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Cover: The brightly striped zebra fish is popular among aquarium owners. Developmental biologists have also become fans of the small fish. By deliberately mutating genes in the sperm of zebra fish, these researchers hope to discover the genes needed for a vertebrate embryo to develop. (Adapted from: University of Oregon)

- 364 The Splintered Universe

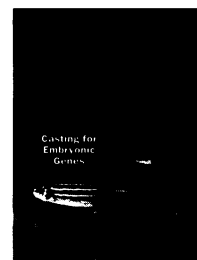
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## Letters

### Pumping water closer to home

I am perplexed by one of the techniques that government officials are reportedly considering to improve the health of the Colorado River ecosystem ("Healing Water," SN: 9/21/96, p. 188).

Why would officials pump warm water hundreds of miles upstream (and either through or around the Grand Canyon) from Lake Mead when warm surface water from Lake Powell is located so much closer to where it's needed?

Peter A. Flax  
Norwalk, Conn.

That was our mistake, not theirs. Water would indeed come from Lake Powell. —T. Adler

I am the engineer who did the fundamental research on the aeration slots at all of the Bureau of Reclamation dams, including Glen

Canyon and Hoover. Therefore, I am a little sensitive to statements that are not 100 percent accurate.

The flows released in 1983 and 1984 dwarf the recent discharges from Glen Canyon. Those earlier flows exceeded 40,000 cubic feet per second (cfs) for over 50 days! During that time, the peak flow reached 92,600 cfs. The maximum spillway flow was 20,000 cfs.

Following repair of the spillways and the installation of an aeration slot, the spillways were tested to a flow of 50,000 cfs. The purpose of the aeration slot is to prevent damage from cavitation. We discovered that they worked perfectly. Therefore, the comment by Mr. Valdez that large floods could damage the dam walls is completely wrong.

Henry T. Falvey  
Conifer, Colo.

Valdez was referring to floods much larger than 50,000 cfs, for which the dams haven't been tested. —T. Adler

### Third route to invisibility

David Peters writes that there are only two ways to attain invisibility (the H.G. Wells, or biochemical method, and the Star Trek, or energy-refraction method), neither of which would cast a shadow (Letters, SN: 10/5/96, p. 211).

At least one other technique exists, however, which I expect was the one Leonard Rome had in mind in the "What's in the Vault?" article (SN: 7/27/96, p. 56): the wearing of a Ring of Power, as reported by Professor J.R.R. Tolkien of Oxford University. The shadow created by the wearer of such a ring was explicitly documented in both descriptive and experimental contexts.

It is regrettable that the physics behind this phenomenon didn't get sufficient explanation, but then, Star Trek and H.G. Wells didn't explain theirs very well, either.

And anyway, those are both fictional.

Philip B. Sturmfels  
St. Louis, Mo.