NEWS OF THE WEEK

DISEASE ERADICATION

Two Steps Forward, One Step Back in Polio Fight

The generals managing what they hope will be the final campaign against polio delivered a mixed message last week. The good news is that the virus’s toughest strongholds, in India, Pakistan, Afghanistan, and Egypt, are finally yielding to relentless assaults. With cases at an all-time low (just 21, compared with 94 this time last year), experts are predicting success by the end of 2004. After 20 years of slogging uphill, “it is a very big turnaround,” exults Bruce Aylward, the global coordinator for polio eradication at the World Health Organization (WHO) in Geneva.

The bad news is that Nigeria, Niger, and perhaps other countries in western and central Africa seem poised for the worst polio epidemic in years, in which possibly thousands of children will become paralyzed. Chances of stopping wild transmission in Africa in 2004 are practically nil. “I won’t say a miracle isn’t possible,” says Aylward, “but I wouldn’t bet on it.”

In India, until now the most deeply entrenched reservoir for wild poliovirus (Science, 26 March, p. 1960), only eight cases have been reported this year, and the country is moving up the final “mop-up” phase from September to June. In Pakistan, Afghanistan, and Egypt as well, detection of a single case will trigger two massive tailor-made campaigns to vaccinate 1 million to 5 million children in the area, says Aylward’s boss, David Heymann.

Countries across western and central Africa are also rallying, and political commitment is stronger than ever, noted Julie Gerberding, director of the U.S. Centers for Disease Control and Prevention in Atlanta, Georgia, one of the partners in the campaign along with WHO, UNICEF, and Rotary International.

In Nigeria, the epicenter of the disease, Minister of Health Eyiayto Lambo insists that Kano state, where vaccination has been halted since August 2003 and the disease is running amok, is now coming under control. Muslim suspicions about contaminated vaccine are largely tamed. Lambo says Kano’s governor promises to resume “catch-up” vaccinations soon, and the entire country will participate in national rounds in September, October, and November. In a synchronized effort, 10 nearby countries will coordinate campaigns, probably in October, and that number will grow to 21, probably in early 2005, in an ever-expanding effort to cordon off the virus in Nigeria. Heymann sets the rough price tag at $100 million, which the partners have yet to raise.

The African ministers say they can meet the 2004 goal, but odds are stacked against them. Speaking of both “optimism and looming disaster,” Heymann notes that at 119, there are five times as many polio cases in Nigeria now than last May, and five countries have already been reinfected, up from one. What’s more, civil unrest has erupted in Kano, with hundreds of Muslims and Christians massacred in the past few weeks; WHO and UNICEF have pulled their people from the field. They should have a hint of how bad the outbreak will be by July, heading into the high season.

—LESLIE ROBERTS

ARCHAEOLOGY

Iranian Dig Opens Window on New Civilization

BERLIN—The third millennium B.C.E. is known for the rise of complex cultures that produced the pyramids in Egypt, the ziggurats of Mesopotamia, and the large cities of the Indus River valley. At a meeting here last month, archaeologists presented evidence from an obscure valley in southeastern Iran indicating that there was another sophisticated civilization at this time. The finds—including a massive stepped structure, signs of contact with distant societies, and possible examples of writing—are sparking both excitement and controversy among archaeologists. They “shed light on what is happening in a resource-rich area of the Near East during the explosion of urbanism,” says archaeologist Roger Matthews of University College London.

The site near the Iranian city of Jiroft came to the attention of researchers only in the past 4 years, after looters stripped ancient cemeteries and hundreds of carved stone vessels began to appear on the art market (Science, 7 November 2003, p. 973). Large-scale excavations began in January, when an Iranian team led by archaeologist Yousef Majidzadeh dug on two large mounds not far from the devastated graveyards. At the meeting here of the International Congress on the Archaeology of the Ancient Near East, from 29 March to 4 April, Majidzadeh, a former professor at the University of Tehran who now lives in France, and American archaeologist Holly Pittman of the University of Pennsylvania in Philadelphia laid out their initial discoveries.

One mound was a huge mud-brick platform extending 400 meters by 400 meters, with a second level of 250 meters by 250 meters and evidence of a third story, says Majidzadeh. The structure resembles the famous stepped ziggurats used as temples more than 1000 kilometers away in Mesopotamia. “If it’s a ziggurat, then it’s...”
the largest ever known ... and the earli-
est,” he says, estimating the date at around 2300 B.C.E.

That is a contentious claim. Full-fledged ziggurats do not appear until around 2100 B.C.E. But Uruk’s white temple in today’s southern Iraq is a platform with a temple on top—and it dates to about 3150 B.C.E., over 1000 years earlier, notes archaeologist Margarete van Ess of the German Archaeological Institute in Berlin, who has dug at Uruk.

Furthermore, Majidzadeh’s date is based only on a preliminary look at pottery, with no radiocarbon data. And the pottery chronology is unclear. Stone vessels similar to those dug up by Jiroft looters have been found in Ur and other Sumerian cities dating to around 2500 B.C.E., but others in the Persian Gulf were apparently made several hundred years later.

