

Don't underestimate the enemy

When an infectious disease appears to be in decline, the agent that causes it tends to disappear from the biomedical research agenda. As recent events have revealed, that can be a mistake.

The outbreak of poliomyelitis that hit the Caribbean island of Hispaniola last summer took everyone by surprise. The news that weakened, live viruses in the oral polio vaccine had reverted to a form that can initiate a disease outbreak is forcing the World Health Organization to re-examine the final stages of its global campaign to eradicate polio (see page 278).

Thankfully, the outbreak amounted to no more than eight cases. But it has exposed the limits of our knowledge about the polio virus. The genetic determinants of its transmissibility, for instance, remain obscure. And they seem likely to remain so, with polio now a low priority for the world's biomedical research agencies, which view it as a 'conquered' disease.

This attitude is short-sighted, because viruses have a habit of producing unpleasant surprises. In 1996 and 1997, for instance, as civil war raged in what is now the Democratic Republic of the Congo, the country was hit by a substantial outbreak of monkeypox. In Central Africa, contact with primates means that people do catch this disease from time to time. But the severity of the outbreak sparked fears that the virus had mutated into a more pathogenic form, or had acquired an enhanced ability to spread from person to person.

In the event, this appeared not to have happened. But some virologists argue that the threat is real, as the global eradication of smallpox — completed more than two decades ago — has left the door open for the related monkeypox virus to evolve and fill its vacant niche. Once more, however, testing this theory does not

seem to be high on the list of biomedical research priorities.

The last official samples of smallpox reside in secure facilities in the United States and Russia. But other stocks may exist in undeclared bioweapons laboratories — and the threat of biowarfare or bioterrorism provides another reason to maintain a broad view of the potential threat posed by viral diseases.

This was underlined last week by the revelation that a team in Australia had inadvertently created an unusually lethal form of mousepox. The researchers were trying to create a contraceptive vaccine, using a benign mousepox virus to express genes for proteins carried on mouse eggs. They also added the gene for interleukin-4 (IL-4), in an attempt to boost the antibody response against these proteins. But a paper in the latest issue of the *Journal of Virology* (75, 1205–1210; 2001) describes how the IL-4 gene also shut down the cellular arm of the animals' immune systems. As a result, the virus killed the vaccinated mice within days. Such findings show that it may not take much for a malevolent bioengineer to create a hideously effective weapon.

Advances in fields from immunology to epidemiological modelling mean that we are in a better position than ever to respond to the threats posed by viral evolution and bioterrorism. High-throughput gene sequencing, in particular, means that a virus's genetic secrets can be rapidly laid bare. But deploying these tools effectively may require a strategy of expecting the unexpected. Apparently conquered or benign viruses cannot simply be ignored. ■

The stuff of ideas

Introducing new ways in which researchers and others can stimulate *Nature's* readers.

This issue sees the launch of two series of essays, devoted respectively to writing and concepts in science. It also contains an unusual collection of overviews in the Insight section which focuses not on the current state of research but, in a more visionary spirit, on its future (see page 385). All of this represents an effort to focus on aspects of the essence of science, rather than on new results or new developments in science policy. And at some level, all focus on something the literature sees too little of: scientific ideas.

The self-censorship of ideas from scientific journals is, up to a point, desirable. The value of ideas as perceived by others (including referees) can be highly subjective. Few have the time to invest in the hope that an idea has potential, only to find that it does not. And an idea's true originality can be difficult to evaluate. New ideas, in short, are usually best cultivated in private, especially if one wants to reap the rewards that their fulfilment might bring. And the literature is burgeoning enough already.

Nevertheless, open discussion of ideas seems undervalued. Occasionally, an old idea may deserve public re-examination because it has more to offer or is being misrepresented — as a result, perhaps, of the 'Chinese whispers' of second- or *n*th-hand citation. Or a recent idea may deserve explication to a wide audience to fulfil its potential between disciplines. Alternatively, an idea

may deserve examination for its development.

It is with these considerations in mind that the series Concepts (see page 289) has been conceived. Some scientists niggle away at a concept for years, finding it an ever-fruitful source of stimulation or puzzlement. Some may be exasperated by others' perceived misuse of a concept. Either way, they have a point of view that deserves to be captured for the rest of us. Each article will therefore not only communicate some aspect of a concept to readers, but will also bring a touch of the author's personal perspective along with it.

The act of writing itself, in and about science, also deserves celebration and analysis. Hence our other new section, Words (see page 287). The weekly articles will explore issues, anecdotes and episodes (both historical and contemporary) that elucidate the relationship between science and words. We shall be publishing contributions from authors in the many disciplines that touch on science, words and language, including leading linguists, historians of science, poets, playwrights, novelists, anthropologists and scientists who are themselves excellent writers.

These articles are essays — a word defined by at least one dictionary as "a literary composition". We hope that, in both new series, the writing itself will be found to be as enjoyable as the messages are refreshing. ■