experiential toward an interest in cooperation and relationship Enough people are interested and now it has become significant to the critics of popular culture I think we re seeing what Alexis de Tocqueville predicted in 1830 in *Democracy in America* The United States would eventually become spiritual for the simple reason that it was so materialistic

The New Age has become the latest thing and the questions about it have focused on certain subjects—crystal healing trance mediums and that kind of thing What will happen is that we will miss an opportunity as a society to take advantage of an openhearted spirit that I would say is increasingly evident There is something in the air People would like an excuse to be kinder Certainly there is some very fringe stuff and people are involved who mean well but may not be very substantive I ve been a critic myself asking that we please get our act together But the heart of this paradigm is very old and just keeps recurring It s characterized by cooperation spiritual values and respect for nature What we are really talking about is caring about closeness—that s what the New Age should be about

RICHARD BACH, author of *Jonathan Livingston Seagull*

The New Age movement is this amorphous thing that seems to affect some people in irrational ways I don t want to make any claim that this particular label has touched me I hate labels

But more and more people at younger and younger ages are asking the questions Who are we? and What are we doing on this little planet? Any movement toward recognizing our individual identity and power is a good thing I have a better sense of well-being because I know more people are concerned with the invisible things that matter rather than the little flashes and glitters I want to be a part of a world where people are experimenting with the nature of consciousness

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HARDWARE

CONTINUED FROM PAGE 138

"We've got to shut that thing off" I gasped In desperation I hit the light switch and the room went dark

It stayed dark about eleven milliseconds Then the power came on again

I ASKED YOU NOT TO DO THAT the screens said In the analysis chamber the asteroid artifact rose into the air in its little gesture of anger and subsided

AND NOW TO CONTINUE ALTHOUGH IT WAS NOT THE INTENTION OF EITHER FACTION TO BRING ABOUT THE ACTUAL DESTRUCTION OF OUR WORLD THE POLITICAL SITUATION SWIFTLY BECAME SUCH THAT IT WAS IMPOSSIBLE FOR THE QUARRELING FORCES TO WITHDRAW FROM THEIR POSITIONS WITHOUT SUFFERING AN UNACCEPTABLE DEFEAT THEREFORE THE FOLLOWING ARMING PROCEDURE WAS INITIATED

And I watched helplessly as the artifact, earnestly desiring to tell us the history of its world finished the job of explaining the simplest way to blow up a planet

"My God" I murmured "My God my God my God!"

McDermott came over to me "Hey take it easy Charlie Take it easy!"

I groaned "'Take it easy' the man says When that thing has just handed out simple instructions for turning Earth into the next asteroid belt?"

He shook his head "It only *sounds* simple I don't think it really is My bet is that something like that isn't even remotely feasible right now and won't be for at least a thousand years"

"Or five hundred" I said "Or fifty Once we know a thing can be done someone's always likely to try to find a way of doing it again just to see if it's really possible But we already know it's possible don't we? And now everybody on Earth has a bunch of jim-dandy hints on how to go about doing it" I turned away from him and looked at the artifact The purple spots really were glowing green I saw The thing must be working very hard to communicate with all its myriad simpleminded brethren of the third world I had a sudden vision of a time a billion or so years from now when the star people from Rigel or Betelgeuse showed up to poke through the bedraggled smithereens of Earth *The only thing they're likely to find still intact* I thought *is a hunk of shiny hardware And alien hardware at that* I swung around and glared at the screen The history lesson was still going on I wondered how many other little useful things the artifact from the asteroids was going to teach us ▫▫

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SPACE

in the ocean, the Himalayas. Then you know you're really in space.

Coming over India tonight there were hundreds of fires, each one like a little jewel in the darkness. I'm starting to watch some lightning storms over South America. It's amazing, some of these lightning strikes are not just in one point. They run along a linear track on the ground, curving and swerving like a snake as they move. Some of them make a big fishhook, some go in straight lines.

[During the second day the *Discovery* crew launched *Syncom IV*, the second of the two satellites they carried. For an unknown reason *Syncom*'s electrical and communications systems did not turn on after launch, and its rocket motor did not fire, leaving *Syncom* in a useless orbit. Hoffman and fellow astronaut Dave Griggs had to make an unscheduled spacewalk to attach two "flyswatter" devices to the end of the remote manipulator arm. With these the shuttle crew would try to flip an external switch on the side of *Syncom IV* in hopes that it would activate the satellite's launching system.

They began preparing for the spacewalk. As protection from the bends when they went from the high cabin pressure to the lower pressure of the space suits, the astronauts reduced the percentage of nitrogen in their blood by putting on their helmets and breathing pure oxygen for one hour and also by decreasing the cabin pressure from 14.7 pounds per square inch (psi) down to 10.2 psi.]

