from the patient's verbalizations, but confirm and verify its controls from ego and superego material. However, he would be presumptuous were he to anthropomorphise animal behavior.

In keeping with Tinbergen's extrapolations to groups perhaps one might remark that there is today no worldwide Institute for Interpopular Ideals.

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More on Forest Defoliation

Newton's statement "High forest is not particularly good habitat for many animals, birds, and insects . . ." ("Defoliation effects on forest ecology," Letters, 12 July) has no relevance to his conclusion that the use of herbicides and defoliants in Vietnam should not be criticized on the basis of ecological considerations.

It may well be true, as he implies, that the clearing or defoliation of near pure-stand temperate forests (by "game biologists") might lead to development of second growth or undergrowth vegetation which is more diverse than the forest and is thus a more suitable and more available habitat for many "animals." However, the situation is quite different in the tropical forests of Vietnam. There it is again true that "High forest is not particularly good habitat for many animals, birds, and insects . . . ," but it is also true that the tropical forest canopy, with its diversity of tree species, is the *only* habitat for countless more species of insects, birds, aboreal reptiles, mammals, and epiphytes. In short, most of the life in a tropical forest is connected with the canopy in some vital way. For the most part these organisms are not an important part of the naturally occurring second growth vegetation (river clearings, land slides) or of man-made clearings choked with second growth. These organisms have their specific food plants, nectar sources, nests, and territories in the canopy. They cannot be expected to move successfully into adjacent second growth (or even adjacent forest) when their part of the canopy is defoliated.

The life functions of tropical forest organisms take for granted, so to speak, the predictability of tropical climate. Defoliation or killing of vast areas of forest is an event unprecedented in the

evolutionary history of any tropical species. Even several months of defoliation in the forests of Vietnam is certain to cause the extinction of many animal populations. Improved productivity in the subsequent regeneration phase, which Newton deems to be beneficial, is of little consequence to these extinct populations.

Destruction or disruption of nature in vast areas of the tropics by *any* means is not, in our opinion, warranted by even the most noble goals of any country. The United States is setting a most unfortunate precedent in forest defoliation in Vietnam, but this is not the only aspect of our foreign policy which requires the advisory capabilities of competent tropical ecologists. Any use of pesticides, the building of dams, or initiation of large-scale agriculture in the tropical regions of the world, by the United States or any other nation, should have the approval of not only agriculture experts and other applied biologists, but of tropical ecologists and population biologists who are just beginning to understand the nature of the tropical forest—a crucial factor in the future of all mankind.

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There is a point to be made about the illegality of the defoliation operation. The Geneva Protocol of 1925 prohibits ". . . the use in war of asphyxiating, poisonous, or other gases, and . . . all analogous liquids, materials and devices. . . ." Although this statute was signed by our representatives at Geneva, it has not to this day been ratified by the United States. Why? Nations by the score have adopted the agreement; it was fully respected by the belligerents in World War II; and it certainly has the support of the collective conscience of civilized mankind.

The widespread use of defoliants and herbicides and the massive application of CS (*o*-chlorobenzalmalononitrile) and other gases in Vietnam is not just illegal in terms of international law. It could open a Pandora's Box leading ultimately to the acceptance and use of ever more toxic and lethal materials. . . .

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