blades, or the interior wall of a pipe) does not assert that "the fluid's average velocity in the boundary layer increases linearly with the logarithm of the distance from the boundary," as Cipra states. The law of the wall is well stated by Donald Coles (*2*): "Prandtl and von Kármán observed that the mean-velocity profile for turbulent shear flow in close proximity to a wall could be written in a form which has become known as the law of the wall; $u/u_\tau = f(yu_\tau/\nu)$ where $u_\tau = \sqrt{(\tau_w/\rho)}$." In this equation, u is the local mean velocity component parallel to the wall, τ_w is the mean wall shear stress, ρ is density, y is the distance normal to the wall, and ν is the kinematic viscosity. The law does not state what the function f is. Here u/u_τ and yu_τ/ν are the coordinates of the figure in the Research News article.

As its name implies, the law applies only "in close proximity to a wall." This means the region where the stress is effectively constant, which confines the law to the inner 10 to 15% of the boundary layer. A different law, sometimes called the law of the wake, applies to the outer 85% of the layer.

Barenblatt and Chorin also appear to misapply the law of the wall to the region far from the wall. All of those "little hooks" on the figure in the article are in the 85% of the boundary layer where the law of the wall was never meant to apply. In the constant stress region, the law of the wall fits 60 years of good data very well over an extraordinary range of Reynolds number and has proved useful in applications ranging from wing design to pesticide dispersal.

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I wish to express my disappointment that Cipra's article could appear in *Science*. It is best described as extravagant advertising of unconfirmed ideas. Howlers such as measuring the slope of the deviation function instead of that of the log law of the wall and concluding that the classical theory is in error by 65% is something even my undergraduate students would find hard to believe.

How could such claims be made and entertained before the release of the Princeton "Superpipe" data, which could be used to test the theory? If the sketch representing the Superpipe data shown in the article is accurate, then it seems to me to be the most convincing confirmation of the classical theory so far produced. A long log law is apparent, with systematic peel-offs of the deviation (or wake function), which has a shape that remains the same as it moves up the log line with increasing Reynolds number, thus confirming the Reynolds number invariance of the velocity-defect law at high Reynolds number. This picture alone would put smiles on the faces of Karman, Prandtl, Izakson, and Millikan, the founders of the classical theory.

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California Civil Rights: Stealth Clause

The description of the so-called California Civil Rights Initiative in Marcia Barinaga's article "Backlash strikes at affirmative action program" ("Maintaining diversity in science," 29 Mar., p. 1908) does not mention a "stealth clause" (section c) that drastically dilutes protection against discrimina-

tion by gender. Discrimination against women and girls would be permitted if "reasonably necessary to the normal operation of public employment, public education or public contracting." Such discrimination is currently legal only if related to some compelling public purpose, which is a much more stringent criterion. Math programs aimed at girls and counseling, outreach, and support programs aimed at college women, not to mention recruitment and support in the workplace, could all disappear.

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Streetcar Theory and Long-Term Evolution

In his Research News article (8 Mar., p. 1365), Nigel Williams discusses a new theory that I have called "the streetcar theory of evolution." The development of this theory was initiated by Eshel and Feldman (*1*) and Lessard (*2*), who demonstrated mathematically that genetic constraints can be overcome in phenotypic evolution if a rich variety of new mutant alleles is taken into consideration. Their ingenious papers influenced Matessi, Liberman, Weissing, and others to elaborate on the new idea. Eshel (*3*) realized the main conclusion from this body of work, namely, that the theory of long-term evolution supports the concept of phenotypic optimization. He also stated that this theory supports the concept of an evolutionarily stable strategy (ESS).

When I wrote a survey on evolutionary game theory together with Selten in 1994 (*4*), we were deeply impressed with Eshel's thoughts and intended to cite his work without any addition as a cornerstone of ESS theory. However, we found some mathematical and conceptual problems with the interface between his theory of long-term evolution and the theory of ESSs. This caused us to think about the adjustments needed to close the remaining gap. In my 1996 paper (*5*), I describe the outcome of this theoretical investigation, which shows that the original idea by Eshel, Feldman, and Lessard does indeed apply to evolutionary game theory. I also make an attempt to express with great clarity the essence and biological relevance of the mathematical theory under discussion. This led me to introduce the streetcar metaphor and to describe two central results of this theory as the characterization of a "final stop of the streetcar."

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Letters to the Editor

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