Monday morning. Day four. We just got the news from MCC [Mission Control Center] that the mission management team has approved our EVA [spacewalk] and rendezvous. We are getting serious now about cleaning up the mid-deck and depressing the cabin. Dave and I have to put our helmets on and prebreathe one hour. We're down to 10.2 psi. Dave and I have finished our prebreathe, which is a miserable experience. The helmets are very uncomfortable, particularly since I kept mine extremely tight to make sure I didn't get any nitrogen leaking in around the edges. I've totally lost track of where we are around the world and whether it's day or night.

[Hoffman and Griggs returned from their spacewalk. They had attached the flyswatters to the remote manipulator arm. Once back in the shuttle Hoffman recorded his impressions.]

I'm floating in the air lock now. We put the suits back together. The helmets are on. The pants are on. The arms of the space suit look like they're waving to me. It was about three of the fastest hours I have ever spent.

Going out of the air lock and going to the toolbox was very much like [being in] the water tank [zero-g training tank] because we tended to be looking down, not much aware of the world going by. It was when I went up to the sill [of the cargo bay] to start back to my work position that I turned myself upside down and looked at the earth going by. That's when the awesomeness of what we were doing really struck me, that and having a one-hundred-eighty degree panorama of the world.

On the one hand, I had to concentrate very closely on all of the procedural aspects of what we were doing, the safety of being out in the suit, thinking about how to get the job done, making sure we didn't lose the equipment—all the things we did to make sure the whole thing turned out successfully. At the same time there was a part of me just standing back, not believing what I was seeing and what I was doing. It was an amazing feeling—actually being on top of it [the shuttle] and holding on to the tiles with my hands, being up in the sections where normally we could never get to. I let go of the handrails a few times just to float free for a minute or so, but I tried not to let myself get out of control. Quite often I looked down at my hands and feet and tried to remind myself that it was really me doing this.

[The flyswatters were attached and the *Discovery* crew rendezvoused with the *Syncom* satellite. The rendezvous was smoothly made, and using the robot arm and the flyswatters the crew was able to flip the *Syncom* switch successfully three times. But the problem turned out not to be with the separation switch. The satellite did not turn on.]

[The night before returning home Hoffman took one last look earthward from his extraterrestrial perspective.]

I had a lovely time just floating with my stomach up toward the overhead window. I hooked my finger into one of the escape wires to stop my body from floating around. It was sort of the same feeling psychologically as lying on your back in a meadow watching the clouds go over head, only here they were going under neath in endless patterns.

After a while we came over the coast of South America. I saw the Andes from space, probably for the last time on this trip. It was late in the afternoon in the Andes, and the shadows were in beautiful relief. The eastern side of the mountains was going through the terminator [the shadow line on Earth made by oncoming night]. You could see the smoke from the fires where the trees are being burned away. Then the earth went dark. I pulled myself out of my trance, flipped over and watched the day turn into night. ☒

Excerpted with permission from An Astronaut's Diary *© 1986 by Jeffrey A. Hoffman. Caliban Press. A paperback and tape cassette of excerpts from Hoffman's diary are available from Caliban Press, 114 Westview Road, Montclair, NJ 07043. Cost: $8.95. Jeffrey Hoffman is donating his proceeds from the diary sales to the* Challenger *Fund.*

STAR TECH

ACCESSING THE FUTURE

MUSIC MASSAGE

Inventor Michael Bradford has created a strange looking machine he says uses music vibrations to alleviate stress

Called a Cotyledon the seven-foot-high jungle-gymlike module contains a platform where patients listen to relaxing synthesizer music They also *feel* the music internally According to Jerry Hampton who markets the module Transducers compress sound waves from music and move them across the air space The body receives these as vibrations which theoretically massage the muscles

Hampton claims the machine contains unique, computerized sensors "These devices read vibrational frequencies the body accepts or rejects by measuring the different electrical capacitances the auras given off by tense and relaxed muscles " he says Then the music is adjusted to individual stress levels

Hampton admits no scientific studies have confirmed just how or if the Cotyledon works But we don't claim it's a panacea It's an environment that teaches you to relax "—Sherry Baker

Access Cotyledon therapy is available in New Orleans, Indianapolis Clearwater Florida Santa Barbara California and San Diego Cost Generally $30 to $45 for 45 minutes A home model of the Cotyledon is on the drawing board Contact Jerry Hampton Discovery Marketing Systems Box 152 Noblesville IN 46060

FREEZE-DRIED CORNEAS

"The nose cone of a rocket is not unlike a cornea " notes Dr Richard S Koplin an ophthalmic microsurgeon and medical director of bioengineering at the New York Eye and Ear Infirmary in New York City The Freedom of Information Act freed up a lot of information from NASA that is of interest to us What Koplin is talking about are contact lenses made from freeze-dried corneas a procedure in which he is one of the pioneers

