

small numbers of skuas attempt to breed, clutch size is small and fish is not a dominant item in the diet. In 1988–89, we found a reasonably large breeding population (163 breeding pairs censused just before clutch initiation). In a subsample of these pairs (54 nests), mean clutch size was 1.4 eggs per nest⁶. Fish was the predominant item in chick diets. We believe the differences between our values and those reported above for Palmer skuas are because Trivelpiece *et al.* started their observations later and their sampling was less frequent.

Trivelpiece *et al.* suggest that Palmer skuas would have suffered a reproductive failure in 1988–89 without the oil spill. The contrasting mortality patterns we observed in 1988–89 and 1989–90 do not support this assertion. Even though we observed complete mortality on our study sites this year, again due to intraspecific aggression, the pattern of chick mortality was very different. This year, early- and late-hatched chicks had the same life expectancy, about 2 weeks, suggesting that parents were having difficulty meeting the increasing energy demands of their growing young. Most loss occurred during storms. In the year of the spill, early-

hatched chicks had a significantly longer life expectancy than late-hatched ones⁷, reflecting the fact that virtually all chicks died within a short period coincident with the spill.

Because South Polar skuas nest at high densities and have a propensity to cannibalism, their reproductivity is sensitive to any factor which increases the likelihood of attacks by neighbours on the young. Parental neglect, rare before the spill in 1988–89, increased tenfold during the spill and affected chicks of all ages. The available evidence suggests that the mortality observed following the spill was unusual, and not due to food scarcity.

Z. A. EPPLEY

M. A. RUBEGA

Department of Ecology and Evolutionary Biology,
University of California, Irvine,
California 92717, USA

1. Eppley, Z.A. & Rubega, M.A. *Nature* **340**, 513 (1989).
2. Ainley, D.G. *et al.* *J. anim. Ecol.* **59**, 1–20 (1990).
3. Parmalee, D.F. *et al.* *US Antarc. J.* **13**, 146–147 (1978).
4. Ainley, D.G. *et al.* *Colonial Waterbirds* (in the press).
5. Pietz, P.J. *Auk* **104**, 617–627 (1987).
6. Eppley, Z.A., Rubega, M.A. & Tasker, M.L. *US Antarc. J.* (in the press).
7. Eppley, Z.A. & Rubega, M.A. *Mar. Ecol. Progr. Ser.* (in the press).

Protein terminology tangle

SIR—The independent approaches used to identify calcium- and lipid-binding proteins, and phospholipase A₂- and blood coagulation inhibitors, means that many names are used for each member of the same protein family. A common nomenclature (see table) would improve communication between laboratories and reduce the considerable confusion that exists at the moment. The term ‘annexin’ which was suggested by Geisow (*FEBS Lett.* **203**, 99; 1986) because of the membrane-binding properties of these proteins, has been combined with the numbering system of Pepinsky *et al.* (*J. biol. Chem.* **263**, 10799; 1988). Forty-one

researchers have now agreed to these suggestions; we can provide a list of their names and addresses to interested readers on request.

M. J. CRUMPTON

Imperial Cancer Research Fund
Laboratories,
PO Box 123,
Lincoln's Inn Fields,
London WC2A 3PX, UK

JOHN R. DEDMAN

Department of Physiology
and Cell Biology,
University of Texas Health Science
Centre at Houston,
Texas 77225, USA

Calcium/phospholipid-binding proteins

Annexin	I	II	III	IV
Previous terminology	Lipocortin I p35 Calpactin II Chromobindin 9 GIF	Calpactin I Lipocortin II p36 Chromobindin 8 Protein I PAP-IV	Lipocortin III PAP-III 35- α Calcimedlin	Endonexin I Protein II 32.5K Calelectrin Lipocortin IV Chromobindin 4 PAP-II PP4-X 35- β Calcimedlin
Annexin	V	VI	VII	VIII
Previous terminology	PAP-I IBC Lipocortin V 35K Calelectrin Endonexin II PP4 VAC- α 35- γ Calcimedlin Calphobindin I Anchorin CII	p68, p70, 73K 67K Calelectrin Lipocortin VI Protein III Chromobindin 20 67K Calcimedlin Calphobindin II	Synexin	VAC- β

Coiling hand

SIR—John Galloway’s revival in *News and Views*¹ of D’Arcy Thompson’s vision of biological form being guided by physical forces is once again a reminder of just how fascinated humans are by asymmetries in a world so overwhelmingly composed of symmetrical organisms. In both *Bacillus subtilis* and the snail *Lymnaea peregra* the presence or absence of one molecule determines direction of coiling.

Regrettably, the implication that some asymmetry at the molecular level predisposes snails to coil in a particular (right-hand) direction is weakened by the results of the only other studies to examine the inheritance of coiling direction. In the polymorphic Tahitian landsnail *Partula suturalis*², as in the case of *L. peregra*³ reported by Galloway, coiling direction is controlled by a single locus. However, unlike *L. peregra*, sinistral is dominant to dextral in *P. suturalis*, suggesting that left-handedness requires the molecule whereas right-handedness does not. The pulmonate *Laciniaria biplicata* exhibits the same pattern of inheritance⁴.

Although the vast majority of living species of gastropods exhibit dextral coiling⁵, the basis of the bias remains elusive. Even more curiously, whereas gastropods are predominantly dextral, both dextral and sinistral shells were approximately equally common among conispirally coiled fossil nautiloid and ammonoid cephalopods^{6,7}. Hence cephalopods seem to have been immune to the dextral bias so pervasive in gastropods. Perhaps differences in the early cleavage patterns, between these classes⁸ result in differential susceptibility to an intrinsic coiling bias. But then again, perhaps D’Arcy Thompson’s appealing vision is just a bit too simplistic when applied to shell coiling.

A. RICHARD PALMER

Department of Zoology,
University of Alberta,
Edmonton, Alberta T6G 2E9, Canada

1. Galloway, J. *Nature* **343**, 513 (1990).
2. Murray, J. & Clarke, B. *Genetics* **54**, 1261–1277 (1966).
3. Freeman, G. & Lundelius, J.W. *Wilhelm Roux's Arch.* **191**, 69–83 (1982).
4. Degner, E. *Mittl. Hamburg Zool. Mus.* **51**, 3–61 (1952).
5. Vermeij, G.J. *Nature* **254**, 419–420 (1975).
6. Flower, R.H. *Evolution* **9**, 244–260 (1955).
7. Arkell, W.J. *et al. Treatise on Invertebrate Paleontology Part L (Ammonoidea)* (Univ. Kansas Press, Lawrence, 1957).
8. Giese, A.C. & Pearce, J.S. *Reproduction of Marine Invertebrates. Vol IV* (Academic, New York, 1977).

GALLOWAY REPLIES—I did not mean to imply that it is some molecular asymmetry that determines hand of coiling in gastropods. In fact I emphatically think it is not. For the record, the point Palmer makes about *Partula* was made in an earlier *News and Views* article I wrote (*Nature* **330**, 203; 1987) entitled “Evolution of Helicity: Cause for Reflection”.

JOHN GALLOWAY

Cancer Research Campaign,
London SW1Y 5AR, UK