

South Africa and AIDS

Death by dithering

JOHANNESBURG

A health tragedy compounded by government farce

THE scientists, politicians, activists and doctors who met in Durban this week to discuss South Africa's awful AIDS epidemic had nothing to cheer. Nearly 5m of the country's 45m people have HIV, the virus that causes the disease, and its impact worsens each day. One delegate lamented that the country is already in the "death phase" of the epidemic, with more people dying from AIDS than are catching it.

Not that new infection rates are dropping. Rather, death rates are rocketing. Statistics are contentious because AIDS is not a notifiable disease, so doctors need not record it as a cause of death. But many researchers say AIDS is easily the top killer of South Africans, accounting for 30% of deaths. Life expectancy at birth has plummeted from 62 years in 1994 to 51 years now. Perhaps 600 people die each day.

Yet the government will not agree on a plan to distribute drugs which prolong lives and help prevent further infection. It has postponed a decision for months, despite estimates by civil servants that such drugs would save hundreds of thousands of lives and that ample money is available. Rumours flew at the Durban conference that a cabinet decision is imminent. But frustrated senior civil servants say that "the political will is not yet there", meaning that Thabo Mbeki, the country's president, and Manto Tshabalala-Msimang, its health minister, are still unconvinced.

What will persuade them that the drugs should be used now in state hospitals? Not money, clearly. An offer of a \$165m grant from the Global Fund, an international body set up to combat AIDS (and also tuberculosis and malaria) is due to expire in three months' time because the health minister will not accept it. Mrs Tshabalala-Msimang refuses to let foreign money go directly to provinces, such as KwaZulu-Natal, where anti-AIDS drugs are already widely distributed. Although the top civil servant in the health ministry said on August 5th that the deal will be signed later this week, such hopes have fizzled before. In any case, according to the government, many hospitals are not ready. One study presented in Durban this week suggested only 40% of South Africa's health staff are trained to avoid HIV infection. Just 59% of hospitals and clinics can conduct their own HIV tests.

Political pressure is also proving ineffective. AIDS activists who sat in talks with the government earlier this year are ready

to withdraw. Zackie Achmat of the Treatment Action Campaign has abandoned a personal boycott of the drugs, fearing that he would die before the government shifts ground. Instead, the group has relaunched a campaign of civil disobedience. Mrs Tshabalala-Msimang was widely jeered in Durban. The country's main trade-union confederation, Cosatu, which represents 1.7m workers, hints that it may join in. The biggest predominantly black newspaper, the *Sowetan*, this week launched its first attack on the government's AIDS policy.

Such activity may force change eventually, but some worry that progress already made is being undermined. This week the official opposition party, the Democratic Alliance, said that the government is weakening an earlier pledge to give anti-AIDS drugs to rape victims, after a new bill on sexual offences was rewritten to exclude the right to treatment. Even a ruling made last year by the Constitutional Court—that Nevirapine, a drug which helps stop the infection of newborn babies, must be distributed—could be in jeopardy. The Medicines Control Council (an independent body) says Nevirapine has not been registered properly and could be withdrawn by the end of October. Its manufacturer, Boehringer Ingelheim, must now show it is safe and effective, despite recent reassurances from the World Health Organisation that it can be used.

Effective dialogue is in short supply. Mr Mbeki stayed away from the Durban meeting, and Mrs Tshabalala-Msimang flew in only for the opening and closing ceremonies. But there is one reason why even the most committed ditherers will have to act: the death rates are fast becoming too awful for anybody to ignore. ■

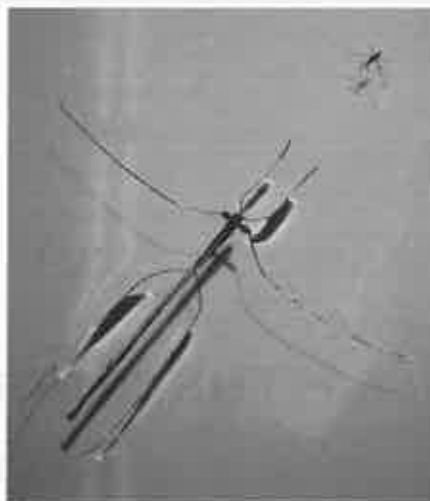
The Robostrider

Striding ahead

A robot that walks on water

WATER STRIDERS are insects that can perform amazing feats of dexterity on water. They perch on the surfaces of ponds and slow streams as if on solid ground. And, as their name suggests, they can skim blithely across the water's surface, just like surfers on a wave.

Not to be outdone by these humble creatures, John Bush and his colleagues at the Massachusetts Institute of Technology have tried to create a mechanical device that can do the same. The result is the Robostrider, a 9cm-long replica that looks remarkably like the real thing (although it is about nine times longer). It is fashioned



Big Daddy

out of aluminium and steel-wire, and powered by an elastic thread and pulley. Like a real water strider, the Robostrider relies on the surface-tension properties of water to stay afloat.

How it moves, though, is a different issue. For years, scientists have argued that water striders propel themselves by creating surface waves that carry momentum backwards. Newton's third law (that for every action there is an equal and opposite reaction) then carries them forwards. This idea works for adult water striders. To generate suitable waves, an insect leg must move faster than about 25cm a second, which is the minimum speed of a surface wave. Exceeding this speed is not a problem for water striders with long legs. But if it were the whole story, then baby water striders, with much shorter legs, should be immobile on water—yet they skim along as easily as adults.

This conundrum, known as Denny's paradox after the scientist who first noticed it, has puzzled researchers for almost a decade. Dr Bush and his colleagues believe they have found the answer. As they explain in a paper published in this week's *Nature*, water striders typically stroke the water with their middle legs a couple of times each second. High-definition pictures captured on video cameras reveal that each stroke produces a pair of vortices beneath the water's surface. It is these vortices, which move backwards in the wake of the insect, that are responsible for driving both adult and baby striders forward.

Like its inspiration, the Robostrider depends primarily on vortices for thrust, although it creates both vortices and surface waves in its wake. The researchers say that it can achieve speeds of about 30cm a second. Not bad, though real water striders have peak speeds of about one metre a second. And the Robostrider, they concede, moves less elegantly than its natural counterpart. Walking on water is impressive and not as easy as it seems. ■