A donor cornea is freeze-dried and banked Later when rehydrated it is cut using NASA technology to specifications like those for a lens and sewn over the surface of the patient's own cornea

Much simpler than a cornea transplant which involves opening up the eye the procedure can be performed under a local anesthetic Because the freeze-dried cornea or lenticle is stripped of a layer of antigenic material there is no danger of rejection

The usual beneficiaries are people whose corneas have been injured by accident or by cataract surgery It's a last-ditch attempt to rehabilitate the eye without a corneal implant Koplin explains

—Judith Hooper

Access As of this writing several hundred doctors have been trained in the operation For information contact Joni Young at Allergan Medical Optics Box 25155 Santa Ana CA 92799 1-800 348-6554 (This is the company that manufactures the lenticles)

COIN-OPERATED FRENCH FRIES

New technology is making it possible for coin-operated vending machines to dispense the damnedest things not just candy and soft drinks And some even make the products they sell—right inside the machine

When you drop 75 cents or so into the new Prize Frize vending machine it busily sets to work making up and cooking a portion of French-fried potatoes And it completes the minimanufacturing process—from forming the fries themselves out of dehydrated potato concentrate to frying the extruded fries in normal heated oil (375°F)— in just 60 seconds

The machine hands you the sizzling-hot fries in a cup Stuffed into the cups hollow bottom from beneath are circular sealed packets containing salt and ketchup And the machine makes the most delicious fries boasts inventor William Bartfield as he glances at the $6 500 conglomeration of gears chains and electrical components

Observers/participants watching the machine's first public demonstration recently in Chicago tended to agree "I think the French-fry taste is very good said one man chewing on his second mouthful Yes very very nice said another "The best I've tried out of a machine

—Roger Field

Access William Bartfield Prize Frize Inc 960 East Tahquitz Way Palm Springs CA 92262

STAR TECH

BURNERLESS COOKING

A sleek black-glass four-burner induction cook top with no unsightly heating coils to offend aesthetic chefs has just been unveiled by General Electric.

One considerable advantage of this state of the art stove is that the cook top itself stays cool to the touch everywhere except directly beneath the hot pot, which sits not on a burner ring but above an invisible energized magnetic coil. Just switch it on, and the stove top sets up a magnetic field that passes through the surface to the pot. The ferrous molecules get excited and run around and heat the pot, says GE's Jeffrey Dick. In effect, the pot itself becomes the burner.

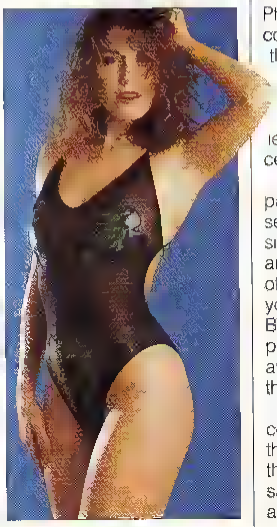
A disadvantage is that only pots and pans made of metals with magnetic properties—such as cast iron, some stainless steel, and enamelware—can be used. GE describes the cook top as very clean, very efficient, aesthetically pleasing, and techie. It comes with advanced electronic controls that regulate cooking temperatures in minute increments. Turn off the controls, and boiling milk stops boiling instantly because there is no residual heat from the coil. Try that on your dated conventional stove.—George Nobbe

Access: Available late in 1987 from authorized GE dealers at a price reportedly in excess of $1,000.

MOOD SUITS

Careful. A new bathing suit will soon be on the market that reveals more than just the extra pounds you gained last winter. Donald Spector, an inventor from Union City, New Jersey, has designed a bathing suit (at right) that changes color with the temperature of its wearer. The suit is made of thermally sensitive material that contains liquid cholesterol crystals. When the wearer's body temperature changes, the cholesterol molecules rotate, reflecting light in different patterns. That's what causes the color change. The suit can be made in any basic color, but the part of the suit affected by the change in temperature goes through a predictable spectrum of colors—from brown to green to deep blue.—Fran Lunzer

Access: Spector will be marketing the bathing suits through his New York City company, Scentronic Industries, and expects them to be generally available in department stores by the summer of 1988. Their cost will be about that of designer bathing suits, most likely less than $100.



SOLAR MAILBOX

As manufacturing technology improves, the cost of making solar cells has been dropping steadily. And now the companies that make them are looking for futuristic products that can use inexpensive solar cells.

Arco Solar has come up with a solar-powered mailbox (above). During the day, explains Bill Bottenberg, Ph.D., the sun shines on our collector, which is on top of the mailbox. The energy generated by the solar cell charges a set of batteries. Then at night those batteries power an electroluminescent display.

