

Technology

A new choo-choo

Futuristic visions of magnetically levitated trains that soar at 300 miles per hour on supercooled, superconducting rails have captured the imagination of the scientific community and, sporadically, the public.

Yet these utopian trains run up against two real-life barriers: cost and practicality.

Given the present state of the art of superconductors, decades will probably pass before trains move large numbers of people on frictionless, magnetic cushions. Among other obstacles, levitated trains would have to run on an entirely rebuilt rail infrastructure—costing many billions of dollars.

However, Barry M. Marder, a physicist at Sandia National Laboratories in Albuquerque, and his colleagues have proposed a practical solution that would make high-speed magnetic trains feasible now. Adapting a magnetic propulsion system originally designed for the Strategic Defense Initiative to send objects into space, they have designed a magnetically propelled train that can run on existing U.S. tracks.

Called Seraphim—for segmented rail phased induction motor—the new trains would roll on nonmotorized wheels moved along by specially designed magnetic coils. Each train would carry 20 to 30 such induction coils, powered by an onboard gas turbine. Electric pulses through the coils would propel the train by creating forces that push against a series of aluminum plates bolted across tracks, like the rungs of a ladder.

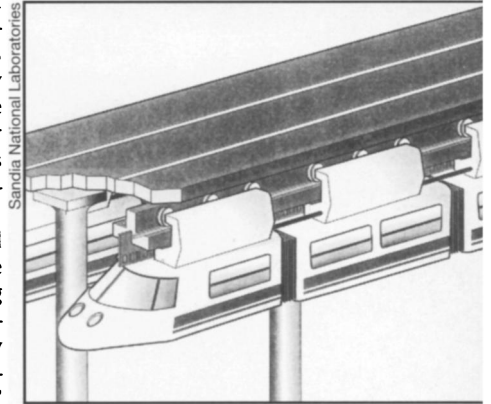
Engineers could build the new system for only one-quarter the cost of magnetically levitated trains, the scientists estimate. Preassembled ladderlike trellises could be attached to existing tracks, permitting the new, lightweight magnetic trains to zip along at speeds up to 125 miles per hour.

Since the researchers originally designed the linear induction motors to accelerate objects at extremely high velocities—up to 6 kilometers per second—speeds of 200 to 300 miles per hour would come easily. At present, the U.S. rail system's old tracks limit speed. If upgraded incrementally, with proper alignment, reinforcement, and safety features added, they could permit trains to soar swiftly along, says Marder.

To show that the system works, the scientists have built a 2-foot-tall model of a Seraphim system that can accelerate an aluminum plate to 34 miles per hour in only 12 feet.

"It's an interesting idea," says Britto R. Rajkumar, an engineer at the Association of American Railroads in Pueblo, Colo., who wants to test the Seraphim system on a train car. "Magnetically levitated trains sound nifty, but you really don't need to levitate trains to go 300 miles per hour," Marder says. "It's easier to move them magnetically on wheels."

"This technology will probably prove to be superior to what's being built in Japan and Germany, but they're already committed." The new system "is ready to go," Marder adds, "whenever people want it."



The proposed Seraphim train could be adapted to run on existing tracks.

One might expect that a "scientific conference" devoted to people who have reported being kidnapped by "little green men" would be dismissed out of hand. But the conference was to be held at the Massachusetts Institute of Technology and would have as its chairmen a Pulitzer Prize-winning Harvard psychiatry professor and a professor of physics from M.I.T.

C.D.B. Bryan attended the conference throughout its five days. He approached the subject with no prior stand, no agenda, and an open (if slightly skeptical) mind.

As the conference progressed, he was astonished by the quality of the stories told by the hundreds of men and women who came forward hesitantly and reluctantly with their utterly amazing—and utterly convincing—accounts of having been abducted.

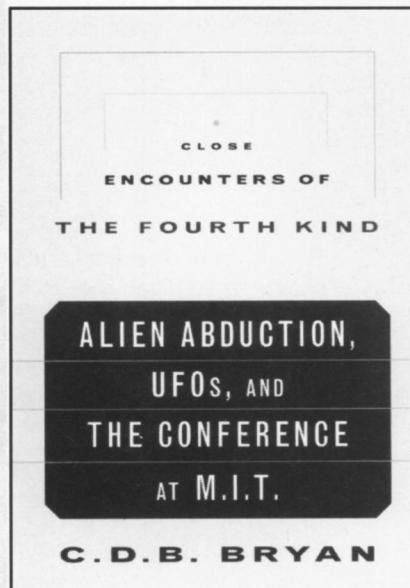
What most astonished Bryan were the similarities found again and again in these accounts and the consistency of their details. As the Harvard professor John E. Mack asked at the conference, "If what these abductees are saying isn't happening to them, then what is?"

This question—and the possible answers—are at the center of this richly explicit, serious, and riveting book.

Bryan re-creates the conference. He interviews ufology's most prominent psychiatrists, psychologists, hypnotherapists, researchers, physicists, physicians, and folklorists. He interweaves throughout the testimony of the abductees themselves, who tell us their stories in chilling detail.

Close Encounters of the Fourth Kind is a detailed, objective exploration—the most concrete to date—of one of the enduring amazing mysteries of our time. It is a book that will equally fascinate believers and nonbelievers

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