

nature

A large, circular fluorescence micrograph of a cell in the process of division. The cell's cytoplasm is stained red, showing a complex network of filaments. In the center, a bright green starburst-like structure represents the mitotic spindle. Several blue, rod-shaped structures, likely chromosomes, are visible within the cell, some near the center and others towards the periphery.

CHROMOSOMES IN MOTION

Unexpected role for actin
in oocyte division

MULTIPLE ASTEROIDS

Three's company for Sylvia

CLIMATE VARIABILITY

Dawn of an ice age

ALCOHOL TOLERANCE

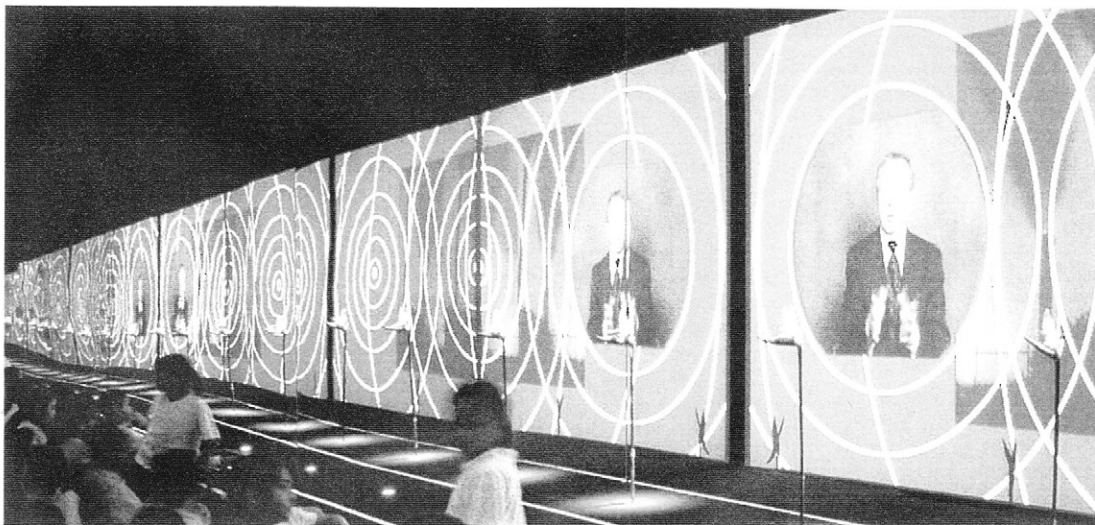
The *hangover* gene

RICE GENOME FINISHED

Improving the breed

NATUREJOBS

Make it Malaysia



Looking ahead: a series of experts outline some of the problems facing southern California.

EXHIBITION

Down and out

Collapse?

At the Natural History Museum of Los Angeles County until 15 January 2006
www.nhm.org/exhibitions/collapse/index.html

Philip Campbell

"Collapse? — Are we next?" ask the flags attached to the streetlights as you cruise down Sunset Boulevard. And as you attempt to drive along the freeways, moving ever more slowly across a city faced with increasing water shortages, random gunfire and neighbouring districts that are racially and culturally divided, the appropriate response seems to be: "You bet!"

The flags promote an exhibition at the Natural History Museum of Los Angeles County that provides a strong taste of the threats to our survival, and a sobering sense of past civilizations' failures to meet them. Stimulated by Jared Diamond's book *Collapse* (Viking/Allen Lane, 2005; reviewed in *Nature* 433, 15–16; 2005), the exhibition is an excellent attempt to persuade citizens to face up to the problems that increasingly confront them. The reality is that Angelenos have little to fear, provided that they and their nation avoid the mistakes highlighted in the exhibition.

If there is one message that emerges clearly from Diamond's comprehensive survey of past and present societies in trouble, it is the importance of anticipating and responding appropriately to the portents of collapse. This means you need to capture a population's attention. Ruefully, Vanda Vitali, the exhibition's originator, acknowledges that Los Angeles is not a museum-going city, at least in comparison with Europe. But the exhibition has attracted strong media coverage and a healthy attendance, not least from schools. The museum

is set to launch an interactive extension to accommodate feedback and spontaneous discussions, alongside monthly debates involving citizens and their leaders.