Driving down the road, a passing motorist would see an eerie and unusual sight—glowing green letters and numbers on the side of your mailbox spelling out your name and address. Bottenberg expects the solar-powered mailbox to be available toward the end of this year. Cost: $100 to $200.

But once solar power comes to rural mailboxes, there's no limit to the features that may be added. Those same batteries could power a remote alarm that triggers

a loud horn in your house when the mail s delivered A separate sensor could detect cars that turn into your driveway and transmit a different pattern of honks Or a microchip could play electronic music to passersby "Anything s possible" says Bottenberg —Roger Field

Access North American Marketing Box 6032 Camarillo CA 93010

BEAR SPRAY

Missoula Montana inventor Bill Pounds has perfected what he believes is the most promising means yet of repelling an uninvited bear It s an orange aerosol spray called Counter Assault whose active ingredient—capsaicin—is a derivative of cayenne pepper which Pounds says has discouraged Montana grizzlies Arctic polar bears and even the smaller Asiatic black bear a nasty customer from the forests of Hokkaido Japan

The spray comes in 14-ounce (400-gram) cans and is activated in atomized shotgun bursts at the touch of a button The chemical apparently irritates the nerve endings of a bear s eyes and nose impairing its sight and smell without any lasting damage If you happen to be surprised by a bear says Pounds "try for a direct shot in the face The inventor adds "So far we ve had five or six saves The bear just does a one-eighty and walks off rubbing his eyes"

Tests by researchers at the University of Montana s Border Grizzly Project on 150 captive bears showed the chemical worked where everything from tear gas to rock music had failed How well it works on bears in the wild is moot according to project director Charles Jonkel He and others worry the spray might give outdoorsmen a false sense of security

The product has limited government approval pending more studies and the Environmental Protection Agency has told Pounds not to claim it works on animals He hasn t But the label on the can has a real nice picture of a bear he says —George Nobbe

Access Bushwhacker Backpack and Supply Co Inc Dept FS Box 4721 Missoula MT 59806 Cans cost $29 95 breakaway holsters for belt or backpack go for $12 95

SIMULATED GOLF

Until now in densely populated golf-crazed Japan golfers had few options They had to play at night or book as long as six months in advance for a daylight tee-off time at the fancy new clubs where escalators take you from hole to hole and memberships traded like commodities can go for more than $2 5 million

All that may change next year when a company called Joytec Ltd in Saskatoon Canada starts selling its $18 000 GS 2020 a computerized indoor golf simulator (above) While it could be sold for home use—it fits in a 12 by 12-foot room with a 10-foot ceiling Joytec s Larry Machula says that it s designed primarily for hotels pro shops resorts health clubs and apartment buildings

The golfer stands on a slightly elevated artificial-turf platform Then he swings at a tethered ball on a fixed spindle as he faces a TV screen that displays first an overhead and then an eye-level view of the first hole of a real course The apparatus uses laser disks that allow you to play your choice of professional courses

The 2020 designed for two players and for either coin-operated or credit card operation will be distributed by Mu Marubeni Corporation with several thousand simulators scheduled for delivery in Japan the United States and Canada by 1988 —George Nobbe

Access Joytec Ltd 1414 Fletcher Road Saskatoon Sask Canada S7M 5M1

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STARS

CONTINUED FROM PAGE 24

University of Illinois astronomer John Dickel, when you get too many of these things up there, it becomes a terrible bookkeeping problem." He also worries about what he calls the precedent effect. "If you let one guy send something up for a week, it could be politically difficult to stop others."

And astronomer David Crawford says that he foresees runaway space art culminating in his worst nightmare: McDonald's arches flying around.

MIT's Davis agrees that space artists have the responsibility not to interfere with the work of astronomers. If anything, they should work together. By its nature, space art is a collaboration of artists, scientists and engineers. Each should be sensitive to the needs and interests of the others. In order to sell NASA on *Ruby Falls*, Davis showed his art had scientific—as well as artistic—merits.

Beyond the complaints about astronomical interference, there is a more profound question. Given the inherent beauty of a starry night, why would anyone want to change it? Davis offers this answer: "That's like someone coming up to the first cave painter and asking, 'Why do you want to paint that rock? God gave us that rock.' But art, by its very nature, is disruptive. You have to disrupt modes of the past in order to create the future."

