therefore as if the Tibetan plateau is responding to compression from the south not by folding but by a kind of lateral extrusion. This requires a ductile behaviour in the underlying crust and upper mantle, a condition which is compatible with an observed strong attenuation of elastic waves beneath the region.

Molnar and Tapponier take the further step to suggest that the ductile lower crust and upper mantle beneath the Tibetan plateau may be regarded as the working fluid in a massive geo-barometer, the elevation of the plateau reflecting the level of stress transmitted to the fluid contained by surrounding but uncoupled blocks. The authors essentially propose the decoupling of a thin and more or less passive brittle, upper crustal layer from a ductile zone beneath, which experienced relatively homogenous crustal shortening. It does seem, however, that the amount of isostatically compensated crustal shortening required to 'pump up' the Tibetan plateau to 5,000 m is very large (of the order of 100%) and this would involve a much larger strain in the overlying plateau than is observed.

Molnar and Tapponier may not have solved the problem of plateau uplifts—there are other comparable but smaller features such as the Colorado plateau—but they have refocused attention on the long standing problem of how stresses are transmitted through the lithosphere to produce localised strains. The deformation is clearly inhomogeneous and there is much to be learned about the formation and decoupling and interaction of small scale crustal and lithospheric blocks. The combined application of the methods of earthquake fault-plane solutions, surface geology, gravity, and elastic wave attenuation studies offer a promising way forward. □

Life at low Reynold's number

from Paul Colinvaux

SMALL planktonic animals must feed in water which has properties a little like those we know in treacle, as the size and slow motions of the zooplankters make them live at low Reynold's number, at which liquid flow becomes laminar. One of the properties of laminar flow is that raking or stirring movements do not jerk particles through the water so that there is no easy displacement of suspended matter. Planktonic herbivores respond to this reality by generating a flow of water towards themselves and then 'filtering' the flow for algal food. Operating a filter seems an indiscriminate mode of feeding and one wonders whether one of the consequences of life at low Reynold's number is that zooplankters are of so catholic a taste that they eat everything caught in their 'filters'. If they do, it seems curious that the algae of the phytoplankton have evolved so many shapes and sizes. Zooplankters must also cope with the consequences of living in a transparent medium. Rapid motion is forbidden by the low Reynold's number and there is nowhere to hide. Their fluid environment also tends to be layered, warm on top and cold underneath. The strategies adopted by zooplankters to deal with these conditions were explored at a conference on the structure of zooplankton communities held at Dartmouth College New Hampshire*.

We now have a better idea of what 'filtering' really means because the process has been watched by high-speed cinematography through a microscope (J. R. Strickler, University of Ottawa; J. J. Gilbert, Dartmouth College). It turns out that food is often 'handled' rather than 'screened'. A long filamentous diatom colony, for instance, is manoeuvred by a copepod to be end-on to the mouth, then fed into the jaws and broken up like brittle spaghetti. Larger fragments vanish down the animal's mouth but smaller fragments drift away. In a feeding rotifer, a stream of water flows against the ciliated wheel, where different algal cells are accepted or rejected as they thump against the cone that leads to the rotifer mouth.

Data on what particles are removed from suspended mixtures also show that herbivores in the plankton do specialise to some extent but that the discrimination is fairly crude, usually by size or against the obviously scarcely edible. Copepods and rotifers discriminate more than do cladocerans.

The habit of swimming up by night and down by day (vertical migration) has various possible advantages. It hides zooplankton from predators that hunt by sight. But the habit can also result in a systematic food search and it also ought to let plankters lower the energy cost of respiration by putting them in the cold bottom water when not actively feeeding. The conference was given strong evidence that all three mechanisms were, indeed, driving the habit, with a suggestion that predation was the most prevalent.

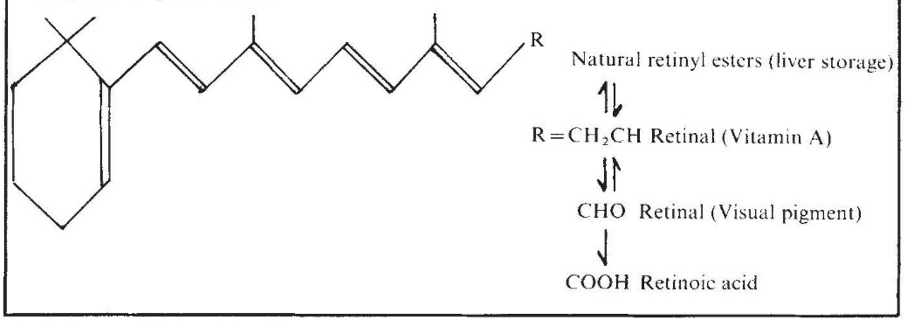
Water mites, which are apparently without serious predators, may migrate up and down, apparently in quest of food or optimum temperature. But plankton in tropical Lake Gatun abandoned a former pattern of vertical migration when their fish predators were removed. In Lake Llano in the Phillipines *Chaoborus* is restricted to water deep enough to let it hide from fish at the dark bottom by day. In the 30 m high experimental chamber at Dalhousie University marine copepods went up and down when the water was essentially without food but abandoned their migrations to remain at an introduced layer of algae. In the Arctic Alaskan Toolik Lake, where there is no night in summer, there was no regular vertical migration but the animals adopted a depth which depended on temperature or their age and hunger.

Another way in which the larger zooplankton avoid predators appears to be by 'cyclomorphosis'. Specimens of some large Cladocera have a significant part of their total volume taken up by essentially transparent protuberances, a change of shape of the growing animal that can be expected to minimise the target presented to a fish

*Held on 21–25 August, 1978.

Erratum

In the article 'Epithelial cancer, differentiation and vitamin A' (*News and Views* **277,** 261; 1979) the wrong illustration was inadvertently included. The correct diagram is given below.



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