

I protest the glaring anti-USSR stance represented by the cover of the July 14 edition of SCIENCE NEWS. After all, it is the USA that has refused to take a "no first strike" position. It is our own Department of "Defense" that says it wants to have the USSR (and the world) feel that we could launch a preemptive strike!...

Karl A. Grossenbacher
President, California Gray Panthers
Richmond, Calif.

The conclusion of Janet Raloff's excellent pair of articles on the potential of beam weapons highlighted several objections to their development for ballistic missile defense (BMD). We should also consider the Soviet response to an American BMD system. Any given system can destroy only a limited number of attacking ICBMs. Therefore we must worry that if it will cost the Soviets less to produce additional missiles than what it will cost us to enlarge our BMD system correspondingly, then the Soviets need only build more and more ICBMs to maintain their ability to overwhelm our BMD.

Is it likely that Soviet offense will have such a cost advantage over American defense? Based on the experience of astronomers in designing and building a number of telescopes for use in space, we may estimate that the cost of the still larger optical systems envisioned for the laser BMD stations will be greater at least in proportion to the diameter of their primary mirrors. This estimate provides a lower limit on the cost of a BMD station fully equipped with a high-power laser and a high-speed pointing control system. This limit suggests that it will cost at least 10 times as much to destroy an ICBM as to

add one to an offensive arsenal.

This tentative conclusion demonstrates the need for obtaining more precise estimates of the marginal cost of BMD by means of lasers or particle beams before we head down the road to a BMD system. At this point we should be aware that the development of a BMD capability might create irresistible pressure for accelerating the arms race both in expenditures and in sheer numbers of missiles. This open-ended arms race would place the world in a state that is less stable, less predictable and less secure than ever before.

Michael Ratner
David Spergel
Cambridge, Mass.

Re "Beam Weapons": Maybe I'm missing something in this argument ... or maybe the DOD is. Before we spend a quarter of a trillion dollars on satellite defensive weaponry, I would like to know what possible defense there could be against a mass of small metallic bits—essentially a "bucket of nails"—launched in a counter orbit at the same height as our would-be missile-killers. Not only would these collide with the beam weapons at a speed of 35,000 mph, they would do so twice every orbit. The Fletcher panel says that "there appeared to be no Soviet countermeasure for which there wasn't an effective counter-countermeasure." Well, gentlemen? I'm listening...

Russell Madden
Iowa City, Iowa

Before I agree to spend \$500 billion and further increase our unbelievable National

Debt, I want someone in the Defense Department, preferably with a high school course in physics, to answer the following question: If mirrors must be used to focus the lasers, what's to prevent the Russians from having a mirrored surface on their missiles?

Do we have a plan B, where we send in CIA men with spraycans of flat black paint, just before launch?

Mat Boissevain
Los Altos Hills, Calif.

Indeed, there has been concern expressed among weapons analysts and designers about whether a highly polished finish might grant a missile some degree of immunity to damage from lasers by allowing its mirror-like surface to deflect much of a beam's energy instead of absorbing it. There have also been questions raised about the potential risk of attempting to rely on a missile's reflectivity as protection against lasers. Explains Herbert Flicker of Los Alamos National Laboratory, "To have a polished aluminum surface and maintain it polished is difficult because aluminum oxide grows [on it] naturally." Moreover, he says, "If you launch this through the atmosphere, it's likely to get degraded even if it was recently polished," owing to potential abrasion from atmospheric dust and other materials. In any case, the reflectivity issue is among factors pushing laser-weapon designers to focus on development of shorter-wavelength devices. — J. Raloff

Correction: In "Microwaves: Hints of low-dose hazards" (SN: 8/18/84, p. 103), the immune-response data were collected from animals sacrificed 13 months into the 25-month-long study, not after only 3 months, as stated.

The long-awaited, absolutely essential book for all dinosaur owners—and all those who want to be!

This delightfully illustrated book provides everything you need in order to provide the proper care for a pet dinosaur—where to keep it, what to feed it, and even how your pet might earn its keep.

Complete, detailed descriptions make it easy to pick the pet that's best for you:

- **Euparkeria:** For the beginner or the experienced reptile-keeper, the classic first step on the road to dinosaur-keeping. Warm-blooded, active, small, manageable, and easily fed on scraps.
- **Archaeopteryx:** Easily kept, fed, and bred, there is an *Archaeopteryx* for every occasion. Perfect for the bird-lover.
- **Ornitholestes:** Eminently suitable for the apprehension of suspected malefactors. Just right for the small-town police force.
- **Stegosaurus:** Difficult, delicate, and spectacular. Though not for the private individual, it's great for the well-appointed zoo.

Science News Book Order Service

1719 N St., NW, Washington, DC 20036

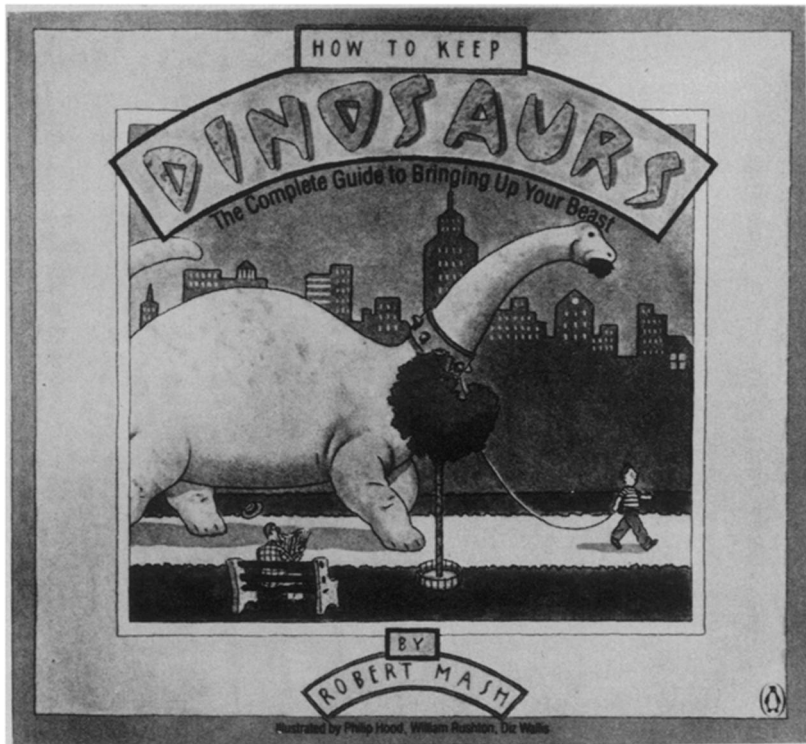
Please send _____ copy(ies) of *How to Keep Dinosaurs*. I include a check payable to Science News Book Order Service for \$5.95 plus \$1.00 handling (total \$6.95) for each copy. Domestic orders only.

Name _____

Address _____

City _____ State _____ Zip _____

RB259



Penguin, 1983, 72 pages, 8½ × 7⅞", paper, \$5.95