

# New "China Syndrome" Puzzle



Guy McKhann

**Rigid response.** Victim of Chinese mystery syndrome remains stiff when lifted.

HERE'S A MEDICAL PUZZLE: WHAT LOOKS A lot like polio and affects children in Latin America and China—but isn't polio? If you don't know the answer, you're not alone. It's a puzzler that's stumping medical experts, including those who developed the vaccines that conquered polio. "Over the last 3 years, there have been thousands of cases of acute flaccid paralysis in Latin America," says Albert Sabin, the 84-year-old physician who was inventor of the Sabin polio vaccine. "It is obviously a condition that is prevalent in poor countries." And neither Sabin nor anyone else yet knows quite what those cases amount to—as was made clear at a workshop last week.\*

Almost none of the 7000 cases of the puzzling condition reported to the Pan American Health Organization (PAHO) in Latin America between 1987 and 1990 are poliomyelitis; and the hundreds of cases crippling and sometimes paralyzing children in northern China every summer also lack some classic hallmarks of polio. Researchers have speculated that they might be cases of the rare and little-understood Guillain-Barré Syndrome (GBS), another paralytic disease. But at last week's workshop it became clear that that explanation isn't holding up either. Says Guy McKhann, a professor of neurology at Johns Hopkins University who organized the workshop: "It is becoming increasingly clear that in some parts of the world, people who meet the clinical criteria for GBS probably have something else."

To complicate things further, the paralysis cases seen in China differ somewhat from those seen in Latin America. What these new paralytic syndromes do share, however, is that, like polio, they attack the motor neurons of the spinal cord and prevent it from generating nerve impulses. That sets them apart from GBS, which attacks the myelin sheath that surrounds peripheral nerve fibers, blocking impulses that already have been fired.

But that distinction wasn't understood until recently, and in China the mystery

cases have been diagnosed in recent years as GBS. That's the reason the Chinese government invited McKhann and some of his Johns Hopkins colleagues specializing in GBS to examine 40 children in northern China last summer. What they found, however, was not GBS but a disease that constitutes medical "virgin territory," says Johns Hopkins physician David Cornblath.

One thing that sets this virgin territory apart from the familiar regions of GBS is its epidemiology. In the United States, GBS is an extremely rare condition, striking about 1 in 20,000 people of all ages. The so-called Chinese Paralytic Syndrome, however, is more prevalent—and it strikes younger patients (half younger than 7).

At the same time, this new "China syndrome" doesn't seem to be polio. For one thing, the children who get it have already been vaccinated against poliovirus. Nor do they exhibit high fevers early in the course of the illness, as happens in polio. Finally, the paralysis is often less extensive than in polio and the children have a better prognosis for eventually recovering most or all of their motor function.

Even less is known about the Latin American cases. As in China, though, Sabin rules out GBS, because autopsies on 40 children who died in Mexico in the 1960s showed that at least half lacked lesions in their peripheral nerves—a key sign of GBS. He says there are also other differences—such as the amount of protein found in the cerebrospinal fluid early in the disease, changes in the neurons and the pattern of stiffness in the children's necks and backs.

Clearly, what's needed here are far more observations and more tests for possible etiologic agents. In Latin America, says Sabin, "we're proposing new PAHO studies to be carried out on these people." That work will include further stool and blood studies, checks for fever and tests for protein in their cerebrospinal fluid (something not usually seen immediately in polio). And further information could also come quite soon about the Chinese cases. The Johns Hopkins team is returning to China this summer, where they hope to find clues that may help to clear up this mysterious syndrome.

■ ANN GIBBONS

## UK Cold War

**London**—For the scientists and engineers who helped build the West's military superiority, the Cold War era may soon start to look like the good old days—at least in Europe. Instead of a peace dividend, warns a report commissioned by Britain's Parliamentary Office of Science and Technology (POST), thousands of scientists and engineers can expect to get pink slips as Europe's defense industry cuts back a predicted one-third of its jobs over the next 6 years.

This paradoxical byproduct of the peace process will be felt nowhere more strongly than in Britain ("only France and the USA face comparable problems," says the report). Here an exceptionally high fraction of the national research and development budget has always been allocated to defense projects. Indeed, if defense cuts are made without boosting the civilian sector, warns the report, whole areas of technological expertise may be lost.

Then again, they could be lost anyway. In Britain, more than most countries, there has traditionally been an enormous gulf between the defense and civilian R&D sectors. Says Martin Edmonds of Lancaster University, who contributed to the report produced for Parliament's science office, "We have separated our defense from civil industry so that there is no synergy between the two." His fear: It may prove extremely difficult to convince private industry to bridge the gap by hiring ex-defense industry researchers, even if they were trained in a discipline needed for civilian applications.

The solution, as expressed in a separate document compiled by the office of science and technology to provide Parliament with policy options, is to "Imitate America." Not imitate what America has so far done for its endangered defense scientists—because that is still precious little—but imitate what the British view as a healthy debate that is growing ever fiercer in Washington. As the report's authors see it, U.S. policy discussions first considered spinoffs from defense research, but quickly moved onto a more fruitful question: Could dual-use technology be encouraged so each sector drives the other?