Diamond's unusual approach to history, as previously exhibited in the phenomenally successful *Guns, Germs, and Steel* (W. W. Norton, 1997), is to treat it in a scientific fashion akin to evolutionary biology and cosmology. Unable to tweak the world in order to test theories, he conducts copious surveys and analyses in order to discern key principles. Thus *Collapse* surveys many past societies, from Easter Island to Greenland, analysing in detail how each failed or succeeded in coping with some or all of five factors: climate change; decline in support from neighbours or trading partners; hostile neighbours; loss of environmental services; and, critically, how the society dealt with the problems facing it.

In contrast to Diamond's comprehensive coverage, Vitali and her team have achieved a triumph of economy. The failure of the Mayas is highlighted by a sizeable reconstruction of the pyramid and temple of Tikal, set starkly alongside blown-up photos of the ruins, taken before they were excavated. This is in mournful and salutary contrast to the richness of Mayan life as portrayed on its plates and vessels.

Comfortingly, the exhibition depicts a past success, too: the top-down management of forest resources by the Shogun of Japan's Tokugawa region in the nineteenth century. This is effectively represented by the simplicity of a Japanese domestic interior decorated with scrolls describing Japanese forest management and emblems of Samurai leadership.

The visitor is then transported to a contemporary society under threat: Australia. Here

I feel that the exhibition failed to convey just how daunting is the litany of threats now facing that arid and hypersaline continent.

At this point the exhibition turns from the concrete to the conceptual, focusing one by one on the five factors identified by Diamond. Anyone familiar with museums knows of that sense of fraying patience and concentration when overly didactic exhibitors confront the visitor with text piled on text. This exhibition takes a radical step to avoid that risk: the concepts are illustrated with almost no text and with the most simple Bayeux tapestry-like cartoon narratives. This controversial strategy pays off. The concepts are explicit enough and are easily comprehended. And they are popular, according to Vitali. As one grandmother said to her: "It allows me to look intelligent to my grandchildren as I tell them the stories."

So far, so good. But these displays would leave little lasting impression were the exhibition not framed by today's people, captured on video for the exhibition. At the outset, Montana is depicted, the place from where Diamond embarks on his own narrative: spacious, inspiring nature undermined by the quietly devastating effects of logging, mining and holiday-home ownership by people with no stake in the area. And at the end of the exhibition, there is southern California: a 12-minute cycle of voices from experts on water, power, climate and planning, explaining the choices that need to be made if the region is to cope with the increasing pressures on support systems that its citizens could all too easily take for granted. Encouragingly, Vitali tells of visitors staying and listening several times over.

Diamond's book showed that the threat to southern California is as nothing compared with the grave dangers that ultimately extinguished the Mayas — and, for that matter, the Easter Islanders, the Chaco culture of what is now the southwest United States and Mexico, and the Greenlanders. It also shows, however, how relationships with neighbours, threats to water from climate change, and environmental

degradation are unavoidable challenges. It is hard to imagine a more successful illumination of those challenges than this exhibition.

Travelling exhibitions are money-losers. But this exhibition deserves to be seen beyond Los Angeles. Southern California is famous enough, thanks to Hollywood, for a presenta-

tion of its problems to serve a purpose even outside the United States. Better still would be for local museums to adapt the exhibition, soliciting video narratives of foreseeable threats from their local citizens and leaders. Next stop Australia?

Philip Campbell is editor-in-chief of *Nature*.

Chemistry to die for

The Elements of Murder: A History of Poison
by John Emsley

Oxford University Press: 2005. 436 pp.
£18.99, \$30

Roger P. Smith

The title is a bit of a put-on. In *The Elements of Murder*, John Emsley, a chemist and science writer, slowly works his way through the periodic table, discussing those elements that are toxic enough to have caused human poisonings, whether accidental, or as emphasized here, deliberate. Rather more amusing is the (unintentional?) quip in the introduction: "Murder by poison may be a dying art..."

The major thrust of this effort centres on what professional toxicologists invariably, but unsatisfactorily, classify as 'heavy metals'. These are the electropositive natural constituents of the Earth's crust, with a density greater than 5. The classification has always been unsatisfactory because it lumps together some 40 elements of wildly different acute or chronic toxicity, including some that have a very low toxicity, or are toxic but still required in small amounts for normal biological function. No toxicologist, however, would dispute the importance of mercury, arsenic and lead in

any work on poisons, and a great deal of attention is lavished on them here, together with antimony and thallium. Because Emsley excludes non-metallic organic compounds, the work is not a general history of poison.

