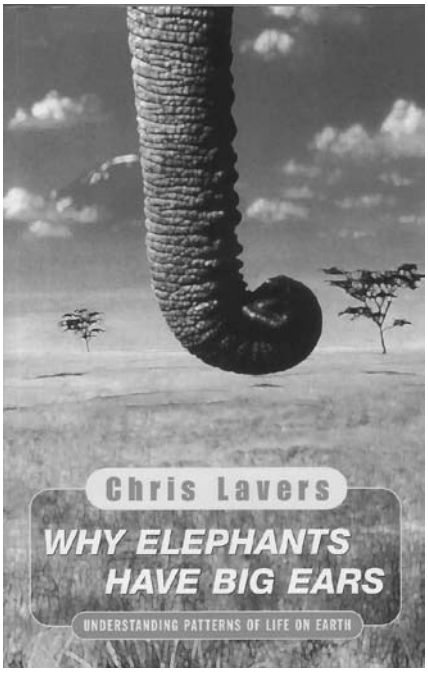
Evolution for dummies

Philip Bell

A review of
Why Elephants have Big Ears: Understanding patterns of life on Earth
by Chris Lavers
Phoenix, Orion Books Ltd., London, 2001



This evolutionary book contains much of interest to creationists and educators. The author is a lecturer in the School of Geography at the University of Nottingham in Britain's East Midlands. As well as his adult readership, his 'fondest hope is that children of school age will read this book …' (Bibliography, p. 227). The back cover states:

> 'Chris Lavers poses a variety of … conundrums to explain *how animals evolved into the breath-taking range of forms that grace our planet* … . Vivid and entertaining, with lucid explanations of the science of the natural world … [emphasis added].'

There are glowing endorsements. British naturalist, David Bellamy, writes: 'If you want to understand evolution, read this'. Steve Brusatte agrees: 'Perhaps no other book available explains evolution, natural selection, and the riddles of natural history as well … '. For Richard Leakey, it's 'A book which evokes a deeper fascination for nature's marvels'. Lavers says that, as a child, he was 'enthralled and awe-struck' as he watched wildlife documentaries,[1] but he had many unanswered questions. This book represents the culmination of his attempts to find answers. It is clear that his inspiration came principally from Darwinism.

'Just-so stories'

Lavers aims, among other things, to explain why elephants evolved as they did. Following a discussion of the well-known relationship between unit length, area and volume (i.e. a doubling of unit length quadruples the surface area but increases the volume eight-fold), he applies this to a comparison between a gazelle and an elephant. Such considerations explain, for example, why elephant legs have to be very thick compared to those of a scaled-up gazelle, since they must bear a disproportionately large load. However, he leaps to the conclusion that this demonstrates that elephants evolved from gazelle-sized animals and thickened their legs in the process. But, this is a classic 'just-so story' and his subsequent zoological discussions include many more vacuous assertions regarding evolution, setting the pattern for much of the first chapter (and indeed, the rest of the book). Various aspects of elephantine physique are dealt with and merely *stated* to have evolved. No *explanation* of the mechanism for elephant evolution (from a much smaller animal, with slighter build, no trunk, fur and small ears) is offered. Instead, we read the following comment:

> 'While elephants are odd creatures in many respects, their bodies conform to a relatively simple set of *design criteria* … [their anatomical features] are all consequences, one way or another, of the inescapable scaling relationship between areas and volumes [emphasis added]' (p. 18).

This, of course, is the crux of the matter: an elephant is (*à la* Ken Ham) 'designed to do what it does do and what it does do, it does do well, doesn't it?' That's the message that I would want to put across to 'children of school age'.

A plethora of living things

Lavers invites the reader to imagine 'a road 100 km long with a five-tonne elephant at one end, a fairy-fly weighing 0.000001g at the other, and representatives of the rest of Earth's creatures arrayed in between in order of size' (p. 19). An aerial view reveals that this is an uneven distribution: '99.9% or more of all animal species on Earth cram into [the last 4 cm of the road]' (p. 33). Even the last 60 m (0.06% of the road's length) is extremely crowded, including 99% of all 1,800 rodent species, most of the 9,700 bird species, 3,800 lizard species, 3,800 frog and toad species, 2,700 snake species and 1,000 bat species. This is a reminder of just how weak the skeptics' arguments are, when they claim that there was not enough room in the Ark for all the animals. As John Woodmorappe[2] (and others) have ably demonstrated, when one considers the *median size* of air-breathing animals, together with the fact that Noah was required to take pairs of each *kind* of animal on board, there was ample space to house representatives of all the extant and extinct creatures.