"We should learn from the Americans who recognize that processes such as computer-aided design and manufacturing are the foundation [of healthy economies]," says Edmonds. But not all of his colleagues are sanguine about the prospect of technology policy transfer from the United States to Britain. "The UK is not facing up to the

\*"International Workshop on the Classification of Guillain-Barré Syndrome (GBS)," 27-28 June 1991, sponsored by the Airen Foundation, the NIH, and Johns Hopkins.

# Warriors: Out in the Cold?

problem,” warns Philip Gummatt, senior lecturer in government and technology policy at Manchester University, and principal author of the report. Instead, he says, the British government believes that “market forces” will take care of everything. That is totally unrealistic, Gummatt protests; inaction will simply precipitate unemployment and another brain drain. “Do we really want our technologists to become taxi drivers because there is no demand?” he asks.

Gummatt’s skepticism is supported by the utter failure of the government’s one attempt to make defense industries exploit commercial markets. A commercial company formed by a group of venture capitalists collapsed within 5 years when financial backers lost their nerve and withheld long-term funding (see box). No surprise, then, that many researchers don’t hold out greater hopes of change than Gummatt does. “The idea that companies can change from manufacturing tanks to tractors, aircraft to teapots, or high specification ammunition to fridges is naive,” says Keith Hartley, director of the Center for Defense

Economics at the University of York, and another contributor to the report. Indeed, the authors of the report could cite only one really positive example of a transfer of defense-oriented research: Thermal imagers that were developed for the battlefield to permit soldiers to “see” through smoke sold well to fire departments, which used them in burning buildings.

Despite their pessimism, however, the authors have plenty of suggestions. Britain needs a coherent government policy, says Gummatt, that would help high-technology manufacturing to convert from defense to

civil markets. Among many recommendations included in the report are that the Ministry of Defense favor suppliers who can demonstrate commercial spinoffs and that new laws force government agencies to use part of their budgets for technology transfer.

A more radical idea comes from Hartley. He believes that decreases in defense spending could be achieved while at the same time increasing defense research. For the sake of military security, he says, “it is possible to argue that we can’t cut back on the ability to build new ships, even though we don’t want to order them. So we should maintain the ability to build them by creating prototypes. More funds could be allocated to research and development at the expense of production,” he says.

But so far the idea of developing new weapons without actually making them has not been taken seriously. Indeed, it goes against the tradition of every industrial country—with the possible exception of Japan. As Sir Ian Lloyd, Conservative Member of Parliament and chairman of POST, puts it: “When organizations are faced with making cuts, they go straight to research and development.” ■ JANE BIRD

*Jane Bird is a free-lance science writer living in London.*



**Flying toward the private sector?** *The Tornado—a two-seat, twin-engined, swing-wing craft—is an example of the UK’s successful defense technology, little of which has been transferred to commercial use.*

## British Ferrets Go Hungry

Britain once appeared poised for success in the complex realm of technology transfer. The challenge, which has often baffled the industrial nations, was to exploit military research for civilian spinoffs that would drive the British economy. The solution was Defense Technology Enterprises (DTE). Formed in 1985 by a consortium of venture capitalists, the organization stunned bureaucrats at the Ministry of Defense by sending staffers—known as “ferrets”—to penetrate the defense research laboratories with a mandate to seek out ideas ripe for commerce.

By May 1989, 45 licenses had been sold and DTE was sending information about military research to 300 companies on its contact list. Bernard Herdan, the company’s managing director, was riding high. He estimated that more than \$119 million in sales would be generated over the next 8 years—worth \$12.7 million in royalties.

And the ideas were creative. Ferrets came across gas-based explosives designed to destroy steel and concrete bridges; why not use them for decommissioning oil rigs? Ferrets encountered active sonar for tracking submarines; put them to work creating “fences” for vast fish farms at sea. But before Herdan and his company could prove that defense could be big business, DTE was at sea. “I resigned in December after I had repeatedly been unable to win investor support for a growth-style business,” Herdan told *Science*.

“Share holders in Britain are not prepared to invest patient money.”

From Herdan’s point of view, DTE’s problem is similar to what has been experienced throughout the industrialized nations: Investors who had gone for small high-tech firms during most of the 1980s now wanted “asset-backed management buy-outs.” And he believes DTE would have been a great success if only it had been allowed to continue for several years before investors demanded returns.

In DTE’s case, no one will ever know. After Herdan left, the organization was closed down. As yet, it has no successor. In April 1991 the government announced the merging of the four principal non-nuclear research establishments—radar, aerospace, admiralty, and armaments—into a Defense Research Agency, one of whose missions is to provide cost-effective science and technology advice to the government and civil customers. But the POST report argues that it will prove impossible to provide both national security advice for the Ministry of Defense and sustainable profits for commerce. A better strategy would be to convert the Ministry of Defense research establishments into National Technology Centers, says ACOST, the government’s science and technology advisory panel, recognizing that civil and military technology have the same roots. Then again, that was a cardinal principle at the DTE. ■ J.B.