Lowry Burgess, a colleague of Davis's at CAVS, agrees and adds, "The sky belongs to all humanity. We look up—to seek inspiration, to imagine, and to hope." His planned space work, called *The Gate into Aether Wreath of Sounding*, is a small cube designed to be carried up in the shuttle, released by an astronaut and picked up after one orbit. Inside it will be a small vacuum, water samples from the world's great rivers, and all the elements known to man. (His explanation: "It's a tiny droplet, flying free, containing everything we know—including nothing.") Burgess admits it is esoteric, but no more so than many of the scientific experiments sent aloft.

In the end it may not be the protests of astronomers or their pleas for pristine skies that keep much of the space art grounded. Since the *Challenger* accident, a tremendous backlog of missions has piled up. Once the shuttle resumes flights, primary payloads like communications satellites and military missions will have priority. Of the 900 secondary payloads which include science projects and space art, no more than a quarter will be launched. "It would be hard to give up a high-priority science payload for one like Burgess's," warns one NASA official.

In spite of the problems, the artists continue to hope. Science has done a lot of dumb things up there, argues Burgess. "They've had things that have failed and succeeded. Let the arts have a chance to do the same."

Nine! A nifty number, nein?

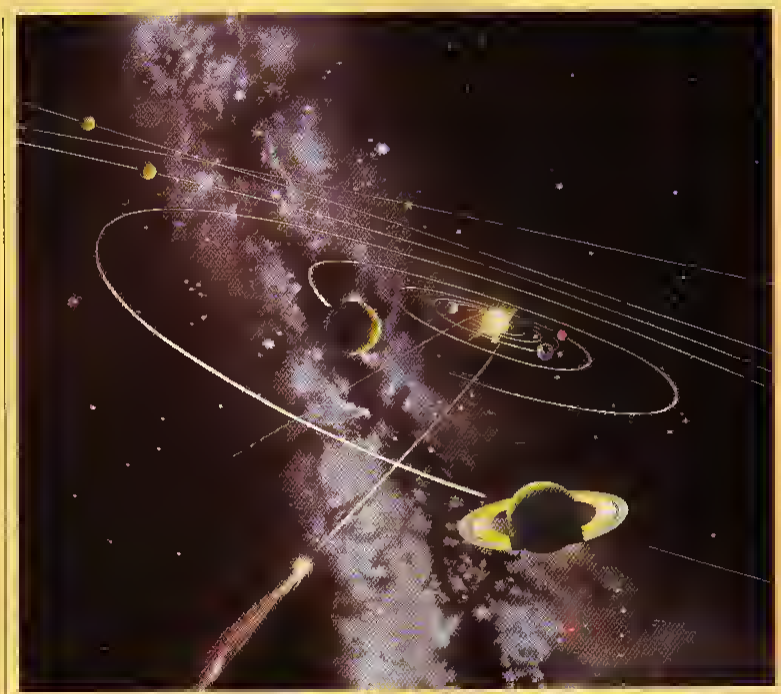
GAMES

By Scot Morris

According to numerologists each of our personal destinies is determined by our birth dates. But destinies are also influenced by our life cycles. And that cycle is computed by repeatedly adding the birth date's figures until a single digit is achieved. For example, if your birth date were January 1, 1987, you would add *1 + 1 + 1987* which equals *1989. 1 + 9 + 8 + 9 = 27, 2 + 7 = 9*.

Although mathematicians and scientists from Pythagoras to Einstein have been intrigued by numerology, today's academicians aren't impressed by the metaphysics of the so-called science. They do, however, recognize the process of reducing a number to a single digit, which they call the digital root.

Some nifty tricks can be performed using the digital root of *9*. And we patiently waited nine long years to use them in connection with our ninth anniversary.



We've got an affinity for the number 9. So does the planet Neptune. Do you know what it is?

TRICKS WITH NINE

Scramble the serial number on a dollar bill and subtract it from the original. No matter what remainder results, the digital root will be 9.

Let a friend try it, and instruct him to circle any digit except *0* in the remainder. Ask him to tell you all the other digits in any order. You can then determine the circled digits by calculating the digital root of the numbers you're given. Using the process known in mathematics as casting out nines, ignore any *9*, or any combination of *9*, such as *7* and *2*, or *5*, *3*, and *1*. Add every thing else until you have a single digit.

If that digit is *7*, the number needed to increase it to *9* is *2*. Therefore, the circled digit must be *2*. If it's *5*, then the circled digit is *4*. If the digital root is *9*, however, the circled digit is also *9*; it can't be *0* because circling *0* isn't allowed. It works because you know that the digital root of the original number will always be *9*.

Numbers expert Martin Gardner has given us several other ways to mysteriously produce a number with a digital root of *9*.

