BOOKS *et al.*

PALEOANTHROPOLOGY

Understanding our origins

How a long tradition of exceptionalism distorted our perception of human evolution

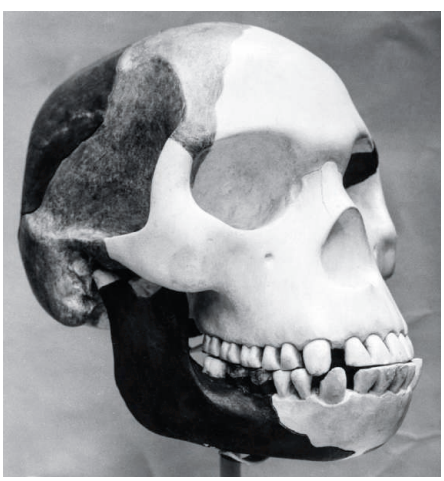
By **Erika Lorraine Milam**

What would happen if, tomorrow, scientists were to rediscover the entire hominid (*1*) fossil record, without any preconceptions inherited from the last century? According to Ian Tattersall, curator emeritus of anthropology at the American Museum of Natural History (AMNH), the resulting picture of human evolution would differ dramatically from that bequeathed to today's paleontologists by their predecessors. In *The Strange Case of the Rickety Cossack*, he traces the contingencies, false starts, and diversity of opinions that have characterized the intellectual history of paleoanthropology from Darwin to today.

The Piltdown debacle from the early decades of the 20th century—in which an unknown perpetrator buried a cranium from a modern human with the mandible of a chimpanzee, leading people to believe that the remains might be an ancient British ape-man—provides Tattersall with an object lesson he repeats throughout the book. Preconceptions matter. They shape scientific ideas with as much force as fossils and facts. Piecing together skeletons from bones found in close association requires a leap of faith. This, he notes, constitutes most fossil finds, as specimens preserved in lifelike articulation are a great rarity.

Another misstep lends the book its title. Quarrymen in the mid-19th century, working in the Neander Valley outside of Düsseldorf, found an unusually shaped skull and associated bones. Pathologist Rudolf Virchow and retired physiologist August Franz Mayer postulated that they represented, not an anatomically distinct "primitive" ancestor (as claimed by Hermann Schaaffhausen, the comparative anatomist who first described the bones), but the relics of a diseased Russian horseman. New specimens discovered in subsequent decades, however, shared the same peculiar morphologies and demonstrated the error made by Virchow and Mayer.

For Tattersall, the greatest villain in the history of paleoanthropology was also one of the most respected evolutionary theorists of the century. Ernst Mayr initially made a name for himself studying the taxonomy and biogeography of living birds. In 1942, he published *Systematics and the Origin of Species* (*2*), in which he defined species as actually or potentially interbreeding populations, reproductively isolated from other related groups.



Once believed to be the remains of an early human, the "Piltdown man" was exposed as a hoax in 1953.

Reproductive isolation worked well for delimiting extant bird species but, according to Tattersall, set an impossible standard by which to judge fossils. Mayr dismissed morphology as a basis for diagnosing taxonomic relationships, yet morphological differences between specimens were all paleoanthropologists had to work with at the time.

At a conference on "The Origin and Evolution of Man" at Cold Spring Harbor Laboratory in 1950, Mayr accused the assembled paleoanthropologists of taxonomic splitting. The numerous hominid genera they had created, he argued, were not warranted. Tattersall claims that Mayr's self-assurance and theoretical heft inspired a generation of English-speaking paleoanthropologists to commit to a vision of human evolution as a "saga of a lone hero battling from primitiveness to perfection over the eons, armed with nothing but natural selection and its own wits." After World War II, this framework proved persuasive in part because it became associated with an antiracist commitment to variation within a singular, progressive human lineage.

Tattersall devotes the bulk of the book to documenting how paleoanthropologists, himself included, struggled in subsequent decades to transcend this linear account of human evolution and rethink assumptions ingrained by their own training. He describes an emerging appreciation for the widespread diversity of mostly extinct hominid genera, built on a wealth of fossil discoveries, radiocarbon and potassium-argon dating, and molecular genetic techniques.

Embedded in this larger narrative, we catch vibrant glimpses of Tattersall's own history. He spent his undergraduate years at the University of Cambridge, working with the "simultaneously intimidating and inspiring" David Pilbeam. He then earned his doctorate under the hands-off genial tutelage of Elwyn Simons in Yale's Department of Geology and Geophysics (which housed the paleontologists). By the mid-1970s, as a junior curator at the AMNH, he arrived at the Comoro Islands in search of lemurs and found political turmoil. When his interest in lemurs waned, Tattersall turned once again to human evolution. Readers follow him to Djibouti, where he hides from a "drunken gang of Yugoslav sailors" who ransacked the hotel where he was staying. These almost cinematic renderings of life behind the scenes add personal texture to his otherwise scientific chronicle.

History, Tattersall reminds us, defines who we think we are. In his retelling, this rings true both for the scientific debates and convergences that comprise his narrative and for the long, complex history of hominids that paleoanthropologists are still piecing together.

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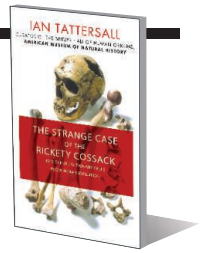
The Strange Case of the Rickety Cossack
And Other Cautionary Tales from Human Evolution
Ian Tattersall
Palgrave Macmillan, 2015. 256 pp.



REFERENCES AND NOTES

1. Because Tattersall uses "hominid" to refer to the taxonomic group that "contains humans, plus all their extinct relatives that lived after the common ancestor," I follow the same terminological convention in this review.
2. E. Mayr, *Systematics and the Origin of Species from the Viewpoint of a Zoologist* (Columbia Univ. Press, New York, 1942).

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