What’s not in dispute is the wealth of seals and seal impressions on clay discovered at a second mound that likely served as an administrative center. These seals make up “a fascinating corpus notable for its extraordinary variety,” says Pittman. Seals were typically used as signatures by businessmen and scribes, and the dozens of examples found offer a trove of data on trade, religion, and governance. One impression includes a crocodile-like creature, similar to seals made in the Indus River valley. Others display similarities to seals found in Afghanistan and Mesopotamia. The variety, says Pittman, shows extensive contact with a host of other civilizations.

The most intriguing finds are two small fragments that Pittman says are “neither figurative nor geometric” and which could be inscriptions. “They are so fragmentary, they just offer hints,” she says. But both she and Majidzadeh hope to find written inscriptions when they return to dig in December. Pittman sees the Jiroft civilization as one of several early states in the region, each “autonomous and indigenous” but in contact with one another.

Majidzadeh, however, has made claims in the Iranian press that Jiroft predates Mesopotamian civilization, and he’s expressed confidence that the two fragments are indeed written inscriptions. Although his Berlin talk avoided making these assertions, some scholars worry that such overreach could damage the credibility of the digs. “There are some rather extravagant allega-
tions,” says Harvard University’s Carl Lamborg-Karlovsky, who excavated at nearby Tepe Yahya during the 1970s. “What we need is data.” Majidzadeh says he plans to wait for next season to find undisturbed material for radiocarbon dating: “So far, we have only excavated what amounts to a pencil dot on a blank piece of paper.”

—ANDREW LAWLER

**INFECTIOUS DISEASES**

**One Year After Outbreak, SARS Virus Yields Some Secrets**

**LÜBECK, GERMANY**—What a difference a year makes. This time in 2003, severe acute respiratory syndrome (SARS) was spreading like wildfire, and researchers barely knew what they were up against. Today, the disease is gone, and researchers are elucidating some of its most intimate details. At a recent meeting here, they reported progress—and some setbacks—in everything from molecular biology to epidemiology to drug development.

Only four mini-outbreaks have occurred since SARS was vanquished worldwide. Three of those were the result of labs failing to contain the virus (Science, 30 April, p. 659)—a record that many scientists fear may erode public support for research on SARS and other agents. “It’s terrible news for all of us,” says Luis Enjuanes of the Universidad Autónoma in Madrid.

The one natural outbreak since last summer, which sickened four people in the southern province of Guangdong in December and January, has provided intriguing new clues into the virus’s epidemiology. Genomic analysis of the virus isolated from one of the patients showed that it was highly similar to a virus isolated from a masked palm civet, bolstering suspicions that civets transmit the disease to humans. But researchers do not think civets are the elusive natural hosts of the SARS virus because, as another study showed, civets suffer symptoms when experimentally infected. A natural host would normally be symptom-free.

Adding another wrinkle to SARS’s confusing epidemiology, Lin Lifeng of the Center for Disease Control and Prevention in Guangzhou showed that the genetic signature of the virus has been detected in the lungs of three out of six rats caught in the building where one of the four recent patients lived. The patient had disposed of a dead rat shortly before getting sick, Lin said, suggesting that the animals may be carriers just like civets. If true, that would pose the specter of a continuous urban source of new infections, says Enjuanes, but much more study is needed. The researchers have not shown that the virus replicates in or is transmitted among rats, for instance.

On the vaccine front, meanwhile, news was sobering. A flurry of vaccine studies began almost immediately after last year’s outbreak, and China has embarked on human trials. But experts fear that some vaccines might worsen the disease rather than prevent it, a phenomenon seen in cat coronavirus vaccines (Science, 13 February, p. 944). Now a study by Cao Jingxin of the National Microbiology Laboratory in Winnipeg, Canada, and his colleagues adds weight to those worries. The SARS virus, the group found, can cause mild liver inflammation in ferrets; that damage was much more serious if animals were first given a candidate SARS vaccine based on a vaccinia virus. “This is another warning sign,” Cao says: “Be very careful before you put anything into large numbers of humans.”

In terms of therapeutics, virologist Berend Jan Bosch of Utrecht University, the Netherlands, showed that peptides resembling part of the virus’s “spike” protein can inhibit the fusion of the virus and its host cell in vitro. And a team at the University of Leuven, Belgium, reported that a compound that produces nitric oxide inhibits virus replication as well.

But without new outbreaks, researchers say it’s hard to see a market for new therapeutics. Even well-established drugs that say it’s hard to see a market for new therapeutics. Even well-established drugs that prevent a SARS-like disease in monkeys, some experts fear that some vaccines might prevent a SARS-like disease in monkeys, some experts fear that some vaccines might worsen the disease rather than prevent it. According to a recent study, for instance, showed that one type of interferon-α could prevent a SARS-like disease in monkeys (Science, 27 February, p. 1273). According to a recent study, for instance, showed that one type of interferon-α could prevent a SARS-like disease in monkeys (Science, 27 February, p. 1273). According to a recent study, for instance, showed that one type of interferon-α could prevent a SARS-like disease in monkeys (Science, 27 February, p. 1273). According to a recent study, for instance, showed that one type of interferon-α could prevent a SARS-like disease in monkeys (Science, 27 February, p. 1273). According to a recent study, for instance, showed that one type of interferon-α could prevent a SARS-like disease in monkeys (Science, 27 February, p. 1273).