



*A venomous African Bush Viper flicks its forked tongue, picking up chemical particles in the air.*

particles then are somehow delivered to two tiny, bulb-shaped structures—the vomeronasal organs—that lie side by side in the snake's snout, just above the roof of the mouth. Some German researchers "suggested that the slender tips of the forked tongue must be inserted into the openings of the [vomeronasal organs], delivering scent particles directly." This hypothesis eventually became dogma and can still be found in some textbooks. But the evidence contradicts it. Snakes can deliver chemical particles to the vomeronasal organs even after their tongue tips are surgically removed. Pads on the floor of the mouth probably make the delivery.

So *what* is the function of the double tongue? Scientists in recent years have found the answer: it is used to follow scent trails. By spreading the tongue tips far apart as they touch the ground, snakes (and fork-tongued lizards) are able to sample scent particles from two different points; they then can compare the strength of the chemicals on each side and follow the stronger scent. This ability is especially useful for following pheromone trails left by prey or potential mates. For both venomous and nonvenomous snakes, Schwenk says, the forked tongue is vitally important: "In many ways, the tongue and the tremendously sensitive vomeronasal system it serves are the essence of being a snake."

## PC Science

"Science by Quota" by Sally L. Satel, in *The New Republic* (Feb. 27, 1995), 1220 19th St. N.W., Washington, D.C. 20036.

In a 1993 measure that President Clinton signed into law, Congress required the National Institutes of Health (NIH) to develop guidelines to ensure that women and minorities are included as subjects in clinical research. "The seemingly laudable goal is to compensate for years of actual and perceived underrepresentation," says Satel, a professor of psychiatry at the Yale University School of Medicine, but the likely result will be fewer medical breakthroughs.

"Wholesale inclusion of minority groups, defined as black, Hispanic, Asian/Pacific Islander, and American Indian/Alaskan native, makes little sense," Satel says, "unless there's a specific reason to expect that different groups will respond differently to particular treatments." Usually, there isn't—yet wholesale inclusion is what the new policy demands. Most investigators probably will have "to search far and wide for minority research subjects," she says, and including them in adequate numbers will make the clinical studies many times larger and far more expensive. "How the policy will affect NIH's allocation of its coveted award budget remains to be seen," Satel says. "But, if priority goes to costly 'inclusive' projects, the agency clearly will be funding fewer studies." Hence, fewer medical breakthroughs.

The NIH guidelines do allow exemptions from the inclusion rule when the particular disease under study is largely confined to a specific minority group (as sickle cell anemia, for example, is to blacks). But few diseases limit themselves so neatly.

Satel sees a better way to satisfy the desire for inclusion. Congress "should encourage the NIH to fund more projects designed explicitly to investigate whether group differences in response to certain medical therapies actually exist." And it should let each of the 21 institutes within the NIH "devote a certain percentage (based on demographic representation, perhaps) of its budget to minority-related

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## Crushed Illusions

In New York City, as in many other American towns and cities, civic-minded souls carefully sort their recyclables and put them out for curbside collection. What happens next, writes *City Journal's* Roger Starr in the *Public Interest* (Spring 1995), would likely shock the virtuous recycler.

As one member of the two-person sanitation-truck team pulls levers, an immense jaw of steel reaches back over the trough into which one or more blue bags have been deposited, cramming them further into the body of the truck. There, a blade, rising from the bottom inside the truck body, presses the newly acquired bags against the rear face of an immense piston, crushing the bags and gradually forcing the piston to retract toward the inside front of the truck body.

In the process, most of the glass bottles, cans, and jars inside the bags are smashed or shattered. Glass shards and glass dust mix with the plastic containers, foodstuffs, and refuse that some less-conscientious householders forgot to wash out of their discards. Inevitably, the reuse value of the carefully saved containers is compressed with them, until the fragments are subject to a new, costly, and only partially effective process for restoring them to marketability.

When the truck reaches its MRF destination—the initials stand for Municipal Recycling Facil-

ity, in New York City always privately owned and operated—the rear wall of the truck body pivots upward. The piston, by now retracted toward or all the way against the front end of the truck body, is driven rearward, forcing the bags out of the truck into a pile on the floor of the MRF or into a large open-top container that can be lifted and moved by a front-end loader.

The privately owned MRF now gets to work, restoring what the truck mechanism put asunder. The natural question of a householder who discovers that the truck monster casually crushed the fruits of his, or, more likely, her, virtue, is "Why does the Sanitation Department countenance such a destructive operation?" The answer is simple. The cost of operating each truck with a two-person team is fixed, and thus, the larger the load that can be crammed into it, the fewer the loads. With fewer loads there are fewer trucks and crews, consequently, lower total waste-collection costs faced by the city.

health problems." This approach might turn "politically correct science into scientifically correct policy."

## From Hackers To Crackers

"Hackers Taking a Byte Out of Computer Crime" by Wade Roush, in *Technology Review* (Apr. 1995), Bldg. W59, MIT, Cambridge, Mass. 02139.

During the 1970s and '80s, rebellious young "hackers" found it thrilling to break into corporate and academic computer systems and commit electronic mischief. They formed

clubs with names such as "Masters of Deception" and "Legion of Doom" and reveled in their superiority over the slow-footed "Establishment" whose computer systems they so easily penetrated. A popular 1983 movie, *War Games*, portrayed young hackers as high-IQ superheroes.

Improved security measures and the threat of imprisonment, not to mention advancing age, brought the heyday of relatively innocent hacking to an end. But the volume of computer intrusions is apparently growing, says Roush, a reporter for *Science*. As more and more people have gotten on the Internet, the exclusive appeal of hacking has diminished, but the number of truly malicious hackers—