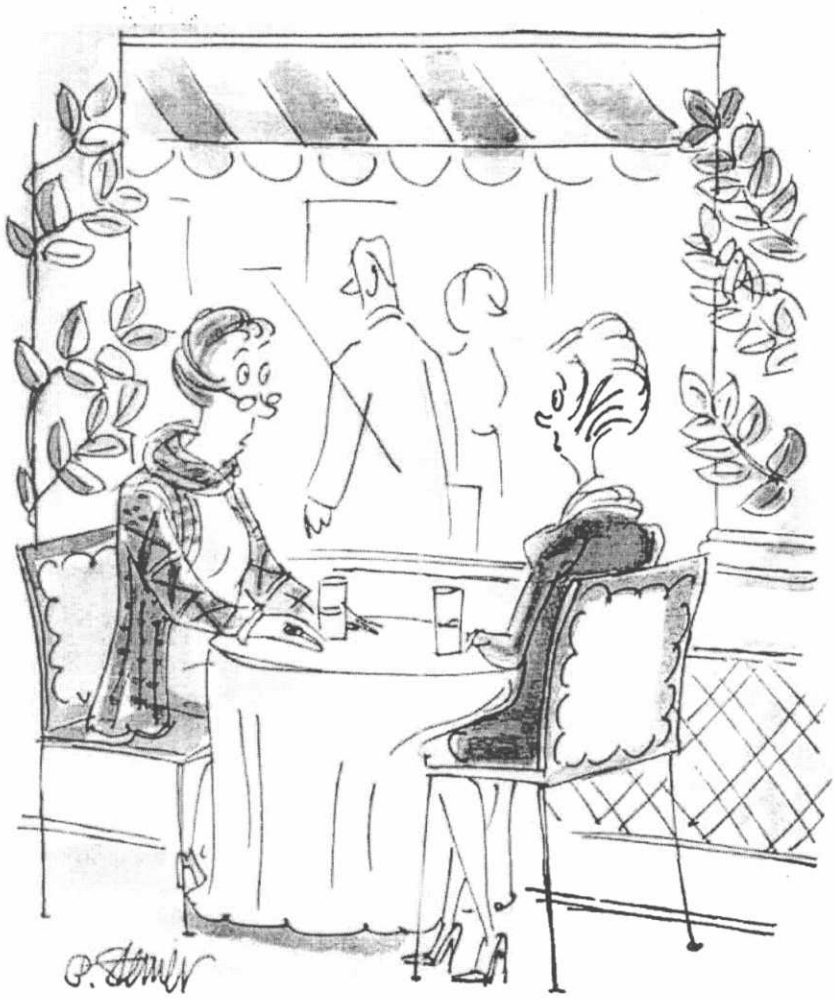
ple at risk, and the one that the government intends to make available to the broader public. (Before that can happen, the private firm in Lansing, Michigan, that holds the license on the formula must meet requirements imposed by the F.D.A.)

Over the years, the Army and civilian scientists at USAMRIID have tested new variations of the vaccine, and it was for just such a test that the Army requested a strain of anthrax from the Department of Agriculture lab in Ames in 1980. What they received was a subculture of the anthrax that had killed the cow in western Iowa the year before.

In working with their new isolate, the scientists discovered something remarkable about it: the Ames strain excreted an especially potent toxin. Ames became known as a "hot," or highly virulent, strain, and by the late nineteen-eighties it had become the gold standard for anthrax strains. "It's hot, so people like to challenge their animals with the Ames to determine how well their vaccine or their treatment modality is working," Patrick says.

The Ames strain's reputation among laboratory scientists created a demand for it, and the demand was handily met. Philip Brachman says that if he had wanted to get hold of an anthrax strain, he could have simply written to a laboratory that had it and they would have sent it to him. Germ banks around the world maintain and sell from collections of bacteria, and hundreds of university and research laboratories freely exchange strains of various organisms. There are some limitations, particularly in the United States. The 1996 Anti-Terrorism Act requires that anyone dealing in dangerous pathogens must show a legitimate scientific purpose and must register with the Centers for Disease Control. But the law does not prohibit possession of those dangerous pathogens by non-scientists. Nor are background checks, such as those required before the purchase of a handgun, conducted upon the hiring of technicians who have access to pathogens in laboratories.

In any event, restrictions can be avoided through private exchanges between scientists. With anthrax, there is plenty to share. "You streak it out on



"But, sweetheart, why do you have to marry a doctor? Why can't you marry a fireman?"

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a petri dish until there's one individual live bacterium at a particular spot on the plate," Jim Roth explains. "You grow it overnight, one bacterium turns into millions."

"It is an isolated case," Tommy Thompson, the Secretary of Health and Human Services, said after Bob Stevens died of anthrax on October 5th. "There is no terrorism." Such dissonance, which has characterized official pronouncements about the unfolding bioterrorism, is both alarming and, in a way, understandable. In recent weeks, even medical professionals have been made to realize how little they know about anthrax. The military establishment's research centers have been out of the bioweapons business for so long that they have had to rely partly on the advice of the last generation with real hands-on experience.

When anthrax outbreaks in New York, New Jersey, and Washington made it clear that the Florida occurrence was not an isolated case, it became imperative to determine the provenance of the bacteria that was being sent through the mail. A particular strain cannot be identified merely by peering at it through a microscope—all bacilli anthracis look more or less the same on a slide. To establish the genealogy of the poison-letter anthrax, the government turned to a young civilian scientist named Paul Keim, who is associated with Northern Arizona University, in Flagstaff, and whose wizardry in the field of DNA sequencing is fabled. It was Keim who determined that the unsuccessful anthrax attacks mounted by the Aum Shinrikyo cult in Tokyo in 1993 failed partly because the bacteria used by the terrorists was of the Sterne strain—an avirulent (nontoxic) bacteria that is used in an anthrax vaccine.

Keim has assisted American intelligence for some time, though he refuses to talk about it. He and an associate, Martin Hugh-Jones, a microbiologist at Louisiana State University, have compiled a formidable collection of pathogens. "It was set up way back when, 'To be ready for . . .' " Hugh-Jones says. "It went from 'Let's look at thirty samples' to 'Gosh, do you think we could get two hundred?' to now we have something like between twelve hundred and thirteen hundred."

Samples from the anthrax letters were sent to Keim at his laboratory in Flagstaff, where he put the bacteria through genetic-sequencing tests and compared them to known strains. Soon, he had a match: it was the Ames strain.

When Tom Ridge announced, on October 25th, that the strain had been identified, it seemed like a breakthrough. Officials now knew that they were dealing with a highly toxic strain. This, in turn, suggested something more ominous. "The fact that they have selected the Ames strain, a hot strain of anthrax, indicates to me that they know what the hell they are doing," Bill Patrick says.

But, in a way, identifying the anthrax only clouded the picture. Because of its popularity in laboratories, Ames had become a sort of stock strain, untraceable through its genetics alone to any particular source. "Being Ames doesn't tell me anything, except that somebody got ahold of a stock strain without any difficulty," Philip Brachman says.

There are other ways to trace the bacteria's source. The anthrax sent to Senator Daschle's office was weaponized—that is, it had been pulverized by the method that Bill Patrick pioneered almost forty years ago. (Twenty-eight of the forty people in the area where the letter was opened tested positive for anthrax exposure.) The fact that it was weaponized means that the powder