

The Human Primate, By Richard Passingham, Oxford: W, H. Freeman, 1982. Pp. 402. Cased, £14.95; paper, £7.50.

That the title reminds one of 'The Naked Ape' is presumably intentional—in some ways Passingham's book is an updated and upmarket version of Desmond Morris's bestseller. The dominant idea would have been better indicated by a title such as 'The Large-Brained Primate': the popularity of Morris's book was due in large part to his emphasis on large parts, that is, to Morris's explicit concern with the size of the human penis and breast and motives of a sexual kind; but, in keeping with recent work on the linguistic and cognitive abilities of non-human and human primates, Passingham's book returns us to the pre-Morris tradition of identifying human status primarily with the size of the brain rather than the size of other organs, and with intellectual excellence rather than sexual excess. Using a literary device which was risky, but which in my view comes off rather well, Passingham says in the preface that if apes ever learn to read he hopes that they will be able to discover in his book the secret of how to become human, and puts his conclusion in the form of advice to an aspiring chimpanzee—it must expand its brain until it has the capacity to think with the aid of language.

Although Passingham says he is writing at an elementary level, and achieves an admirable if somewhat severe clarity of exposition, the book is a sober, as opposed to a popular, account, and could serve as a general text on primates (but not as a general text on human primates) for psychologists and for students in many other disciplines. There are sections on anatomy (of the senses, limbs and brain); abilities (separate chapters on intelligence, technology, culture and language); and 'social order' (one chapter on family and one on competition). It could make a contribution to interdisciplinary cooperation at the research level, since it is a compendium of information about primates deriving from specialized areas of study, with a wealth of references on topics ranging from audiograms and aggression to tool using and the vocal tract. There are dozens of photographs and figures (137 illustrations in all), and the paperback version is well produced. As a diligently assembled and carefully expounded collection of facts the book will be widely used.

As the title promises, Passingham does not merely present data, but also tells the story of the transition from ape to man, and assesses the implications of the hominid past for the human future. Most of the story is familiar, but there are several novel subplots and a number of *ex cathedra* guesses. The story begins with primates catching insects or collecting fruit in trees, and therefore needing eye and hand more than ear and hoof or nose and claw. It is important that monkeys and apes are active in good lighting conditions, and thus have binocular and foveal colour vision (Early to bed and early to rise makes monkeys and apes both diurnal and wise). And it is crucial that simians have a long life with infrequent offspring, as opposed to being short-lived but fecund, like rodents and rabbits, thus having both the time and the incentive to make use of rather larger brains than would otherwise have been the case. Since there was a brain-size Rubicon of about one and a half pounds to be crossed, body weights in stones were required for sometime before this was reached, and thus our closest relatives are great apes rather than small monkeys. Present-day apes are imitative and manipulative, and some (chimpanzees) occasionally hold and throw sticks and stones, and occasionally hunt small game. Several million years ago some not dissimilar ground-dwelling species did both these things at the same time, and thus changed tool using 'from a hobby into a profession' (p. 159). The profession, of cooperative scavenging and hunting for big game, demanded superior intelligence and an even larger brain, although we do not know how marks were divided between oral examinations, practical tests, and social skills, when it came to selective entry. In any event, when the brain had reached the critical mass of one and a half pounds, general intelligence was sufficient to allow for the evolution of language, which, once it had taken place, led to other professions including science, art, and law, transforming both society and the individual (p. 189). The story of the human primate is thus a story of increasing brain power, but social and emotional changes have left their mark. There was a division of labour among intelligent hominids between hunting and child rearing, since women carrying babies internally and/or externally are hampered in their movements, but need extra calories when lactating, and although

they can gather vegetarian items at their own pace, benefit if provided with a meaty diet, especially in climates or seasons when there is little by way of fruit and nuts. Hominid males, not being able to channel the spoils of their hunting exploits directly into their new-born offspring, as male birds can, did so indirectly, by food sharing with their female mates, as do wolves and other canid carnivores. And so (pp. 292-295) hominid habits led human societies into being social and cooperative (because of group hunting) but containing divisions of labour (in the first place because of sex differences, but sex differences in opportunity not necessarily in temperament (p. 293). A certain amount of competition over territory and mates has been retained, but not a lot: human aggression is not inevitable; there is no monstrous beast within us, and war is endemic only because 'we are too clever for our own good' (p. 330).

