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## This Week

- 212 AIDS: New Viruses to Fill in the Blanks
- 212 Child health: Prospects looking good
- 213 Barnyard biotech: Dissent on the farm
- 213 Conditioning stirs 'synaptic memory'
- 214 How to form large planets
- 214 Venus's volcanism: Present or past?
- 215 Has DOD exaggerated SDI's promise?
- 215 Waiting for the Poincaré proof

## Research Notes

- 216 Biology
- 216 Biotechnology
- 217 Physics
- 217 Technology

## Articles

- 220 The Troubled State of Calculus

Cover: Introductory college calculus is leaving a lot of students behind. Many fail the course and, as a result of their painful experiences with calculus, learn to hate or fear mathematics. Now a small group of mathematics professors, encouraged by other university faculty members, is trying to change what is taught in beginning calculus and the way it is taught. (Cartoon: Sidney Harris)



## Departments

- 210 Books
- 211 Letters
- 218 Off the Beat

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## Letters

### Our learned leaders

"Knowing little about how things work" (SN: 2/22/86, p. 118) may well touch on one of the most fundamental *problems* (not merely symptoms of problems) of our time. We live by our wits—that is, by using an understanding of the anatomy of the things around us, both tangible and intangible. The better and more complete our understanding, the better we live, assuming we use the understanding.

One sidelight to this problem is the incredibly poor level of practical and theoretical understanding of basic technology by the people who staff the mass media. They are, in fact, the real "postgraduate" teachers and researchers for all of us. I suggest you poll a cross section of ordinary radio/TV/newspaper journalists to see if this situation is widespread. After that, you might check the knowledge base of lawyers, politicians, theologians and any other groups from which we draw our "leaders."

One of the most important qualities of leadership is the ability to learn "how things work" and then to turn around and teach it to fol-

lowers. I suspect you will find that we have been drawing our "leaders" from groups of people who are largely "whip-crackers" (skilled at being assertive) rather than those skilled in learning and teaching "how things work."

Harry L. Andrews  
Boone, Iowa

"The biggest problem is not hostility to science, but that people deal with it as if it were magic," it says in the article.

Almost 20 years ago, I was stuck in a Denver hotel room on a Saturday morning. I flipped on the TV and became aware of what my children and countless others were being taught: science presented as magic on the Saturday morning cartoons. The situation has not changed. The good guys and the bad guys in Future World or Galaxy Far Away are capable of accomplishing absolutely anything as long as they are masters of SCIENCE and TECHNOLOGY. Of course, the constraints of physical laws are never considered and indeed are probably not known to whomever it is who makes those cartoons. The makers and ul-

timately the viewers can only think of science as magic. After a generation of this (and many similar things in other media), along with the message that the scientist who conceives it all is some kind of egg-headed madman far too eccentric for anyone under 20 to relate to, why are we surprised that the public views science as magic?

Frank B. Salisbury  
Logan, Utah

### Bear trap?

Electrical engineer Richard Grojean ("Solar bear technology," SN: 3/8/86, p. 153) has been trying to spread an attractive myth: Polar bears are black in the ultraviolet because their hairs are "designed to trap ultraviolet light." I suggest that a more prosaic explanation is available: Hair, like any protein, becomes more absorbing in the ultraviolet.

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APRIL 5, 1986

211