The author attempts a broad-brush explanation for the evolution of the size/number-pattern of Earth's biota. On the way, we are treated to intriguing zoological facts such as this: one of the eight species of naked, burrowing mole-rat (a mammal) in sub-Saharan

Africa is uniquely cold-blooded. He defines natural selection as affecting ' … the frequency of genes in a population through the effects that they have on individual animals.' However, this singularly scientific statement stands in stark contrast to the empty rhetoric about evolution that peppers Lavers' writing. For instance:

> 'Skinniness has been a highly successful evolutionary innovation for [weasels] … ' (p. 24).
>
> '… low metabolic rates of insect-eating bats have probably evolved to see them through lean periods when food becomes scarce' (p. 26).

Allowing the possibility (even likelihood) that weasels and bats may have changed along these lines, this says nothing about particles-to-people evolution. Such statements are examples of the equivocation that many evolutionists indulge in.

Evolution of warm-bloods and cold-bloods?

Lavers observes that living, four-legged animals are either warm-blooded or cold-blooded, not in-between! Such a discontinuity is of course no surprise to the creationist but it is one which the author takes great pains to explain from an evolutionary perspective. Lavers is forced to assume that: 'Tepid animals must have existed when the transitions [sic] from cold-blooded to warm-blooded occurred … ' (p. 31). Due to his *a priori* faith in evolution, he is blind to his circular reasoning here, despite recognizing it in others: ' … the argument that there must be some sort of resistance to the transition [between warm- and cold-bloods] because cold-blooded mammals and birds are so rare is obviously circular' (p. 31).

After outlining the familiar analogy of an animal's respiratory metabolism with that of an internal combustion engine, Lavers compares the performance of cold- and warm-blooded creatures at sustainable and non-sustainable speeds. The reader is informed: ' … at some point in the distant past, natural selection somehow transformed animals with lizard-style engines into rat-style ones' (p. 42). Of course, such an assertion is based on faith because the evidence for such a transition is missing. Furthermore, natural selection is the enemy of such 'macro-evolutionary' change on theoretical grounds, not to mention experimental and observational evidence. Nevertheless, the author describes the two major, competing scenarios for the cold-to-warm blood transition. Predictably, both involve assumptions and have various shortcomings, which he briefly discusses. However, it is what we are not told that is fatal for all such theories, for instance: *how* might organisms have gradually changed the structure of their thousands of enzymes (which are highly temperature-specific) to ensure that they were all operating optimally. *How* might vital homeostatic mechanisms have developed, such as the ability to lose heat by sweating or the ability to divert blood to and from surface capillaries in order to dissipate or conserve heat respectively? *How* did the respiratory turbinates (bony/cartilaginous nasal structures, found in 99% of mammals and birds), that are vital for reducing excessive water loss, develop? *How* would organisms have developed the requisite fatty insulation (to prevent hypothermia) at the same time that their body temperature was rising?

Lavers does describe what some palaeontologists believe is fossil evidence for the acquisition of respiratory turbinates (RTs) in the purported lineage from 'mammal-like reptiles' to mammals. Since his discussion relates to research that was published *after* creationist A. W. (Bill) Mehlert's comprehensive 1993 mammal paper in this journal,[3] I include it here. It should be noted that it is *raised ridges* in the nasal cavities of fossilized skulls that have invariably been interpreted as evidence for RTs. Following the work of Hillenius,[4] Lavers lists the presence or absence of RT ridges as follows:

> ' … pelycosaurs: none found; dinocephalians: none found; dicynodonts: none found; gorgonopsians: none found; therocephalians [Glanosuchus, from the late Permian]: present; cynodonts: present; mammals: present' (p. 55).

He finds this pattern highly suggestive. However, assuming for a moment that these data are an accurate representation of RT status, it is clear that they exhibit discontinuity rather than gradualism. In fact, if the features of extinct creatures such as cynodonts are taken as a whole, they appear to have been 'mosaics',[5] sharing some similarities with mammals and others with reptiles. This is more consistent with their having been a separate, created group, than representatives of animals that were evolving from reptiles to mammals.

This attempt to give reasons for the 'hotting up' of life is an exercise in clutching at straws. Ironically, Lavers points out that the belief that warm-bloodedness represents an advance over cold-bloodedness is erroneous:

> 'This view cannot be justified: warm-blooded and cold-blooded metabolic engines each have their associated advantages and disadvantages, and the ecological usefulness of each system depends on the size of the animal and the nature of the environment in which it lives' (p. 59).