This is only roughly accurate as a paraphrase, but serves to illustrate that Passingham keeps to some fairly well-worn tracks, while making use of anthropological and sociobiological studies of the last decade. Much of the storytelling is inevitably conjectural, but Passingham's assessment of evidence is usually well-balanced, and his opinions carefully considered. As a rule I found his arguments flintily convincing—often he is able to strike useful flakes from a well-prepared core, and at other times he chips away unwanted material to leave a sharp and culling edge. But it would of course be quite impossible to please all the specialists in a book which ranges over many disputed borders. Although Passingham is innocent of the most extreme forms of chimpophilia, since he gives due weight to the habits of a number of primate species, including gibbons, gorillas and marmosets, he sometimes seems to succumb to the temptations of the plausible scenario. All the lesser apes (gibbons and siamangs, live in monogamous nuclear family groups, and gorillas have stable harems—possible patterns for human ancestors, with female sexual anatomy and physiology in particular much closer to the human forms than the chimpanzee's. But neither gibbons nor gorillas hunt small game. Male chimpanzees, it is now said, catch small game (cooperatively) quite frequently and share the flesh with females who ask for it, without even a hint of male-female bonding. Why then should human family structures derive from hunting? It is comparisons with birds and wolves that support the pair-bonding equals flesh-sharing equation, but one still wonders why, for instance, human ancestors could not have been pair-bonding for the same reason as gibbons (the most vocal apes) even before the cooperative hunting stage.

Sadly, there is now no single orthodoxy in evolutionary biology which a psychologist can take as read. But Passingham perpetuates what I regard as an unfortunate implication: 'Evolution could not supply an animal with mental or physical equipment of which it has no need, because there can be no selection pressure if the equipment is of no value in promoting survival' (p. 224). The main support for this is Humphrey's anecdote to the effect that Henry Ford ordered the kingpins on model Ts to be made weaker because he found they were unnecessarily well made. But the whole point of Darwin's theory is that there is no Henry Ford—he would never allow upland geese to retain webbed feet, or South American ostriches to waste so many eggs (the examples used in Darwin's *Origin*). Natural (and sexual) selection has its tail-finned Ford fuel guzzlers as well as its model Ts. It is the S. J. Gould side which argues against the 'panselctionist pitfall' of assuming that every observable phenomenon must have had a selection pressure of its very own, but Passingham himself observes that hardly anything human primates do nowadays has been selected for, and so it seems unnecessary for him to have taken the 'selfish-gene for everything' view. One of the more puzzling selectionist dogmas is that monkeys and apes became 'specialized as intelligent creatures' because this 'equips them for survival in a wide variety of environments' (p. 141). It is puzzling partly because practically all of these species have rather narrow ranges of habitat in tropical forests—as an order primates (apart from humans) have an extremely limited variety of environments to choose from, by comparison with rodents and carnivores, Passingham's conclusion here is that 'the human strategy for survival is basically the same as that of his close relatives' (p. 141) and one suspects extrapolation backwards—because *homo sapiens* is very adaptable, we are reluctant to acknowledge that the ecological niches of gorillas and orangs are not all that much broader than those of individual species of leaf beetle or greenfly.

Elsewhere Passingham is commendably clear in arguing for a discontinuity between human

strategies of life and those of apes, as when humans change the environment to suit themselves (p. 168). deliberately educate their children in these and other skills (p. 187), and also (sometimes) turn their children into responsible adults who have altruistic ideals quite outside the scope of genetic inheritance (p. 281).

Finally, some minor complaints concerning cortex. There is no listing in the index under cortex, or under cerebral cortex, only under neocortex (oddly, there is also nothing in the index under human or primate). Cortex is defined on p. 81 as the grey matter on the outside of the brain, but figures and text on pp. 85 and 86 talk about volume of neocortex as a percentage of brain size when what was actually measured was cortical grey plus as much underlying white matter as the collectors of the data chose to include. Readers could be forgiven for getting the impression that anthropoid brains must be 75 or 80 per cent cortical grey while in fact in a perfectly normal human brain this figure may be as low as 25 percent (e.g. brain volume 1500cm^3 ; cortical surface 1500cm^2 ; cortical thickness 0.25 cm). Given the range of other material, it is understandable that few details of cortical function are discussed (there is no Hubel and Wiesel), but it is disconcerting to come across such arithmetical ambiguities in a book whose major theme is the proposition that simple quantitative changes in brain structures were responsible for human uniqueness. However, the ambiguity has no effect on the point at issue, which is that the human brain is a large brain 'after the primate pattern', and I imagine that if literate apes ever read the whole book they will approve of it, not only because it is well written, but because much of it is about them, and most of all because it will be true.

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