

The Vienna zoo

Many happy returns

VIENNA

A birthday for the world's oldest zoo

VIENNESE zoos were around long before Emperor Franz Stephan decided to organise one in the gardens of the Schönbrunn palace in 1752. But only his has lasted. It is now the oldest in the world, and it marked its 250th birthday on July 31st by opening a high-tech rainforest exhibit—a far cry from the dreary cages that the first inhabitants endured.

Franz Stephan recoiled from what every schoolchild knows: a good zoo needs plenty of scary carnivores. In the early days he ruled them out because of their smell. Instead, he placed exotic birds and deer in cages that encircled an elegant pavilion, still standing, where he could take breakfast on warm mornings (and, some say, perform alchemical experiments by night). Visitors were encouraged. Mozart strolled past, as did later and lesser generations of Viennese.

Animals arrived only gradually. They were bought from travelling menageries or else landed by Emperor Josef II's expeditions to the Americas and Africa in the 1780s. The imperial gardener, Franz Boos, tried and failed to bring back a giraffe from Africa. In 1801, perhaps to make up for that disappointment, the zoo had a deceased keeper stuffed by a Venetian taxidermist and displayed along with the animals.

The first giraffe arrived to great fanfare in 1828 but lived for only ten months. A post-mortem speculated that its legs had never recovered from fractures sustained when it was strapped to the backs of camels carrying it from Sudan to Egypt. Polar bears from an Austro-Hungarian expe-

dition in 1873 (which also discovered Franz Josef Land, an Arctic archipelago named after the emperor of the day) fared better.

By then, zoos were coming of age. Budapest got one in 1866, New York in 1873, Tokyo in 1882. With the European conquest of Africa (in which Austria-Hungary did not participate) the Schönbrunn grew rapidly, from 800 animals in 1879 to 3,400 in 1918. New factories swelled Vienna's population in parallel with this growth, and the animals found themselves prey to merciless weekend crowds. Some were poked to death. Others were poisoned. Still others died of malnutrition, disease, disorientation or even heartbreak.

There were happier moments. In 1906, an elephant was born in captivity in the Schönbrunn—a first for any zoo. In 1924, the zoo appointed its first scientist as director. Otto Antonius greatly improved the living conditions of the animals but proved less generous to humans. A com-

mitted Nazi, he took his own life as the allies approached the zoo's gates in 1945. There was not much left to liberate. Allied bombing had already splattered the rhinos and hippos across their pens. The starving giraffes, which miraculously survived the falling bombs, were nursed back to health by Red Army officers.

Today's Schönbrunn sees its mission as preservation and education. Its animals are gene donors for fellows in the wild. Researchers at the zoo are helping to reintroduce the Przewalski wild horse back into Mongolia, the oryx to Jordan, and the ibis to Morocco. Like most good zoos, it is downsizing. It wants to give a better life to fewer animals. Numbers have fallen from 4,000 in 1980 to 2,500 today. Innovative enclosures such as a swish new elephant house give both researchers and the public a better chance of learning about the animals. Not least Abu, who last year became the world's first test-tube elephant. ■

Assessing hurricane risk

Sounds like trouble

Underwater microphones should be able to measure the risk from hurricanes

IN AUGUST, the tropical cyclone season in the Atlantic and Pacific oceans will reach its peak, putting coastal populations on alert. A hurricane is fuelled by the warmth of tropical waters and loses strength when it crosses land, but not before the wind batters buildings and the sea swamps the coastline. Although there may be little more than a gentle breeze on the outskirts of a storm, wind speeds near the centre can exceed 100kph.

A tropical storm can extend over thousands of kilometres, and the giant spirals of clouds can easily be tracked by satellite. But it is not so easy to measure the wind speed. If a hurricane threatens America, aircraft are sent into the storm to collect the relevant data. But many of the countries hit hardest by hurricanes, such as India and Bangladesh, are among the world's poorest. Aerial reconnaissance missions are too costly to be part of their storm surveillance, and estimates made from satellite photographs are unreliable.

Nicholas Makris, an acoustical oceanographer at the Massachusetts Institute of Technology, may have an answer. He proposes using hydrophones (underwater microphones) to detect the deep-water rumble made by a hurricane. The hydrophones would form a permanent and cost-effective monitoring system, listening to the sea. The noise of a storm—both the power and the pitch of the sound gener-

ated—could give accurate measurements of wind speed.

The waves set up by winds blowing across the sea's surface crash and froth, sending billions of bubbles into the water. Each bubble oscillates, creating a pressure wave in the water that is detected by the hydrophones. Calculations suggest that the amount of power absorbed into the ocean from a storm and subsequently detectable as noise is proportional to the cube of the wind speed. Observations have shown that these calculations are accurate for gentle winds, but there are no data for hurricane-force storms.

Or at least no accessible data. However, the American navy installed a network of hydrophones during the cold war to detect submarine activity and it is likely that they have recorded the passage of tropical cyclones. The records are classified, but Dr Makris is negotiating with the government to get them released.

Meanwhile, an oil company has given permission for hydrophones to be put on rigs in hurricane-prone areas of the sea. The first will start listening to storms in the Gulf of Mexico before the end of the year. If the detected noise translates into a wind speed that agrees with measurements made on flights through the storm, this technology may eventually lead to networks of hydrophones in such hurricane hot-spots as the Bay of Bengal. ■



Welcome to Vienna