

sphere. Such systems adopt a sinistral, that is, right to left, direction of writing and reading scan. Studies of eye scan direction have shown that sinistral scan direction favours a perception of lexicals to the left of the visual fixation point⁹. Such displacement of lexical perception into the left visual field would be expected if lexicals were preferably processed in the right hemisphere. Likewise as dextral scanning produces a perception of lexicals to the right of the fixation point, the dextrality of the Greek alphabet would follow from the adoption of a left hemispheric perception of lexicals through the right visual field.

Why should the development of a left rather than a right or bilateral representation of writing, as a consequence of the alphabet, have led to the Greek intellectual revolution? The answer probably lies in the fact that "competences" within the brain compete for expression. Analogously to Mendelian genes, the competences of the mind can have a dominant or recessive relationship to each other. Levy and Trevarthen⁹ have shown that when two hemispheres each possess a competence able to answer a question, only one will do so. Though often the dominant competence will be superior in correctly replying compared with the recessive competence it dominates, frequently the recessive competence, as found by unilaterally testing it, will have a superior ability to answer to the question correctly than the competence which dominates it.

I conjecture that the alphabet, by producing a unilateral representation of lexicals in the left hemisphere, freed recessive competences in the left hemisphere which underlie rational, analytical and logical thought. These competences were previously overshadowed, inhibited and restricted in their development by a right hemispheric set of competences deriving from its representation for lexicals.

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- Ojemann, G.A. *Behav. Brain Sci.* 6, 189-230 (1983).
- Hatta, T. *Neuropsychologia* 14, 685-688 (1977).
- Hatta, T. *Neuropsychologia* 19, 87-94 (1981).
- Tsao, Y.-C. *et al. Brain Lang.* 8, 367-371 (1979).
- Sasanuma, S. *et al. Neuropsychologia* 15, 547-554 (1977).
- Sasanuma, S. & Fujimura, O. *Cortex* 7, 1-18 (1971).
- Marcel, T. *et al. Neuropsychologia* 12, 131-139 (1974).
- Levy, J. & Trevarthen, C. *Brain* 100, 105-118 (1977).
- Rozin, P. *et al. Science* 171, 1264-1267 (1971).
- Pollatsky, A. *et al. Brain Lang.* 14, 174-180 (1981).
- Levy, J. & Trevarthen, C. *J. exp. Psychol. hum. Percept. Perform.* 2, 299-312 (1976).

Alignment of base sequences

SIR — In a recent paper Richards *et al.* show¹, in their Fig. 4, an alignment in which they claim that gaps "were inserted to maximize the number of base matches". The authors are to be commended on the clarity of phrase "number of base matches" when so many would have preferred the ambiguous term "homology". They have, nevertheless,

still managed to mislead the careless reader as the following segment of their alignment shows:

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-----CCTTCAGAAATACAGAAATAGGGACATAGAGA
ATCCCACCCAGCCCCCTGGACCTGTAT-----
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(Underlining shows the base matches.) An alternative alignment might be as follows:

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CCTTCAGAAATACAGAAATAGGGACATAGAGA
ATCCCA---CCCAGCCCCCTGGACCTGTAT
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This alignment reduces the number of gaps in this region by 50 per cent, reduces the number of gapped residues by 80 per cent, and increases the number of base matches by 133 per cent. More modest improvement around two of their other gaps is also possible. If I can increase the number of base matches by removing gaps, then clearly the authors' insertion of gaps did not maximize that number. One should seldom claim that one has maximized anything in the absence of a rigorous algorithm to accomplish that task². It is sufficient (and frequently correct) to assert that gaps have been introduced to increase the number of base matches.

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- Richards, J.E., Gilliam, A.C., Shen, A., Tucker, P.W. & Blattner, F.R. *Nature* 306, 483 (1983).
- Smith *et al. J. molec. Evol.* 18, 38 (1981).

Fissure animals of Bristol and South Wales

SIR — Michael Benton has given a fair account of the published material on the Upper Triassic and Lower Jurassic fissures of Bristol and South Wales¹. However, in reviewing my work on the fissures, he missed some important aspects.

