the mislabelling of the SIV_{MAC} reisolations, I hope that all genuine West African-type human viruses will, henceforth, be labelled HIV-2 and all simian viruses SIV (SIV_{MAC}, SIV_{AGM} and so on) and that the terms HTLV-IV and $STLV\text{-}III_{AGM}$ be reserved exclusively for the laboratory contaminants.

This episode should serve as a strong warning for all virologists working with multiple isolates to check any new isolates against viruses present in the laboratory. I am aware, or have been told, of at least five instances in other laboratories in the United States and Europe where non-infected cell cultures became infected with HIV-1 in the same containment hood. □

1. Daniel, M.D. *et al. Science* **228,** 1201–1204 (1985).
2. Kestler, H.W. III *et al. Nature* **331,** 619–621 (1988).
3. Essex, M. & Kanki, P. *Nature* **331**, 621–622 (1988).
4. Kanki, P.J. *et al. Science* **232,** 238–243 (1986).
5. Kanki, P.J. *et al. Science* **230,** 951–954 (1985).
6. Chakrabarti, L. *et al. Nature* **328,** 543–547 (1987).
7. Kornfeld, H. *et al. Nature* **326,** 610–613 (1987).
8. Hirsch, V. *et al. Cell* **49,** 307–319 (1987).
9. Hahn, B. *et al. Nature* **330,** 184–188 (1987).
10. Desrosiers, R. *et al. Nature* **327,** 107 (1987).

Carel Mulder is Professor of Pharmacology, Molecular Genetics and Microbiology at the University of Massachusetts Medical School, Worcester, Massachusetts 01655, USA.

Species preservation

The CITES conservation circus

N. Mrosovsky

THE convention on international trade in endangered species of wild fauna and flora (CITES) has noble aims: to help save species endangered by international trade through the recognition that success demands not only cutting off the supply by clamping down on poachers, but also limiting the demand by making imports illegal in consumer countries. At biennial meetings, representatives from more than 95 countries can list species on the appendices to the convention. Listing establishes either a virtually total prohibition on export and import (appendix I) or a monitoring of trade by a permitting system (appendix II). Unfortunately, decisions taken at the most recent CITES meeting in Ottawa last July are not encouraging.

There are a great many endangered species, but not all of them are endangered by trade. According to criteria adopted at Berne in 1976 for placing species in the appendices, both the biological status and the extent to which the species is threatened by trade must be taken into account. Information provided should preferably include scientific reports on population size and range, or at least some indication of the potential causes of extinction. On the trade side, requirements depend on in which appendix the species is being listed. Even for appendix II listing (monitoring), evidence that actual or potential trade constitutes a threat to survival is needed.

There are obvious reasons for limiting a convention on trade to species endangered by trade. Even this is a huge task: so many different countries, animals and plants are involved; there is the danger of re-export of products in different forms; and the problem of distinguishing endangered species from others that may look similar. To achieve its aims, CITES must be practical and credible. If it becomes too complex it will be unenforceable, and if it seeks to stop trade in animals that are not endangered by trade it may lose support.

The case of the poison-arrow frogs of the genus *Dendrobates* illustrates the problems. These animals are small, generally brightly coloured amphibians found in tropical central and South America. Most species have probably not been used by Indians for poisoning arrows, although they do contain toxins. There are about 50 species in the genus, some arboreal and hard to study despite being conspicuous.

At the most recent CITES meeting, the representative from Surinam proposed that the whole *Dendrobates* genus be placed in appendix II. Few population data exist, nor is there any evidence that *Dendrobates* spp. are in danger of extinction. There is some demand in Europe and elsewhere for these colourful frogs to adorn terraria, but there is no evidence that this trade is affecting wild populations. *Dendrobates* are quite easy to breed in captivity and some of the pets in Europe come from such stocks.

Not only did the proposal to list *Dendrobates* on appendix II fail to meet the Berne criteria, but other information presented at the meeting strongly indicated that these frogs should not be listed. This information was compiled by the IUCN Trade Specialist Group and was based largely on the work of Charles Myers (American Museum of Natural History), one of the few people to have studied poison-arrow frogs extensively in the wild. Among the cogent points are: (1) the species appearing most often in trade are mainly those with the largest ranges, and are often among the most abundant vertebrates in their habitats; (2) apparent small ranges for some species may simply be the result of inadequate study of other areas; (3) there is no evidence that these frogs are dependent on primary forest — they occur in mixed second growth and in banana plantations, for example; and (4) collection of large numbers of frogs does not seem to depress local populations. Sometimes they seem even more abundant after collection. Amie Brautigam, compiler of the IUCN report, notes that "Myers reports that during a 4-year study on *D. histrionicus* during which he collected 7,600 specimens from one population for scientific purposes, the population actually increased rather than decreased". Taken together, there is no evidence that *Dendrobates* are endangered at present by trade — or by anything else. Yet the proposal from Surinam to put them on appendix II was passed, largely with the support of the South American countries who may have voted more in a spirit of regional solidarity than on the basis of scientific evidence.

The listing of such species may seem like a victory or at least a symbolic gesture for conservation, but is it really helpful or is it counterproductive? Burdening administrators and customs agents might distract effort from species that are incontestably being threatened by trade. Indiscriminate listing of species and regional block voting, especially in the scientific committee, could turn CITES into a circus for political exhibitionism. Endangered species deserve the best science, not political posturing. Accepting flawed proposals actually discourages the research into the predicament of a species and the field investigations that should precede an adequate proposal. The poison-arrow frogs are only one example of the listing of species on the appendices without scientific justification. At its best, CITES is a splendid example of cooperation between rich and poor countries, but if it does not place the utmost importance on scientific considerations, it may survive for even less time than some of the species that need its help. □

Over-protection — is the monitoring of trade in poison-arrow frogs such as Dendrobates pumilio *(left) and* D. leucomelas *(right) really necessary? Photographs: Bruce Coleman.*

N. Mrosovsky is in the Department of Zoology at the University of Toronto, Toronto, Ontario, Canada M5S 1A1.