RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Antimicrobe Spy Network

A network of 72 hospitals and medical clinics around the world has been formed to fight some of the world's most threatening microbes—those that have become resistant to antibiotics. In large part because of indiscriminate use of these drugs, bacteria in some parts of the world have built up alarming levels of resistance, according to pathologist Ronald Jones of the University of Iowa, Iowa City, and microbiologist Jan Verhoef of the University of Utrecht in the Netherlands. So last month, the two announced a new program for standardized monitoring and testing of bacterial resistance.

Earlier this year, the Iowa group assessed resistance of more than 10,000 bacterial samples taken from hospitalized patients with bloodstream, respiratory tract, urinary tract, and wound infections in the United States, Canada, and South America. They found, for example, that in South America, about 30% of the strains of *Klebsiella*, a bacterium that causes urinary tract infections, were resistant to third-generation cephalosporin antibiotics. In the United States, says Jones, the emerging resistance "is the worst in the world. We're paying for 20 years of misuse [of antibiotics]." Resistance in pneumococcus, which causes pneumonia and middle-ear infections, has jumped from 10% 5 years ago to 40% in many places, he reported last week at the International Congress on Chemotherapy in Sydney, Australia.

In addition to the initial 72 medical centers, 100 in Australia, Africa, the Middle East, and Asia are expected to join the project in the next year. The program is funded for the next 3 to 5 years by Bristol-Myers Squibb Co., which will use the bacterial samples obtained for developing more effective antibiotics.

Iguana Go Home

Last month saw the release of four 6-year-old iguanas into the Hellshire Hills of Jamaica—the first time zoo-raised iguanas have been reintroduced into the wild.

Iguanas in Jamaica were believed to have gone extinct more than 50 years ago, after sugar growers introduced the ferret-like Indian mongoose to keep down the rat population. Because rats are nocturnal and mongeese hunt at dawn and dusk, the scheme didn't work out. The animals instead preyed on reptiles, including iguana eggs. It wasn't until 1990 that a tiny population of surviving iguanas was found in the rugged Hellshire Hills near Kingston.

Now scientists, in a joint project of the Fort Worth Zoo in Texas and Kingston's Hope Zoo, are hoping to beef up that population by periodic release of zoo-bred iguanas (*Cyclura collei*). "Iguanas are really good candidates for release [because] they don't need any head-start training," says Rick Hudson, assistant curator at the Fort Worth Zoo herpetarium. Other species require a lot of coaching. Brazil's golden lion tamarins need extensive socialization, California condors need to be trained to avoid power lines, and Wyoming's black-footed ferrets have to be taught to avoid coyotes and badgers. But iguanas have all the necessary skills hard wired. "Iguanas are on their own from the day they're laid," says Hudson.

The release program is being supplemented by stepped-up mongoose trapping and efforts to keep wood gatherers out of the core habitat which, says Hudson, is "one of the last really pristine examples of tropical dry forest in the Caribbean."

FORT WORTH ZOO

Back to nature. Jamaican iguana with Edwin Duffus, who found a species long thought extinct.

Canada in the Fast Lane

Last week, Canada unveiled its "next generation" Internet. Called CA*net II, it will operate 10 to 15 times faster than today's Internet and will handle audio and visual traffic better than most existing high-speed networks.

Now available to a handful of universities in Alberta, Nova Scotia, and Ontario, CA*net II is expected to be extended to all 89 of Canada's universities and dozens of research institutes by the end of the summer. "This is the first significant upgrade of Internet services in the world," said Industry Minister John Manley at a press conference in Ottawa.

CA*net II is also the first foreign high-speed network to connect to STAR-TAP, the Chicago access point to the very high speed Backbone Network Service being developed for U.S. researchers by the U.S. National Science Foundation (NSF).

Led by the Canadian Network for the Advancement of Research, Industry, and Education (CANARIE), a nonprofit industry-government consortium in Ottawa, CA*net's developers will invest $60 million over the next 2 years to fine-tune the network. The network transmits data at the rate of 155 megabytes per second, compared to 10 in the current system. But it's the multimedia capability that is most

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Russia to Get New TB Center

After taking a several-month respite from the Russian science scene, philanthropist George Soros is at it again: The billionaire financier has ponied up $3 million to create two new labs in Moscow to study tuberculosis and hospital-borne infections. The funds, to be administered by the nonprofit Public Health Research Institute (PHRI) of New York City, are meant to establish a beachhead from which to battle Russia's mounting infectious-disease problem.

Since the Soviet Union disintegrated in 1991, Russia's medical establishment has been unable to stem a rise in TB, diphtheria, and other infectious diseases. According to the Moscow State Sanitary Committee, the annual number of new TB cases increased 42% from 1991 to 1994, while the death rate jumped by 87%.

PHRI biologist Alex Goldfarb has persuaded Soros to respond to the situation by funding a tuberculosis lab at the Central Institute of Lung Disease in Moscow, and a hospital-borne infections lab at the First Moscow Medical Academy. If PHRI can raise another $5 million, Soros will match it with $2 million more.

This week, PHRI is sending a team of specialists over to assess the Russian institutes' needs. Says PHRI infectious-disease specialist Barry Kreiswirth, we "don't [yet] know the extent of the problem" in Russia, including the prevalence of multidrug-resistant TB strains and rates of patient compliance to therapy.

Kreiswirth and his colleagues say the $3 million initiative will only be a start. They point out that New York City has spent nearly $1 billion in the past few years to upgrade its facilities for fighting TB's resurgence—and New York was much better equipped than Moscow to begin with.

