

supply the energy for the observed ice thinning: a longwave radiational contribution from direct thermal trapping due to increasing greenhouse gases estimated from the literature to be 0.5–1.0  $\text{Wm}^{-2}$ ; a warming of 0.0–0.2 °C contributing through sensible heat transfer 0.0–1.4  $\text{Wm}^{-2}$ ; and a 0.1–0.2-g  $\text{kg}^{-1}$  increase in specific humidity, in part induced by atmospheric warming, which through latent heat transfer would make available 2–4  $\text{Wm}^{-2}$ .

The recent drastic wastage of Mount Kenya's glaciers indicates that significant climatic change is occurring in East Africa. In particular, the energy requirements for the observed ice loss point to the pivotal role of increased atmospheric water vapour content as part of a green-

house forcing. A new mapping of Mount Kenya's glaciers would serve to monitor the continuation of such climate controls.

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## Garbage in paradise

SIR — The high Arctic is the “floor of creation”<sup>1</sup>, the land having only recently emerged from its protective cradle of ice. In spring 1990, I was a member of a 1,200-km ski-traverse of Ellesmere Island (76–84° N), the northernmost land in North America<sup>2</sup>. We came to realize that if curiosity in paradise was the original sin, then certainly the cavalier jettison of human garbage must be a close second.

Far from being an untainted wilderness, Ellesmere Island is riddled with the detritus of human passage and occupation. We encountered 208 objects, listed in the table, or one piece of garbage every 4 km of non-glaciated surface travelled. Yet Ellesmere Island is remarkably isolated, containing only about 100 permanent residents although it is the size of Great Britain.

No single problem of garbage is more pervasive in the Arctic than that of aircraft gasoline drums discarded by scientists studying the natural environment. A further irony is that the single largest collection of garbage we encountered was identified as belonging to a geologist who had written an article arguing against establishment of a national park on Ellesmere Island because it would attract too many tourists to an “environment [which] has exceptional limits in sustaining and suffering human use, even by the most modest southern standards”. The Polar Continental Shelf Project, the umbrella government organization that coordinates all research in the Canadian Arctic, must enforce a ‘garbage in – garbage out’ policy to all researchers relying upon its support.

The high Arctic is extremely unforgiving when it comes to absorbing human insults against its environmental integrity. The desert climate and harsh temperatures preserve our accumulative abuses. In an environment where

one can easily find relics of historic expeditions of centuries ago, the present waste will always stare back at us in mute testimonial to our arrogance. Items now left behind in the age of air travel can no longer be regarded as relics, just refuse.

### HARVEST FROM ELLESMERE ISLAND

Gasoline drums (45-gallon, several stencilled “Eureka”)	47
Rusted metal food containers	41
Rifle cartridges	15
Gasoline drums (25-gallon)	14
Snowmobile parts	14
Self-agrandizing cairns by Army personnel	10
Food crates (wooden and metal, each containing about 50 items)	7
Recent news magazines	6
Metal cans and cylinders	6
Cigarette butts	6
Angle iron (3-m lengths used to weigh down plastic for cartographic bench mark, 1 with stamp ‘1975’)	6
Pieces of clothing	5
Plastic garbage bags (empty)	5
Bales of wire	4
Scientific crates (some identified)	3
Snow gauges	3
Tarpaulins (plastic and cotton)	3
Tent heaters	2
Cotton and plastic cloth (15-m lengths)	2
Wooden boxes	2
Styrofoam drinking cups	2
Flare cannisters	2
Wooden tower (for radio antenna)	1
Graffiti (3-m letters for incoming helicopters spelling out sexual slang)	1
Surveying steel cable	1

This survey, together with that of Benton's for Ducie Atoll<sup>3</sup>, indicates that though some of the most remote corners of the globe may be technically classified as ‘wilderness’ through absence of human inhabitation, nowhere is the world really free of human waste.

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## Prune function?

SIR — The sometimes surprising and unexpected results yielded by emergent similarities between products encoded by mutationally defined genes and other proteins with biochemically defined functions can sometimes lead to new insights into cellular function. Such has been proposed to be the case for the *Drosophila* eye-colour gene *prune* (*pn*), which Teng *et al.* state implicitly<sup>1</sup>, and Ruggieri and McCormick explicitly<sup>2</sup>, encodes a protein with significant similarity to GTPase-activating proteins (GAPs). Based on this conclusion, Teng *et al.* develop a model<sup>1</sup> where the *abnormal wing disks* (*awd*) gene product, a nucleoside diphosphate kinase principally associated with microtubules<sup>3</sup>, has a minor role in activating a hitherto unidentified Ras-like protein. The role of the *pn* gene product is then construed to be a down-regulator of this unidentified GTPase.

However, we believe that the *pn*/GAP similarity is far from significant. First, screening the PIR database (release 29.0) with the *pn* protein sequence using WORDSEARCH<sup>4</sup>, no outstanding scores are produced. However, the best ones that are produced are greater than that obtained against GAPs. The first of the GAP family of proteins (bovine GAP) is only the 102nd listed protein, there being 70 proteins with actual higher scores. It is therefore not clear how Teng *et al.* arrived at the conclusion of GAP similarity. A similar result was obtained using FASTA<sup>5</sup> and BLAST<sup>6</sup> searches, the last of which examines all protein databases and has a useful probability score which indicates that all of the matches are not significant (the best score, against acetyl CoA carboxylase, being 66,  $P=0.2$ ).

Second, attempts to align *pn* and bovine GAP using ALIGN<sup>7</sup>, which includes a 100-fold randomization of the sequences to provide statistical meaning, shows that with gap penalties of +7 or +8 and with a mutational data matrix value adjustment of +5, alignments with numbers of gaps similar to those reported<sup>1</sup> are produced (21 and 19, respectively) yet the scores for the alignments lie within 0.5 s.d. of the mean of the randomized scores. This means that 30% of all randomized sequences score better and that therefore the sequences are unrelated.

Third, using the *pn* subsequence claimed to correspond to the most conserved sequence within the GAP catalytic domain (see Fig. 3d in ref. 1), we were unable to produce significant alignments to GAP proteins nor any significant matches to other protein sequences in the databases. Furthermore, using ALIGN on the *pn* subsequence and the