

# HARVARD

## MAGAZINE

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### ON THE COVER

Society often sees quiet, shy people as phlegmatic. In fact, they may have a *stronger* than normal response to novelty. They are more, not less, vigilant than others. Jerome Kagan believes their brain chemistry is different, too. The illustration is by Susan Avishai.

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His own research has persuaded child psychologist Jerome Kagan that the clue to extreme shyness and gregariousness lies in brain chemistry and genes. *Ruth Mehrrens Galvin.*

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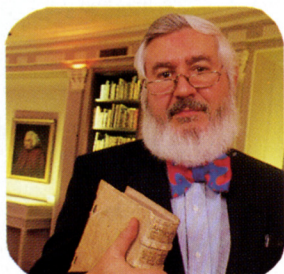
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CENTER FOR UFO STUDIES. INSET: COURTESY OF DEBRA TOMKEY

## “An Authentic Mystery”

One telling scene occurred in the New York office of Budd Hopkins, a researcher into alien abduction cases—incidents in which people report being kidnapped by alien beings, taken into spacecraft, and eventually returned to their point of origin, often after undergoing disturbing medical or sexual explorations. A woman from Indiana was narrating her own abduction for Hopkins; when he showed her a drawing of an alien’s face, she asked how he had obtained so accurate a picture of her captors. His reply was that the drawing was not of *her* captors but had been made by another abductee in North Carolina. At this revelation, “she freaked out,” says Cambridge Hospital’s John Mack, professor of psychiatry. “She could no longer explain her experience as something her mind had created.”

In a way, the psychiatric profession finds itself in a similar quandary when

faced with the strange phenomenon of alien abduction. The bizarre happenings reported by *experiencers*—another term for abductees—are severely traumatic and often come complete with physical scars, cuts, scoop marks, or “implants” in the experiencers’ bodies. Yet no theory that jibes with our current understanding of the universe can explain these occurrences. Mack is one of the first psychiatrists to take such reports seriously; over the past two years he has interviewed 36 experiencers and worked with several of them in a continuing way. He flatly states that “there is no psychiatric explanation for this phenomenon. It is an authentic mystery.”

The anomalies are many, and there are many reasons why the cases cannot easily be dismissed as delusions, dreams, media-guided fantasies, or the hallucinatory products of disturbed minds. Perhaps the most crucial unset-

*One of many photographs taken of UFOs that appeared on the nights of December 20-21 and December 30-31, 1978, near Clarence River, New Zealand. Among the observers was a TV news crew that filmed UFOs tracked via radar. (Inset) A drawing of an alien by an abductee.*

ting element is the uniform structure of the abduction experience itself. As Mack writes in his foreword to *Secret Life*, a forthcoming book on the topic by Temple University historian David Jacobs, abductees describe “a pattern that is consistent, even in minute details, among individuals who have had no opportunity to communicate their experiences to one another, including specific elements that are not available in the mass media.”

For example, Julia, one of Mack’s abductee clients, is a woman in her late thirties who has had multiple abduction experiences, beginning when she was eighteen years old. A typical abduction began when 3½-foot-tall visitors arrived while she was sleeping and took her onto their spacecraft. They communi-

cated with Julia via telepathy. The small beings had grayish-white skin, inverted pear-shaped heads, and large bug eyes without irises. The aliens forced Julia to relinquish an embryo, apparently a hybrid human-alien fetus conceived during a previous abduction, and showed her a nursery of such hybrids aboard the spacecraft.

"At the heart of the abduction process there appears to be some sort of complex reproductive enterprise involving the conception, gestation, or incubation of human or alien-human hybrid babies," Mack writes in his foreword. "In Jacobs's words, 'the focus of the abduction is the production of children.'"

In general the abduction stories emerge only with difficulty and accompanied by strong and distressing emotions. Experiencers have often thoroughly repressed their memories of the events. They may only remember a mysterious block of "missing time," whose recall brings up troubling feelings and images. The 1961 abduction case of a New Hampshire couple, Barney and Betty Hill, for example, occurred on a September night when they could not account for two hours lost on their return journey from a holiday in Montreal. Much abduction research uses hypnosis to facilitate memory of the actual events, and Mack learned hypnosis after becoming involved in this work two years ago.

On the upside, many abductees have found some positive element in their encounters; in particular, the alien captors seem frequently to provide multimedia, quasi-educational experiences that dramatically raise the abductees' ecological and planetary awareness.

Mack, who leads a monthly support group for abductees, has found nothing in the experiencers' lives or mental makeups to justify an explanation based on psychopathology. Recently he has worked as a consultant with CBS-TV, which this May will air a four-hour miniseries concerning the struggles of an urban psychiatrist treating alien abduction cases.

"The traumatic nature of the memories persuades me that these people aren't concocting this for some psychodynamic purpose, or one involving sec-



CHRISTOPHER S. JOHNSON

*Fakhri Bazzaz in his greenhouse. The foreground plant is a robust specimen of *Cecropia obtusifolia*, three months old and already about four feet tall. This tropical species springs into growth very soon after land is burned or clear cut.*

ondary gains. Even a neurosis serves you better than this—there's no payoff," he says. "I don't know of any trauma like this—which includes intense fear, residual suspiciousness, nightmares—that arises entirely from within the psyche. Trauma by its nature arises from a relationship between the outside world and the self." —Craig Lambert

## Future Atmospheres

If you consider corn a humble and even humdrum vegetable, consider the future. In our potentially carbon dioxide-rich atmosphere of tomorrow, corn may become the luxury delicacy of the privileged. That idea is perhaps far-fetched, but if one were to extrapolate from the work of Timken professor of science Fakhri Bazzaz, the world becomes a very different place.

Bazzaz was originally interested in the effect on plant life when carbon dioxide ( $\text{CO}_2$ ), a primary component of photosynthesis, was present in increased quantities. It has been scientifically recorded that ambient  $\text{CO}_2$  in the earth's atmosphere has increased from about 280 parts per million (ppm) of air before the Industrial Revolution to its current 352 ppm, and that there has been a 20 percent increase since 1957.

Using the  $\text{CO}_2$ -controlled chambers and compartments in Harvard's specially designed glass houses, Bazzaz has spent years growing plants, plant communi-

ties, and replicas of ecosystems in varied concentrations of  $\text{CO}_2$ . At 700 ppm, or double the current concentration, humans cannot detect a difference in the air and can breathe and function normally. The plants, however, know the difference.

In photosynthesis, plants take  $\text{CO}_2$  from the air, water from the soil, and with sunlight's energy, turn soil nutrients like nitrogen and phosphorus into green leaves and other structures. When plants encounter increased amounts of  $\text{CO}_2$ , photosynthesis actually speeds up. At first glance, this looks like a good thing—increased growth with a natural ingredient.

Upon closer inspection, such as the chemical analysis of plants that Bazzaz carries out, the rosy picture of the " $\text{CO}_2$  fertilization effect" fades. Bazzaz has found this effect is most notable in plants grown in isolation from their ecosystem, and in the presence of abundant water and "food." Bazzaz's work with plant communities shows that while plants will suck up extra  $\text{CO}_2$ , growing unusually fast and large, they don't incorporate in their tissues the normal proportions of nitrogen, phosphorus, and other minerals crucial to plant health. This is more pronounced in some species than in others.

The tropical grasses, including our familiar corn, and plants with similar metabolisms, the so-called  $\text{C}_4$  species, tend to fare worse in excess  $\text{CO}_2$  than