- Write any multidigit number and subtract the sum of its digits. The sum of the digits in the number *4,018*, for example, equals *13*, and *1 + 3 = 4*. *4,018 − 4 = 4,014*, and *4 + 0 + 1 + 4 = 9*.
- Write any number and multiply it by *9* or any multiple of *9*. *444 × 9 = 3,996*. *3 + 9 + 9 + 6 = 27*. *2 + 7 = 9*.
- Write any number, add two scrambled forms of it, and square the results. For example, *453 + 354 + 534 = 1,341*. *1,341² = 1,798,281*. The sum of these digits equals *36*, and *3 + 6 = 9*.
- Using a calculator keyboard or push-button telephone, choose any three-digit column, row, or diagonal and arrange the numbers in any order. Multiply the figure by a three-digit number in any other row, column, or diagonal. Example: *753 × 258 = 194,274*. *1 + 9 + 4 + 2 + 7 + 4 = 27*, and *2 + 7 = 9*. This works because the digital root of each column, row, or diagonal is a multiple of *3*. Multiplying therefore will always produce a digital root of *9*.

QUIZZICAL NINES

Using the following clues determine the answers affinity with the number *9*

1 The longest one-syllable word in the English language it contains only one vowel the letter *e* The first and last letters are *s*

2 The most common word used in phone conversations

3 The planet Neptune

4 John Henry

5 Social security numbers and full-length zip codes

6 Citizens band radio

7 Kurt Vonnegut's 1965 novel *Cat's Cradle*

8 Helps to fight tooth decay

9 A German anagram and homonym

10 *W*, *X*, and *Y*

11 (

12 A whip with knotted cords

13 A 1963 film that stars Horst Buchholz Jose Ferrer, and Robert Morley, it ends with the assassination of Mahatma Gandhi

14 A 1980 comedy about life during working hours

15 A cervine mammal with a *roseate proboscis*

16 A policeman on the corner of Thirty-fourth and Vine broke a little bottle of it

17 Pinochle

18 Dominoes

19 A game that has one in front and one in back

20 William Henry Harrison

21 An old English board game mentioned in *A Midsummer Night's Dream*

22 Pease porridge

23 An underworld river

24 The Muses

25 The Beatles

26 The celestial hierarchy and Dante's *Divine Comedy*

27 *666* and *144 000*

NINES BY THE BOOK

Jot down any three-digit number in which the first and last digits are different Reverse that number and subtract the smaller from the larger Add the remainder and its reversed form For example reverse the number *911* and subtract *119* for a remainder of *792* Now add *792* and *297*

Once you have your answer, take the first two digits and turn to that particular book in the King James Bible Use the third digit to determine the chapter Read it through stopping when you come to the word that corresponds to your fourth digit

Lo and behold You have opened to the Second Book of Samuel chapter eight which reads And after this it came to pass that David smote the Philistines The ninth word is *David*

The secret is simple When you reverse any three-digit number (in which the first and last digits are different) and subtract the two the middle digit of the remainder will always be *9* and the outside digits will add up to *9* When you reverse the digits in your answer and then add those two numbers, you are essentially adding *999* and *090* The answer will always be *1089*

The trick can actually be performed using any book a dictionary or even this issue of *Omni* You can suggest turning to page 108 line or paragraph 9 or page 10 paragraph 8, ninth word Whatever you use be sure to check it beforehand so you know what the word is

Gardner recently demonstrated a humorous variation on this trick Before he began, he wrote his prediction on a card and turned it facedown on a table When his friend finally arrived at an answer Gardner triumphantly revealed his prediction *6 801*

"What? That isn't your number?" Gardner asked dumbfoundedly "But the impressions were strong! I was *sure* that *6,801* would be your answer

After a moment longer he said, "I know what the problem is I was holding the card upside down " He turned it over and revealed his accurate prediction *1 089*

QUIZ ANSWERS

1 The word *strengths* has nine letters

2 The word *I* is also the ninth letter in the alphabet

3 Currently Pluto is closer to the sun making Neptune the ninth planet—until 1999, when Pluto's eccentric orbit will again swing outside Neptune's orbit

4 The steel-drivin' man drove a nine pound hammer

5 Each has nine digits

6 The CB emergency station is 9

7 The compound Ice Nine threatens to freeze all the world's oceans

8 Fluorine the ninth element in the periodic table

9 *Nein*

10 They appear with the number *9* on a telephone and a computer keyboard

11 Appears with the number *9* on a typewriter

12 Cat o' nine tails

13 *Nine Hours to Rama*

14 *9 to 5*

15 That's a deer with a red nose or Santa's ninth reindeer, Rudolph

16 "Love Potion #9"

17 The lowest card in a pinochle deck is a nine

18 There can be a maximum of nine dots on each half of double nine-set dominoes

19 Golf has a front nine and a back nine
An alternate answer could be ninepins the bowling game in which the pins are positioned in the shape of a diamond