The Elements of Murder is obviously a labour of love, but it is less certain whether a niche readership will emerge that will reciprocate the author's affection for the material. The book is both authoritative and meticulously researched, and I found remarkably little to quarrel with in the factual content. Emsley knows what he is talking about. The book's formidable girth includes an extensive bibliography, a brief appendix, a glossary and a useful index. But the lack of citations in the text will limit the book's use as a primary reference source. On the other hand, it is too technical and comprehensive to be a good beach read.

Emsley gives us much more than the collection of anecdotes about grisly murders that the title and dust-jacket seem to promise. Indeed, even the most ghoulish of readers will grow weary from the sheer number of cases reported. Because homicidal arsenic poisoning has been carried out with regularity since antiquity, there are many more examples for arsenic than for the other elements. One

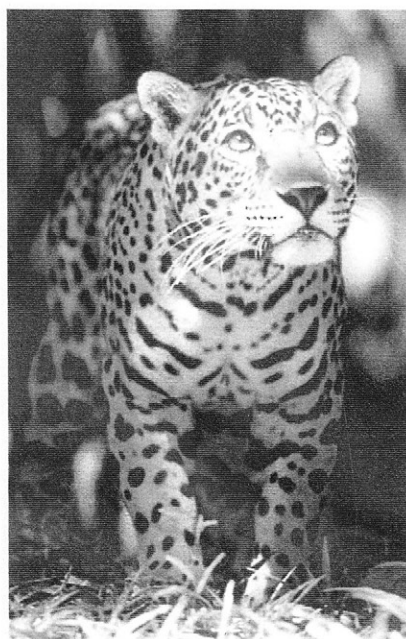
would think that a rather smaller group might have made the point. How many cases can one read about before imagining that one is personally experiencing the symptoms? I was surprised by the intimate details that Emsley has uncovered (and perhaps unfortunately chosen to include) about activities that were supposedly conducted in the greatest of secrecy so many years ago.

The book also includes detailed information on the amounts of the elements found in common foodstuffs, their industrial applications, common chemical reactions, distributions of the element in the body, methods of detection, common forms found in the environment, medical uses, and much more. It's not that this material is irrelevant, just that it is all a little too much. Tucked away into this mass of information are many fascinating tidbits. For example, can it be that thallium is one of the weapons of mass destruction supposedly concealed by Saddam Hussein? The book includes reports on the poisonings, alleged or authentic, occupational or sinister, of many famous people, such as Napoleon, Isaac Newton, Handel, Beethoven, King George III and others.

Toxicological classifications always include a 'miscellaneous' category, and the final chapter has such a group. It contains much shorter treatments of a few more heavy metals and some other assorted elements, many of which were never involved in homicides. But there is no mention of iron, which has caused many tragic accidental deaths.

This is a lovely book, but perhaps sitting down and reading it from cover to cover is not the best way to appreciate it.

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Creatures and craters

Whether you are planning an exotic vacation or looking for a location for your next field trip, two recently published books should provide some ideas.

Nature's Stronghold: The World's Great Wildlife Reserves by Laura and William Riley (Princeton University Press, \$49.50, £32.50) is a compendium of more than 600 of the world's wildlife reserves.

The book features reserves from 80 countries, giving details of such well known ones as America's Yellowstone National Park and Tanzania's Serengeti reserve, as well as lesser known specialist reserves such as Russia's Shulgan-Tash Zapovednik, which was set up to protect the last wild Burzyan honeybees in Russia. Vu Quang reserve in Vietnam is home to the Vu Quang ox — the first new mammal species reported for 50 years. The European bison was once nearly hunted to extinction but a remnant herd, originally protected by Hitler's deputy

Hermann Göring, now inhabits Poland's Bialowieza National Park and a transborder reserve in Belarus. And the endangered jaguar (see picture) finds safe haven at the Cockscomb Basin Jaguar Sanctuary in Belize.

This illustrated book gives details of what to see and when to visit for each of the reserves featured, making it an interesting read whether you are planning a trip or are just an armchair traveller.

More intrepid travellers might find *The Volcano Adventure Guide* (Cambridge University Press, £30, \$50) more exciting. Rosaly Lopes' book gives advice on planning a visit to an active volcano, and has detailed guides to 42 of the world's most spectacular examples.

With chapters on the types of eruption as well as safety and survival rules, this is another book that should interest those staying at home as well as amateur and professional volcanologists alike.

M.P.