In common with creationists, he believes neither condition to be intrinsically superior to the other, but this strongly argues against the idea that one evolved into the other, the environmental peculiarities notwithstanding.

Warm-blooded dinosaurs?

The author deals with the controversy over whether dinosaurs may have been warm-blooded. He does so with great clarity, yet despite his yearnings for the book to be accessible to children, only the most tenacious child would cope with the level of technical detail he presents. Indeed, his treatment of this interesting, but rather singular, paleontological controversy covers some 29 pages of the book; a very useful summary of the debate in

fact. By contrast, Alan Charig (at the British Museum for Natural History) spent a mere four pages on this topic, in his book devoted to dinosaurs.[6]

His pondering of the finds, from the 1960s onwards, of 'polar dinosaurs' (i.e. located well within the Arctic and Antarctic Circles, even during the Jurassic and Cretaceous) seems to clinch the case for warm-bloodedness. Constrained to the evolutionary paradigm, it might appear that dinosaurs *must* have been warm-blooded in order to survive the cold. However, despite other lines of evidence (internal bone structure, apparent high growth rate of dinosaur bones, and evidence that dinosaurs regulated their internal body temperatures within narrow limits, all typical of extant warm-blooded, mammals), many paleontologists are still opposed to this thesis. Lavers observes:

> 'It takes more than cogency, internal consistency and empirical weight to change the collective mind of a community of professional sceptics' (p. 75).

Indeed. Creationists have long experienced this to be true of their challenges to the evolutionary paradigm! One can therefore appreciate this honest perspective:

> '… perhaps the most exciting possibility … is that dinosaurs were neither souped-up crocodiles, nor monstrous birds, nor mammal-analogues, but something unique and unlike anything currently alive on Earth' (p. 84).

Why so few mega-reptiles today?

Lavers notes that extant cold-blooded animals are almost all small and asks why large reptiles are mostly absent from the world's megafauna. He discusses at length, how various ecological parameters (e.g. available niches, climate, body size and temperature) dictate which animals live in particular environments. On the way he looks at exceptions to the rule, such as Komodo dragons, large tortoises (some fossil representatives were like an overweight Volkswagen Beetle!) and the several species of large snakes (family Boidae). No evolutionary explanation for these exceptions is attempted but he does ask a question that is pertinent to both evolutionists and creationists. The Australian outback exhibits a very high diversity of reptiles that fill niches occupied by mammals, in other parts of the world. Why is it that evolution has produced so few large marsupial carnivores (mammals) in Australia?

There have been several ingenious attempts at an explanation but the answer seems to be that, in Australia's climatically unpredictable terrain (with its arid, infertile soils), 'cold-blooded consumers, with their lower food requirements and ability to fast for long periods … ' (compared to large mammals) have a significant advantage. Certainly, the faunal mix found in comparable areas of Southern Africa seems to bear this out. However, while this line of reasoning seems perfectly plausible, it has nothing whatsoever to say about the evolution of new kinds of creatures in Australia. Inspired by his amazing faith in natural selection, Lavers gives speculation a free reign. Our 'reptilian cousins' may not dominate most environments today but beware of complacency!

> 'Who knows what the future holds for our ever-changing planet …?' (p. 137).
>
> 'On a constantly changing Earth, and under the blind and unprogressive rule of natural selection, no future is certain' (p. 140).

This is hardly a message that is likely to instill hope into the young people that, the author hopes, are part of his readership. Although these questions are superficially true (particularly in a hypothetical evolutionary world), there are answers to such fatalism. Our planet may be ever-changing and unpredictable but the Bible declares that there is One who 'uphold[s] all things by the word of His power' (Hebrews 1:3), and in Him, our future *is* certain (e.g. Hebrews 7:25).

Why do reptiles dominate fresh water?

Just as large mammals tend to dominate the land, fresh water is dominated, with very few exceptions, by cold-blooded animals, most notably the members of the family Crocodylidae. Why this should be so, is a 'fascinating, unsolved problem' as far as Lavers is concerned. Of course, it is only enigmatic for those who are committed to explaining how *evolution* produced this distribution. The Bible-believer accepts that God created the original animal kinds with sufficient genetic potential for their descendents to adapt to the many different habitats and niches available in the post-Flood world.

