What We Do Best

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What makes us human? A large brain, an upright stride, coherent speech, shared cultures? All of these, of course, and something else. Something that does not command as much admiration as high encephalization, bipedal locomotion, symbolic language, or intergenerational transmission of mores and taboos. The trait that I have in mind is something most people would not even think about listing as truly special, yet we do it better than any organism alive. And having just moved, temporarily, from Canada to tropical China, I have to rely on it heavily to make it through a day. I'm talking about sweat.

I perspire a great deal. Since I dislike air conditioners, I have to depend on my internal thermostat, which tries to keep the body's core temperature from rising as the outside air climbs above 86 [degrees] E As long as I sit still, my body's initial thermoregulatory adjustment consists of dilating peripheral blood vessels and shifting additional blood from internal to superficial veins. But as I climb up a steep hill to my apartment--although it seems to me I am crawling, compared with my usual Canadian pace--and as my skin temperature approaches 95 [degrees] F, I begin to sweat. Not a great deal at first, because I haven't been here long enough to be fully acclimatized. But if I keep climbing, I will lose water at a rate of more than fourteen ounces per square yard of skin (that is, about a cup every twenty minutes). Per unit of skin area, this is about four times more than a horse and nearly twice as much as a camel, two of the most profuse perspirers among mammals.

But even such a rate of cooling, corresponding to a power input of about 500 watts, is not always enough to cool me. During strenuous activity, most fit people will consume energy at ten to fifteen times the rate they do while resting, and they may need to dispose of 600 to 800 watts of heat. For topflight athletes, the rate of energy consumption during exercise can increase up to twenty-five-fold. To avoid overheating, these individuals must dispose of heat at rates exceeding 1,300 watts, and they will perspire about two quarts of water every hour. Fortunately, such high water losses do not require instant replenishment: healthy individuals are not harmed if they can make up their water deficit within the next twelve to twenty-four hours.

Our genes have conserved the sweating capacity we acquired on the seared grasslands of Africa, but

for those of us coming from northern climes, it takes a while to turn the flow fully on. Even a fit Englishman trying to run farther than six miles the day after flying from London to Singapore is flirting with dangerously high core temperatures and with heartbeats approaching normally tolerable maxima. But if he keeps exercising moderately, he may start matching the sweating rates of acclimatized locals in just ten days. That, of course, is how all those Scottish laddies, who grew up never enduring a hot day, could sail away and build an immense tropical empire for the Queen.

Many centuries ago, the Tarahumara of northern Mexico took turns running down deer in the middle of the day. Unable to match the Indians' enviable capacity for keeping themselves cool, the animals died of heat prostration. The Kalahari's Basarwa hunted duikers, gemsbok, and zebras the same way, and perhaps some Australian Aborigines simply "thermoshocked" kangaroos. After a week's adjustment, I plan to deploy my sweating capacity in running a sixty-two-mile trail in several segments. As the trail shifts from sea level to more than 3,000 feet, and then down and up again, I will find myself having to use that very human, and truly lifesaving, ability to outsweat every other species.

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