

The red planet's big picture

Let's not get carried away with the images from NASA's Spirit rover, nor despair of Britain's silent Beagle 2. The best way to explore Mars is through a programme that builds patiently on each mission's successes and failures.

With two probes safely arrived at Mars, another en route, and just one apparent casualty, space scientists can count themselves lucky. The planet known for wrecking spacecraft seems to have been more hospitable this time.

The familiarity of the pictures beamed back by NASA's Spirit rover from the martian surface belies their rarity. Until now, only three landers had made it to the surface of Mars — two Viking craft in 1976 and the Mars Pathfinder with its mini-rover in 1997, which was little more than a technology test bed.

Spirit and its soon-to-arrive twin, Opportunity, will raise the game to the next level (see page 89). Their cameras and spectrometers are several generations better than those carried by the Viking landers. They can roam around to interesting rock outcrops, like a field geologist. And now that Europe's Mars Express has joined NASA's Mars Global Surveyor and Mars Odyssey in orbit, Mars exploration is poised to enter a new, more sophisticated phase.

After Spirit's landing, Charles Elachi, director of the Jet Propulsion Laboratory in Pasadena, California, which built the Mars rovers, gave special thanks to an influential California congressman and a former White House budget official who lent key support to the Mars programme several years ago. It was a fitting gesture: without a significant budget increase, the lab might have repeated the débâcle of 1999, in which two of its Mars probes were lost.

The new rovers cost a total of \$820 million, more than twice the price tag of the 1999 missions. Not only do these rovers carry more-capable scientific instruments, they also possess additional technologies to improve reliability — or at least provide better information on any failures that may occur. This time, Spirit was in radio contact during much of its descent to Mars, so ground controllers could monitor key events such as the release of its parachutes.

Beagle 2 — which as *Nature* went to press was the only missing

member of the current Mars armada — had no communications capability between leaving its mother ship, Mars Express, and arriving on the planet's surface. It deserves high marks for even getting to the launch pad on a shoestring budget estimated at just \$60 million. But Beagle's British managers may wish they hadn't skimmed quite so much. If Mars Express never picks up a signal, we may never know for certain what went wrong — whether the lander's parachutes or airbags failed catastrophically, or whether an unfortunately located crater rim blocked transmissions from an otherwise healthy spacecraft. Without such knowledge, it is hard to justify investing in a speculative Beagle 3 mission.

NASA, on the other hand, is beginning to reap the benefits of an integrated Mars programme, where each mission builds on the last. The agency's two Mars orbiters played key roles in scouting for Spirit's landing place, as well as communicating with the probe during landing. NASA's science plan is also patient and methodical, laying the geological groundwork by looking for evidence of past water, rather than rushing straight to the search for life.

The European Space Agency (ESA) also seems to be thinking long-term. Mars Express should produce two extremely valuable data sets — medium-resolution imagery of the whole planet, and an inventory of water and ice below the surface — that will inform more detailed future studies. Despite the greater media attention garnered by Beagle 2, Mars Express is the real milestone for European planetary science.

What is the right amount to spend on a planetary mission? That remains a tough question. But with successes such as last week's, ESA and NASA are learning to answer it with more assurance, and to estimate better what it takes to operate reliably on another planet.

Congratulations, then, to scientists and mission controllers on both sides of the Atlantic. It's good to be back on Mars. ■

China and SARS: could do better

Has the world's most populous nation learnt the lessons of last year's SARS outbreak? Only partially, it seems.

Some 10,000 palm civets in the markets in and around the Chinese city of Guangzhou in Guangdong province are due to be slaughtered. The animals, which are sold for food, will be dispatched because they carry the virus that causes severe acute respiratory syndrome (SARS), which has turned up in a resident of the region — the first case, apart from those caused by laboratory contamination, since last year's global outbreak (see page 89).

The slaughter plan and the quick reporting to the World Health Organization (WHO) of the infected patient are a welcome sign that China is now taking its public-health responsibilities seriously. This is in marked contrast to the tardy and secretive response to the previous outbreak, which first emerged in rural areas of Guangdong province in late 2002. However, the case also exposes shortcomings in China's system for monitoring and responding to infectious disease.

There is no evidence that slaughtering civets will prevent further

human cases of SARS. The natural animal reservoir for the SARS virus remains unknown — civets may be infected in markets from some other animal, and we don't even know whether they can pass the virus to people.

Still, given that the animals are destined for slaughter anyway, one could argue that disposing of them quickly is a reasonable precaution. The real question, however, is why they are on sale in the first place. At the height of the SARS outbreak, China closed its wildlife markets, only to lift the ban in August. That relaxation was unwise.

Questions also remain about the adequacy of China's system of monitoring for SARS and other emerging diseases. Away from major cities, many clinics — especially those specializing in traditional medicine, which are the first stop for most of the population — are not integrated into the disease-surveillance system. If China is to protect its people from re-runs of last year's SARS nightmare, this needs to change. ■