A comparison of the physical properties of water (high thermal conductivity and thermal inertia) with that of air would seem to have a definite bearing on the physiology and anatomy of the inhabitants of

lakes and rivers. However, when one thinks of the numerous species of large mammals that inhabit the sea (vastly outnumbering reptiles), this is clearly not the whole story. The author boldly states: 'The most straightforward possibility revolves around the deep evolutionary history of reptiles and mammals' (p. 149). He is talking, of course, about the familiar aquatic reptiles of the Mesozoic that we know from the fossil record: ichthyosaurs, mosasaurs and plesiosaurs. However, his vacuous statement is not bolstered by his appeal to paleontology as his own footnote admits:

> 'A number of *theories* have been advanced to account for this differential survivorship [i.e. marine reptiles went extinct but freshwater crocodiles and their kin did not] *all of them rather speculative* [emphasis added]' (p. 149).

Not to be discouraged, the redoubtable author asserts that the reason, small insectivorous mammals of the Cainozoic didn't evolve into large carnivores in freshwater was that crocodiles already lived there! They had to go elsewhere:

> 'To the rag-bag of small mammals that crawled out of the forests at the end of the Cretaceous, *establishing an evolutionary beach-head* on land and in the sea *was largely a matter of seizing the moment* … [emphasis added]' (p. 150).

So, in the absence of a proper explanation, the reader is prompted to imagine an army of shrew-like mammals scurrying out of the forest onto land and into the sea, squeaking *Carpe Deum*! In fairness to the author, he does admit that the 'crocodiles-got-there-first' theory ' … from a scientific standpoint … appears to be untestable' (p. 151). When Lavers deals with the animals that are an exception to the rule, (large, *warm-blooded mammals* inhabiting rivers), his 'evolutionary explanation' is anything but:

> 'Several species of marine dolphin and porpoise enter estuaries and the lower reaches of rivers from time to time, which is how the world's current handful of freshwater species first evolved … ' (p. 159).

Just as Batten has clearly stated regarding dogs, dolphins breeding dolphins is not evolution, it's just dolphins![7]

Mega-birds and evolution

Lavers speculates as to the scarcity of very large birds ('Cainozoic dinosaurs'). From the start, his comments about evolution do not constitute scientific explanations because evolution is treated as fact:

> ' … thousands of mammal species over the last 65 million years have found themselves heading down the evolutionary path towards gigantism. But … why have birds so rarely traveled the same evolutionary road?' (p. 167).

In between such statements, there are lessons in bird biology but these interesting, non-controversial facts about bird physiology and flight say nothing about evolution. In spite of this, Lavers throws in empty comments about evolution every few pages, seeking thereby, to demonstrate that it has explanatory power. This is simply inexcusable for someone who goes on to say (in a footnote) that '*post hoc* rationalizations … should always be treated with caution' (p. 172).

Bird fossils do not help tell this evolutionary story either. In fact, considering the large birds known to paleontologists, not to mention the recently extinct giant moa (*Dinornis maximus*), Lavers' ramblings about their scarcity seem to be at odds with his premise. He himself discusses predatory fossil birds like *Diatryma gigantea* (2.25 m tall with a head the size of a horse's) and the phorusrhacid, *Titanis walleri*. He admits that the extant cassowaries, emus, rheas and ostriches (flightless, herbivorous heavyweights) were much more diverse in the past. These included the moa, *Aepynornis maximus* ('elephant bird'; 2.5–3 m tall and weighing some 400 kg!). Also, Lavers claims that moas were prey for a giant eagle called *Harpagornis,* with a 3-metre wingspan. He sums up with following explanation-free statement:

> 'The most straightforward interpretation [for the relative scarcity of mega-birds] is that all Cainozoic birds descended from ancestors that could fly …' (p. 178).

Next, Lavers asks why there is a greater diversity of bird species (approximately 9,700) than mammal species (about 4,000) alive today. Creationists would have little problem with his discussions of speciation by natural selection and genetic drift (on oceanic islands) because the variation being spoken of represents within-kind diversity. Our quibble would be that Lavers blurs these processes (which *reduce* a species' genomic complement) with a hypothetical process that is supposed to, somehow, generate *new* genetic information:

> 'Given enough time free from significant competition, the ancestral species may give rise to bark-gleaning, fruit-eating, fly-chasing, nut-cracking and nectar-sipping species that would never get the chance to evolve elsewhere' (p. 190).

But speciation is not evolution! Change it may be, but the resultant diversity arises from a reshuffling of existing genetic information and/or the loss of information. The generation of completely new kinds of creature requires *new information* and there is no evidence whatsoever that this can happen.[8] Lavers ignores this of course, indulging in hyperbole when he describes the adaptive radiation of Hawaiian honeycreepers[9] as 'an evolutionary explosion'.

