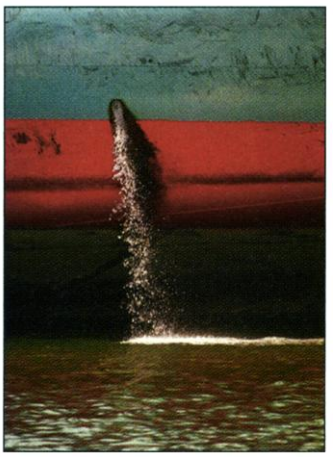
From Ballast to Bouillabaisse

Many troublesome critters hiding in the ballast tanks of ships may soon find themselves literally in hot water. A team of Australian ecologists reports that excess heat from a ship's engines can be used to warm ballast water, cooking unwanted organisms that would otherwise be carried to foreign ports.

Organisms ranging from viruses to fish have traveled the high seas for decades in the water that ships take on to add ballast before embarking. Pumped out in far-flung ports, many of these species wreak havoc in their new environs. The European zebra mussel, for example, has blighted rivers and lakes in North America since its arrival in the 1980s. Filters, poisons, and ultraviolet radiation have done little to stem the number of transplanted species, which rises steadily as ships get bigger and faster.



Spreading eco-disruption.

Geoff Rigby and his colleagues at Reninna Consulting in Charleston, Australia, are now experimenting with a system that uses a ship's engines to heat ballast water to a toasty 35 to 38 degrees Celsius. That should easily polish off zebra mussels. And there's evidence it would do away with many smaller, harder-to-kill organisms, too. In a test in a cargo ship, only a few phytoplankton survived a 30-hour warm bath.

The new technique is promising, says Greg Ruiz, an ecologist at the Smithsonian Environmental Research Center in Edgewater, Maryland, because it appears to exterminate dinoflagellates, the phytoplankton that cause harmful algal blooms. But it won't work for everything. "It's clear that a number of microorganisms can handle elevated temperatures," Ruiz says. "In fact, they prefer them."

Antibiotic Crackdown in Korea

South Korea is home to some of the world's toughest bugs. The country attained that dubious distinction in part by making antibiotic drugs easily available. Now it's finally cracking down by requiring doctors' prescriptions.

For decades Korea allowed pharmacists to sell drugs freely as a way to help people who were too poor to see doctors. Ironically, the practice became a lucrative sideline for doctors, who supplemented their incomes by doubling as pharmacists.

The long-term result of this policy, combined with the spread of resistant clones from elsewhere, has been a sky-high rate of resistance to antibiotics as bacteria enthusiastically evolve in response to repeated challenges. According to a 1997 study by Song Jae Hoon, chief of the division of infectious diseases at Samsung Medical Center in Seoul, more than 80% of *Pneumococci* were penicillin-resistant. The rates of resistance to 10 other antibiotics also exceeded those in nine other Asian countries surveyed.

The government has finally responded to the problem by requiring patients to get doctors' prescriptions for most drugs. The new law took effect on 1 July, triggering an unprecedented 6-day strike by physicians. But some old antibiotics are still exempt from the new law—the Korean medical association says that's because the majority of government policy-makers and advisers are pharmacists.

Good Chemistry

Mitsubishi Chemical Corp. has taken a step unprecedented for a Japanese company: It is putting a foreigner in charge of its research and development efforts. George Stephanopoulos, a professor of chemical engineering at the Massachusetts Institute of Technology, is taking a 2-year leave of absence in Tokyo to assume the newly created post of chief technology officer.

The move is part of Mitsubishi's plan to muscle its way to the forefront of the global R&D crowd. "The chemical industry has forgotten how to grow, because it did not follow an aggressive [R&D] policy, which it saw only in terms of support," said Stephanopoulos at a press conference last week. He intends to establish Mitsubishi as a "knowledge-generating company" as part of his role in overseeing its research strategies, intellectual property policies, and research alliances. The company, with annual sales of $16 billion, currently employs 2300 researchers and technicians at five centers.

The Greek-born Stephanopoulos, 53, is an expert in process system engineering and has been a consultant to Mitsubishi and other corporations around the world for years.

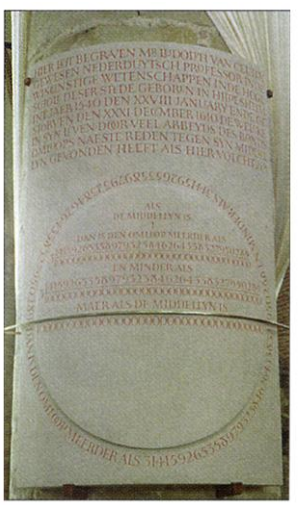
Fat and Happy

"Thin equals discontent. Content people have weight on them. That is why we hire thin people, because they are discontent and will work harder. Heavier people are more mellow and less successful."

—Nobelist James Watson, in a 13 June off-the-record speech at University College London, about his latest research interest, endorphins and hormones, as reported 2 July in *The Guardian*.

Computing Pi-oneer

Modern machines crank out digits of pi by the gigabyte, but 400 years ago Dutch mathematician Ludolph van Ceulen got the ball rolling with a hand computation of 35 digits—all correct. A memorial stone honoring van Ceulen's accomplishment was unveiled 5 July at St. Peter's Church in Leiden. The gravestone, patterned after the original which was lost, was created to mark the 400th anniversary of van Ceulen's appointment to the engineering school in Leiden. All those zeroes are part of the denominator: In van Ceulen's day decimal point notation was just coming in.



CREDITS: (TOP) AP PHOTO/REED SAXON; (BOTTOM) BART DE SMIT