He states that "we must now view the fissure animals as representing a sample of a lowland fauna rather than a peculiar upland fauna". In particular, the tetrapods should be viewed as representing an insular lowland fauna and not the usual continental lowland fauna. The poorly dated mammal-bearing fissures of South Wales are generally described as being on islands^{2,3} of (probably) Lower Liassic Age, whereas the specifically dated⁴ Tytherington fissure fauna can be viewed as being derived from a small low-lying Rhaetian island habitat⁵. Indeed, the incidence of these tetrapod faunas, which are dominated by species with a small body size, is remarkably similar to Quaternary herpetofaunas found in solution fissures⁶ or banana-holes⁷ of modern-day islands.

The importance of this concept, that the Bristol and South Wales fissure animals are derived from insular Triassic/Liassic faunas, cannot be underestimated. Because of the small land areas on which they live each reptile species would have had a relatively low overall population size and thus would be subject to rapid rates of genetic drift and a high probability of ex-

inction. Insular faunas are impoverished and show evidence of disharmony⁸. Therefore the biota could be expected to be unusual in respect to other preserved faunas of the same age, and any given fissure reptile species may show aberrant features compared to its contemporaneous unreserved relatives. In this respect, rather than being closely related to *Anchisaurus* as generally proposed⁹, *Thecodontosaurus* is more likely to be a dwarf plateosaurid (either *Plateosaurus* or *Lufengosaurus*). Full details are in preparation but, for example, it is the case that the basioccipital and basisphenoid of *Thecodontosaurus antiquus* discovered at Durham Down is much more similar to that of *Plateosaurus* than that of *Anchisaurus*.

The high turnover rates expected on these small limestone islands lying near the Welsh and European landmass would also provide one alternative interpretation of the differences between the limestone faunas of the Slickstones fissures described by Fraser and Walkden¹⁰.

The remarkable preservation of the many tiny reptile bones can easily be explained by the short transport distances from death to burial expected in small islands. Indeed, deposition of the bones may be at least partly below sea level (see ref. 5).

Finally, reptile remains were described from Durham Down fissure¹¹, and lepidosaur vertebrae were found in Holwell¹²; both these reports predate the description of *Clevosaurus* in 1939, that Benton refers to as the earliest description of reptile remains from these fissure deposits.

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- Benton, M. *Nature* 307, 111-112 (1984).
- Robinson, P.L. *Palaeontology* 14, 131 (1971).
- Evans, S.E. *Zool. J. Linn. Soc.* 70, 203 (1980).
- Marshall, J.E.A. & Whiteside, D.I. *Nature* 287, 627 (1980).
- Whiteside, D.I. & Robinson, D. *Palaeogeogr., Palaeoclimat., Palaeoecol.* 41, 81 (1983).
- Taylor, J.D., Braithwaite, C.J.R., Peake, J.F. & Arnold, E.N. *Phil. Trans. R. Soc. B* 286, 47 (1979).
- Etheridge, R. *Q. J. Fla. Acad. Sci.* 28, 349 (1966).
- Williamson, M. *Island Populations* (Oxford University Press, 1981).
- Galton, P.M. & Cluver, M.A. *Ann. S. Afr. Mus.* 69, 121 (1976).
- Fraser, N.C. & Walkden, G.M. *Palaeogeogr., Palaeoclimat., Palaeoecol.* 41, 81 (1983).
- Riley, H. & Stutchbury, S. *Proc. geol. Soc.* 2, 397 (1836).
- Owen, R. *Q. J. Geol. Soc. Lond.* 16, 492 (1860).

Seminal lymphocytes, plasma and AIDS — Erratum

IN the piece of "Scientific Correspondence" by Keith James in the issue of 10 May (*Nature* 309, 117; 1984) the reference list was omitted. It should read:

- Prakash, C. & Lang R.S. *Mt. Sinai J. Med.* 47, 491 (1980).
- Anderson, D.J. & Tartier, H. *J. Immun.* 128, 535 (1982).
- James, K., Bradbury, A. W., Hargreave, T.B., Cullen, R.T. & Donaldson, K. W. *AIDS Res.* 1, 45 (1983).
- Talal, N. *Immun. Today* 4, 180 (1983).
- Koder, J.C. & Haliotis, T. *Immun. Today* 1, 96 (1980).
- James, K. & Ritchie, A.W.S. *Immun. Today* (in the press).
- Peterson, B.H., Lammel, C.J., Sites, D.P. & Brooks, G.F. *J. Lab. clin. Med.* 96, 682 (1980).
- Wilkin, S., Richards, J.M., Bongiovanni, A.M. & Zelikovsky, G. *Am. J. Reprod. Immun.* 3, 23 (1983).