Two warnings from history

In the last chapter, the author reviews the various patterns of animal life he has been discussing and concludes that extant organisms are well suited to the habitats in which we find them. 'We warm bloods' have, he says, divided the world between us, such is our adaptability to even the most extreme environments. He gets a little carried away at this point, advising, ' … so next time you look in the mirror, consider how remarkable you really are' (p. 196). This is wholly true, of course, but the Psalmist

took the crucial next step, attributing this superlative human design to the Creator: 'I will praise You, for I am fearfully and wonderfully made; Marvelous are Your works…' (Psalm 139:14, NKJV).

Lavers moves on to recount the impact of human beings on the planet's biodiversity. Historically, we have been responsible for many extinctions through over-hunting. People have also introduced new species to parts of the world they could never have got to naturally, sometimes accidentally, sometimes deliberately. Ironically, goats come in for the greatest blame for species impoverishment (both animal and plant) attributed to them in many parts of the world. Rabbits come a close second for the devastating effects they had on Australia's wildlife and economy[10] but there is a whole catalogue of examples of the disastrous ecological effects of 'hitch-hiking' animals.

There is a strong relationship between extinction and the global mixing of species that is occurring so rapidly today. In fact, those who seek an answer to why dinosaurs became extinct would do well to apply the line of reasoning discussed by Lavers; the so-called '*mystery*' of 'What happened to the dinosaurs?' is really a misnomer. Lavers sees a parallel between the global mixing and the mass extinction that is said to have occurred when the supercontinent Pangea existed; around 95% of species disappear from the fossil record at the end of the Permian. He favours the idea that a combination of biospheric mixing and global warming explains the end-Permian extinction and much of his discussion (which includes copious, well-referenced footnotes) is highly relevant to the creationist debate over the position of the Flood/Post-Flood boundary in the geological column; space forbids further comment here. Lavers believes that such considerations should be taken as a warning that human actions might just be replaying a Permian-like environmental crisis. He concludes with these intriguing words:

> '"The present is the key to the past" runs a nineteenth-century geological maxim … it makes more sense, for instance, to interpret patterns of animal life in the Permian, Cretaceous or Miocene in terms of ecological and evolutionary processes going on around us today, rather than as sequential whims of the Almighty … . *But a strong argument could also be made for the idea that the past is the key to our future* … [emphasis added]' (p. 219).

What a pity that the author does not consistently apply this advice to *all* spheres of his thinking. His closing words advise: 'The time has come to pause a while and take counsel' (p. 220). Quite, but it is *Godly* counsel that is so sorely needed.

Conclusion

Chris Lavers writes with an engaging style and, despite the Kiplingesque book title, many of his discussions are very comprehensive and intellectually satisfying. It's a great shame that he attributes to evolution the many design features that he describes. However, as with any writings by evolutionists, there are occasional frank admissions about the shaky foundations of their cherished theories. For instance:

> 'The *evolutionary history of mammals,* for example, *has been pieced together largely on the evidence of teeth*, which are the only bits of a mammal resistant enough to stand a fair-to-good chance of being fossilized [emphasis added]' (p. 81).

Often, it really does come down to what the individual researcher 'sees'; they all have the same facts but their bias will dictate their favoured interpretation.

Footnotes accompany each of the chapters and are linked to a section of chapter references at the end of the book. There is also a useful index and an extensive bibliography.

References

1. These were mostly produced by BBC Television's renowned Natural History Unit and narrated by Sir David Attenborough.
2. Woodmorappe, J., Which part of the animal kingdom was on the Ark? in: *Noah's Ark: A Feasibility Study*, Institute for Creation Research, Santee, pp. 3–13, 1996.
3. Mehlert, A.W., The origin of mammals: a study of some important fossils, *CEN Tech. J.* **7**(2):122–139, 1993.
4. Hillenius, W., Turbinates in therapsids: evidence for late Permian origins of mammalian endothermy, *Evolution* **48**:207–229, 1994.
5. Mehlert, Ref. 3, p. 127.
6. Charig, A., Warm blood and the dinosaurs; in: *A New Look at the Dinosaurs*, British Museum (Natural History), London, 1985.
7. See, Batten, D., Dogs breeding dogs? That's not evolution, *Creation* **18**(2):20–23, 1996.
8. Spetner, L., *Not by Chance! Shattering the Modern Theory of Evolution*, The Judaica Press, New York, 1997.
9. See Cox, C. and Moore, P., *Biogeography: An Ecological and Evolutionary Approach*, Blackwell Scientific Publications, Oxford, 1993.
10. Rabbits became established in mainland Australia after Thomas Austin brought 24 wild rabbits from England in 1859 and released them onto his property in Victoria.