

Letter From the Desk of David Challinor  
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Many of us enjoy running. In fact, the number of people of all ages and both sexes who participate in this sport seems to have exploded. Witness the stream of joggers visible in the early mornings in not only most North American cities, but also throughout much of the world's metropolises. Motives to run are as various as the numbers of joggers. Some do so to keep fit, others for the glow produced by their endorphin-overload when they finish. Whatever the reason, recreational running is booming. This month's letter considers the evolutionary and biological backgrounds that make humans so well-adapted to running.

In secondary school in New Hampshire in the 1930's, I participated in cross-country meets. They were then held in the early spring before the ice had left the ponds, but after the first blush of green was evident in the woods through which we ran. Later in the season when rowing began on the town reservoir about three miles north of the school, I remember forsaking the open bed truck that normally carried us back to school and ran exuberantly instead. Now, sixty-five years later, I better understand why I felt so powerfully the urge to run back then.

Humans are extraordinarily well-adapted to run, both short and, especially, long distances. If we evolved bipedalism on the African savannas, which we shared with so many grazers and browsers, it is no wonder that early humans needed running skills to maintain a high protein meat diet to supplement a vegetarian one. The species *Homo sapiens* is one of only a few mammal omnivores, the others being goats, pigs, bears and a few others. Thus, free from being dependent on plant matter only, we could exploit almost all food sources. Antelopes and other herbivores of the savanna, however, had acquired keen visual and olfactory warning systems that generally gave them a head start when they felt threatened.

Until I grew cotton in west Texas in the early 1950's, I would never have believed that a man could run down a rabbit. However, one brisk winter morning when stacking root-cut mesquite with my Mexican farm hands (braceros), a young black-tailed jack rabbit flushed from the wood stack. Immediately, two young men gave chase over the uneven, recently root-plowed field. One of them, Rosalio Rios, was a Tarahumara Indian from the mountains of Chihuahua (more about that later). The two men flanked the rabbit about ten feet apart while it zigzagged between and ahead of them. In less than 200 yards, the rabbit had slowed enough for one of the pursuers to dive and catch it in his hat. It was skinned and broiled on a mesquite fire for lunch—a welcome treat after a monotonous diet of beans and rice.

I have thought of this incident many times since and although humans have bred greyhounds to catch hares, borzois for wolves and ridgebacks for big African cats, humans can probably outrun all these prey and the dogs themselves. Very few other bipeds or even quadrupeds can run twenty-six back-to-back five-minute miles. Admittedly, this rate is only achieved on a smooth surface, by a highly trained man. While writing this letter, I read Bernd Heinrich's new book, *Racing the Antelope*<sup>1</sup>. He is a biology professor at the University of Vermont and a successful ultramarathon competitor. He tells of an annual race between man and horse held in Wales, which is sponsored by a large bookmaking (betting) company with a prize of over \$30,000 for the first man to beat a horse. So far, after twenty years, they have not had to pay off. The race conditions are such that the horse is paced by a rider and the distance is four miles less than a marathon, or "only" twenty-two miles. In the last race a well-known marathoner, Mark Croasdale, who won the Marine Corps marathon in Washington, D.C. in two hours and twenty-three minutes, lost to the horse by one minute and twenty seconds. As men can now run the full marathon distance in about two hours and ten minutes, it will only be a matter of time before the human runner will win.

The current popularity of running in part depends on more people having the time to do so, yet today elite marathoners come from broad geographic and economic backgrounds. When I was growing up, long distance running was dominated by Europeans, such as Paavo Nurmi, a Finn and Emil Zatopek, a Czech. Now, the elite runners are North and East Africans. The latter have a particularly long running tradition dating back two or three thousand years. Heinrich in his book describes pictographs of cursorial hunters on a cave wall in Zimbabwe. They carry their bows in their right hands and a bundle of arrows in their left. The lead figure even has both arms raised over his head in the still customary gesture of a successful runner.

If men can almost run down a horse today, think of what they must have done in the past and, indeed, can still do today. Rosalio, the Tarahumara Indian bracero, regaled me with stories of the running bouts in the village where he lived. Almost all the villagers would run on the surrounding mountain paths with the lead runner kicking a ball. He eventually would give way and another man would take over. Rosalio did not recall this pastime as any kind of competition, but rather it seemed to be done for the sheer joy of running. He told me that the Tarahumaras were famous in Mexico for their running prowess and routinely ran down rabbits and deer. Navajos also hunted in this manner and may still do so, because an unblemished deer hide is an essential component of one of their religious ceremonies. The deer, when caught, was ritually suffocated. Its hide, therefore, would be without arrow or bullet holes. Hopi, Pagapo and Pima hunters also ran down game in the Southwest.

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<sup>1</sup> Heinrich, Bernd, *Racing the Antelope*, HarperCollins Publishers, Inc. (2001)

Humans enjoy an advantage over almost all terrestrial mammals in that they seem to be designed for long distance running. In bipedal man his head is on top of his shoulders so he can see ahead binocularly and in color to avoid obvious obstacles. With no significant hair-covering, except on his head, (which protects his pate from sunburn), he dissipates heat efficiently through ubiquitous sweat glands. Perhaps more important even than good lungs and skin through which we easily sweat, is man's ability to think ahead; to anticipate the capture of his quarry, just as a race runner today is stimulated to finish first. Most prey animals have evolved the strategy of sprinting away from danger when their instinct registers that the predator is too close. With a sufficient head start, cursorial prey can thus avoid almost all their predators, except man. Even the wolves in Yellowstone do not chase elk for more than a couple of miles, a short distance for humans. However, there is a cost to humans for the elegant sweating system that not only cools us, but rids our bodies of toxic wastes. This cost is dependence on water. If we do not replenish what we lose, our endurance will fail abruptly. With adequate water, however, our ancestors could run down antelopes at high noon in the African sun, a time of day when our furred carnivorous competitors were not hunting but rather trying to stay cool in the shade.

Where has all this led us? As Heinrich points out, in all cultures examined—including other primates—males are the primary hunters, while females generally care for children. Females who chose good runners, good hunters and, therefore, good providers to sire their children, probably had a part in developing men with those characteristics. On the African savannah, where many believe mankind first appeared, human hunting skills probably developed slowly enough to allow prey sufficient time to evolve the necessary defensive or escape strategy to survive. This may explain in part why there are still scattered remnants of a broad megafauna on African plains, but virtually none in North America, where the arrival and spread of human hunters was so rapid that similar prey did not have sufficient time to learn to protect themselves. When the Pleistocene megafauna vanished shortly after the arrival of humans, plains hunters must have continued running down deer, rabbits and other small game. The ability and even the urge to run continued to flourish in the forested northeast, where running thrived in inter-village lacrosse competition.

Today, instead of feeling the triumphal elation in successfully running down a rabbit, the same emotional reward lures tens of thousands to compete in marathons and other foot races the world over. How many of us have heard one young boy say to another, "I betcha I can beat you to.....!"

The satisfaction of winning a foot race is such a powerful incentive that today it encompasses all ages and both sexes. Our present culture gives women increasing opportunities to run competitively and, as the pool of female runners continues to

enlarge, the gender gap in winning times becomes narrower. In another generation or two, the winning time curves for men and women may cross, particularly in truly long races (>100 km). Whether or not that event ever transpires, we may nonetheless be witnessing a rather specialized evolutionary change in women—but I doubt it, for fleetness has long been a fabled female feature going back at least to Diana of the Chase!

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