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promising, says CANARIE President Andrew Bjerring. On the current Internet, as well as new high-speed links, elements of multimedia transfers are often lost because the system gets overwhelmed by data bits and drops them. CA*net II, however, is able to identify and prioritize voice and audio signals and move them along using a "more circuit-oriented" approach than many systems use, says Bjerring. That means that while others send bursts of information in packets, CA*net II will be less prone to dropping data and other lapses because it transmits data more continuously, says the NSF's George Strawn.

In the search for the optimal mix of speed, accuracy, and economy, everybody's "trying different things" to resolve the multimedia problem, says Strawn. The perfect solution hasn't been found yet.

New Director for India's Troubled Tata

India's premier think tank for math and science, the 52-year-old Tata Institute of Fundamental Research (TIFR) in Mumbai (formerly Bombay), last week got a new director who, observers hope, will reverse what many see as a decade-long decline in the quality of its research. At the helm as of 1 July is Sudhanshu Shekhar Jha, 57, a solid state physicist and alumnus of Stanford University, who has been at TIFR for nearly 4 decades.

Once heralded as the cradle of India's atomic energy program, the institute—which has about 400 researchers—has long been plagued by "simmering discontent within the ranks of the faculty," says TIFR physicist Richard Pinto, who heads a group formed in response to what many see as unfair and inefficient allocations of resources, obstacles to junior scientists' advancement, and promotions based on politics rather than merit. TIFR is stagnating, says Pinto. "Today, while the institute rejects the second best, the best reject the institute."

Spurred by these concerns, the TIFR governing council early this year held the first-ever review of the institute's operations, headed by the British chemistry Nobelist Lord George Porter of London's Imperial College. The document has not been made public, but sources say it calls for a major shake-up that would, among other things, inject fresh blood into the aging faculty.

Jha says he sees "a great opportunity to rebuild the institute." His plans include creating new schools for communications engineering, chemical sciences, and biological sciences. Restoring TIFR to its former glory will be hard, but not impossible, says Yash Pal, a high-energy physicist who spent almost 3 decades there. "There is nothing organically wrong with TIFR," he says, "and Jha seems to be a good choice."

Brighter days ahead? Tata Institute and Jha *(inset)*.

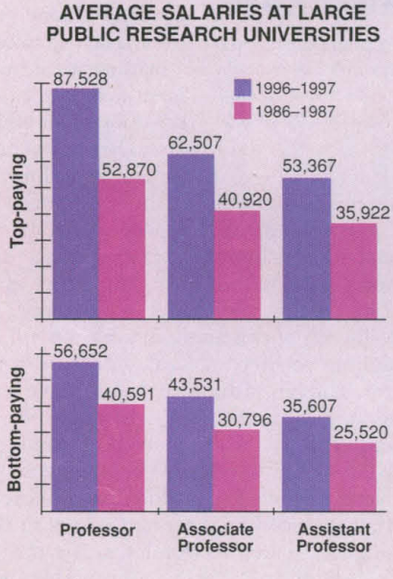
Rock Around the Clock

Hot on the heels of the discovery of a massive planet orbiting the sunlike star ρ Coronae Borealis (*Science*, 30 May 1997, p. 1336) comes what may be the detection of the smallest planet yet found, perhaps even smaller than Pluto. Toshio Fukushima of the National Astronomical Observatory in Tokyo located the telltale signal of an orbiting body in the records of emissions from a pulsar, a rapidly rotating compact star that gives out a radio pulse at every turn with clockwork precision.

The pulsar, PSR 1937+21, is the fastest one known, emitting a radio burst every 1.6 milliseconds. Scientists can tell when such a body is being subjected to the gravitational tug of an orbiting companion because of minute variations in the pulse intervals. By studying records of the Arecibo radio telescope in Puerto Rico, Fukushima determined that an object is circling the pulsar every 3.8 years in an eccentric orbit that varies between 210 million and 600 million kilometers from the pulsar (much more distant than Earth's 150-million-kilometer orbit around the sun). With a mass of just a few huge asteroids, the thing hardly deserves to be called a planet, said Alexander Wolszczan of Pennsylvania State University, who presented data last month on what he dubbed the "rock around the clock" at a planetary workshop held in Blois, France.

If the discovery is confirmed, PSR 1937+21 would be the third pulsar known to have one or more planets. Wolszczan, who found the first pulsar-planet system in 1992, says Fukushima's data look "intriguing" but warns that more observations are necessary. Indeed, at the conference, Wolszczan announced that he is now convinced that a pulsar identified by a Russian scientist in 1995 as having a planet the size of two Earths in a 16.9-year orbit does not, in fact, have any planets at all. Rather, he said, the observed pulse variations are not regular and therefore "almost certainly" due to tiny variations in the spinning of the pulsar.

Academic Salaries "Not So Good"



The American Association of University Professors (AAUP) last week released its annual survey on the economic status of the profession. Noting that salaries for the first time in 4 years failed to keep pace with inflation, the AAUP reports that salaries increased by 3% and inflation by 3.3%. "Continuing" faculty members—those staying in the same job from one year to the next—are slightly ahead of the game, with a 3.5% increase. "Real faculty salaries remain lower than in the early 1970s," says the AAUP. The survey, covering 2236 institutions, confirms that doctorate-granting and high-prestige institutions are the place to be if an academic wants to make money. The average full professor, for example, made $67,415 in the academic year 1996–97. But the average full professor at a private, doctorate-granting institution made $92,112.

Reported in the delayed March-April issue of *Academe*, the survey reveals a growing chasm between the 20 highest paid disciplines, such as law, engineering, and economics, and the 20 lowest paid disciplines, such as the arts, education, and plant science (see chart). "It's fairly clear that as markets have tightened" and exerted more direct impact on universities, "it has magnified the disciplinary differences," says the AAUP's Ernst Benjamin.