20 The ninth president of the United States

21 Nine Men's Morris

22 Pease porridge hot, pease porridge cold, pease porridge in a pot nine days old

23 In Greek mythology the river Styx is said to circle Hades nine times

24 Also in Greek mythology there are nine Muses, sister goddesses presiding over the arts and sciences

25 Their composition "Revolution #9" is the fifth cut on side four of the White Album Notice that (cut) *5* + (side) *4* = *9*

26 According to the early Christians there were nine orders of angels in the celestial hierarchy forming the evolutionary ladder from humans to God Dante Alighieri used this belief in his *Divine Comedy*

27 According to the Bible's Book of Revelation, *666* is the number of the Beast, the unregenerate nature of man that wars against his higher nature In the final battle there will be 144 000 redeemed The digital root of each number is 9

DREAMS OF RIO

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Dreams of Rio is also available on cassette, recorded in digital stereo on location capturing the rich sounds of the jungles and nightclubs of Brazil. To order cassettes or a free color brochure, call Toll Free 1-800-662-3345.

Production was made possible through grants from the Corporation for Public Broadcasting, NPR's Satellite Program Development Fund, the New York State Council on the Arts, the National Endowment for the Arts and KCRW/Santa Monica. Support was also provided by Pan American World Airways, Embratur, Brazilian Tourism Authority, Varig Airlines, Vivitar and Omni Magazine.

Another ZBS Production

NEW AGE

CONTINUED FROM PAGE 85

Fundamentalism not only a literal understanding of sacred mythology but a therapeutic view of religion a belief in its immediate power to produce health and peace of mind It is no accident that miracle cures and faith healing figure so prominently in both For the Fundamentalist there is nothing indirect or problematic about the way Jesus saves He cures whatever ails you New Age people likewise tend to equate salvation with feeling good—about yourself in the New Age version In its most rudimentary form the New Age enthusiasm belongs to the current health craze and appeals to its followers not as an offbeat theology at all but as an offbeat branch of holistic medicine

As such it generates a public debate about the relative merits of alternative medicine and more orthodox medical practices—hardly the most interesting question that could be raised about the state of our society's soul The question is not whether New Age therapies really work but whether religion ought to be reduced to therapy If it offers nothing more than a spiritual high religion becomes another drug in a drug ridden society Instead of objecting that New Age therapies promise more than they can deliver we might better accuse them of promising too little A religion that holds out only the possibility of getting high naturally (as a recent issue of *The Healer* puts it) invites the predictable scorn of those who regard religion of any kind as the opiate of the people

As a degenerate form of an ancient tradition the New Age movement provokes criticism not only from scoffers and skeptics but even from the high priests of modern Gnosticism In *The Cosmic Trigger* Wilson speaks of himself as an "agnostic (as religious people often do) and condemns the socially nefarious leagues of self proclaimed gurus and their equally deluded disciples who have established new fanaticisms snobberies dogmas and cults around their delusions Marilyn Ferguson whose *Aquarian Conspiracy* helped to launch the New Age seven years ago says Mediumship is an interesting phenomenon but it is not necessarily always what it purports to be Many people have underestimated the richness of the unconscious Ken Wilber condemns the whole project of spiritual seeking together with the notion that higher states of awareness can be achieved only in a trance What is important he thinks is to grasp the oneness of being not to make contact with the spirit world or even to achieve what is falsely called heightened consciousness 'You cannot train yourself to enter that state of consciousness which you have never left and which includes all possible states of consciousness Da Free John himself the master of a sect known simply as the Way dismisses cults and sects as expressions of an arrested spiritual development Countless silly people think they are Enlightened when at best they feel good today That mediocre sense of pleasure is not Enlightenment'

The idea that religious experience can best be described as a condition of enlightenment is open to objection in its own right not least because it leads so easily to the conclusion that truth remains a body of secret mysteries accessible only to the initiated The historic quarrel between Christianity and Gnosticism hinges in part on this very issue—the difference between knowledge and faith esoteric mysteries and a revelation accessible to all Both traditions agree however in their contempt for the true believer the individual for whom dogma serves to close off new avenues of experience This religious critique of religiosity cuts more deeply than commonplace skepticism which cannot distinguish between faith and dogma knowledge and belief Skepticism rejects superstitions about the supernatural world only to embrace equally superstitious beliefs in science, technological progress or a coming political utopia The only corrective to the ersatz religions of the New Age is a return to the real thing ∞

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LAST WORD

By Joe Fodor

"I weighed my options. I could turn him in to the AMA and screw up a perfectly good golf foursome, or I could play his little game. Bend like a reed in the wind. I bend."

Ethics. That's my game. Biomedical ethics. Doctors come to yours truly, and I sweat out the tough decisions for them. Like the other day.

Before me sobbed an inconsolable chief of surgery, Dr. Blackhead. He was a gentlemanly sort of guy and one of the best scalpel boys in the business.

"What's up, Doc?" I wisecracked.

"I need your ethical services, Dr. Fodor."

"Sure thing." I said, deftly filling two tumblers full of scotch from the bottle I keep in my drawer. I gave him one. He gulped it down in one swallow.

"It's about this female patient. Gallstones. A wealthy widow."

"Skip the social history, Doc. Just get to the point."

"Anyway, she asked me if she should have her gallbladder out. She left the decision up to me. She doesn't really need the operation, but —he hesitated and stared down at the floor— "I need the cash. I'm behind in the payments on my sailboat. What should I do?"

I weighed my options. I could turn him in to the AMA and screw up a perfectly good golf foursome, or I could play his little game. Bend like a reed in the wind. I bend. "Cut her."

"Oh, thank you. Thank you. Thank you, Dr. Fodor," he said, wringing my hand. I turned away, too embarrassed to look at him, and stared at my collected works of Aristotle. Now Blackhead owed me one.

I'm the legman for the new bioethics. I do the thinking. The docs do the cutting, guilt free, leaving me with lots of heartache and sleepless nights.

Don't get me wrong. I'm not complaining. I get plenty for my trouble. Not only am I the highest-paid ethics counselor in the nation, but I am the highest-paid philosopher in history. Period.

These days most big hospitals have some sort of resident wise guy. For my money most of them are strictly small-time. They say I know nothing about Plato. Can't even spell *Wittgenstein*.

Maybe so. But I know what I like, and while they are drafting position papers on brain death, I'm hanging out at one of my two (count 'em, two) vacation homes in the Bahamas.

Sometimes the game gets rough. Like at last year's bioethics conference, when I was accused of being "a disgusting apologist for the sickest motives and desires in the medical profession."

I was stunned but not down. I came back with "When a tree falls in the wilderness and nobody is around, does it make a sound?" It's the old trick of throwing philosophical sand in their eyes. Then, while they're still struggling with that, I hit them with my haymaker, the old "Could God make a rock heavier than He could lift?" Dirty fighting? Maybe. But I play for keeps.

Most of my day is filled with routine stuff. Nickel and dime cases. Question: Should we pull the plug on Mrs. F? Answer: "Not as long as she's got insurance. Why kill the goose that laid the golden egg?"

Question: Should we tell Mr. L he has a sponge in his guts left over from his appendicitis operation? Answer: I say not. There's no use crying over spilt milk.

Every now and then I get a tough case. Gets me so steamed I almost tear out my hair transplants.

Here's the caper. Hospital had this surrogate-mother deal. At first everything was fine. Everyone as cozy as a shot and a beer. I okayed the job. Mr. and Mrs. X conceive a child in a test tube. One bouncing baby zygote gets implanted in Mrs. Y. Going to carry the Xes' kid to full term and give it to Mr. and Mrs. X. End of fairy tale.

But there's a problem. When the babe gets born, Mrs. Y wants to keep it. Mr. and Mrs. X nix the idea. They still got their receipt. Smart.

So it's my problem. I say to myself. *What now, wise guy?*

This was a tough one. Sent me back to the books. I try Plato; he's got nothing for me. Aristotle? Seems to have had no interest in neonatal technology. Schopenhauer? No dice. Then I find the answer in the Old Testament.

I call all three people into my office. They look nervous. Real nervous. "I got the answer," I tell them. I pull out a sword. "I'm going to cut the baby in half and give each of you a portion."

They look shocked. They talk. They agree it's a good idea. I put the baby on the desk and raise the sword. "Wait!" screams Mrs. Y.

I knew it would work.

"I want the part with the head!"

I tell her I'm not that good a surgeon. Besides, I'm worried I might nick my desk. I bag the whole idea. I got a real problem. My tee-off time was only 30 minutes away, and the three wouldn't leave my office until I came up with something.

I reach into my desk and pull out a deck of cards. "Cut the deck," I say, handing it to Mr. X. "We're going to play a little game I learned when I was in philosophy school. Seven-card stud. No peek. Baby in the middle."

In a few minutes I had won custody of the child and pocketed a couple of hundred simoleons from Mr. X. These people played like chumps.

Last hand. I called, looking at my watch. "Ante up."

"But we don't have anything to play with!" Mr. X complained.

"Five-card draw," I said, ignoring him. "Jacks are wild. This is for the publishing rights to the story." I knew if I played my cards right I could get a piece of the made-for-TV movie. I was right.

Next Tuesday night at nine. Check your local listings. ∞

Joe Fodor is a deep thinker who lives in Thomas Aquinas's old apartment.