f7 Why not look a gift horse in the mouth? < high crowned molars >

> The height of a horse at the shoulder is measured in hands, which unit of measure is about four inches (the inch being a unit of a measuring system retained in use only in the United States since the other last holdout—the Pacific island Duchy (now Kingdom) of Tonga [1] —went metric and is understood to be one twelfth of a foot, which is one third of the English yard that King Henry I in 1101 decreed to be henceforth the distance between his shoulder and his furthest finger tip,[2] and who by that measure must have been close to seven feet tall.[3]

Living horses (***Footnote f7.1***), the most familiar of perissodactyls, are ungulates. Which is to say they are hoofed mammals with the evolved specialization for chewing abrasive fodder, of teeth that do not stop growth at the root, and so continually push out of the gum during life. When a horse is unwell, or is slowed by age, or both, it eats little and its chewing teeth (high-crowned molars) are not kept ground down. The abrasion is mostly by silica phytoliths (quartz stones) in grass leaves (grasses are silica accumulator plants, and species secrete phytoliths with various shapes, often angular). "Getting long in the tooth" is a euphemism for aging. Unlike human's teeth that only appear longer when gums recede with age, a horse's incisors continue to excrete (push out of the gum) throughout life and show growth lines (which is one way those who know how can judge the age of a horse).[4]

Horses were a species going extinct in the Holocene. Domestic horses are the species *Equus caballus*. The most primitive, feral, Przewalski's horses (*Equus ferns przewalskii*) described by I. S. Poliakov in 1881[5] were down to about fifteen when caught near the turn of the twentieth century.[6] Careful breeding in zoos have allowed a few to be returned to their "wild" homeland of the Hustain Nuruu Steppe Reserve, Mongolia (where they go by the name of "takhi").[7] In Europe (where excavation of a 2500 year old grave on the steppes of southern Russia of a Sauromatian warrior woman of high status puts flesh on Herodotus's Amazons myth) horses flourished amid clans of nomadic people fled to the peripheries of where agricultural societies arose.[8] Domestication of the horse was first achieved 5100-5700 years ago in the Eurasian Steppe where they were milked and were bridled for riding by people of the Botai Culture.[9]

In the Americas, horses were extinct when Christopher Columbus brought 24 stallions and 10 mares on his 1494 (second) voyage. On the 1498 (third) Columbus voyage, 40 Spanish conquistadores brought their mounts. To the eyes of the indigenous people, horses must have seemed as strange as may any reconstructed extinct animal. Those gone feral are the North American mustang and the South American criollo. The fossil evidence is that native horses went extinct in the Americas some 10,000 years ago (end Pleistocene, when also many other large mammals went extinct).

Grazing species of horses first evolved in the Pliocene. The variety of horses was greatest then and included: grazers (genera *Pliohippus, Calippus, Nannipus, Hipparion, Neohipparion*), and some browsing horses (genus *Megahippus*) with low crowned molars.

Horses in the Paleogene were exclusively browsing species. At that time grasses did exist but grasslands did not. The horses were forest dwellers and ate the leaves of the bushes. The earliest identified fossil horse is the Lower Eocene *Hyracotherium* (*Eohippus*). The family Equidae (horses) likely diverged from a condylarth (*see* Topic *F11*) predecessor in the Paleocene. [10] ❑

Footnote f7.1 **Order Perissodactyla, Family Equidae, Genus *Equus***

This summary follows that of Kathleen Hunt [11] (data from Colbert's *Evolution of the Vertebrates*): [12]

Equus burchelli: the Plains zebra of Africa, including "Grant's zebra", "Burchell's zebra", "Chapman's zebra", the half-striped Quagga, and other subspecies. The Plains zebra is what people usually think of as the "typical zebra", with rather wide vertical stripes, and thick horizontal stripes on the rump.

Equus zebra: the Mountain zebra of South Africa. This is the little zebra with the dewlap and the gridiron pattern on its rump.

Equus grevyi: Grevy's zebra, the most horse-like zebra. This is the big zebra with the very narrow vertical stripes and huge ears.

Equus caballus: the true horse, which once had several subspecies.

Equus hemionus: the desert-adapted onagers of Asia & the Mideast, including the kiang (formerly *E. kiang*).

Equus asinus: the true asses & donkeys of northern Africa. (The African wild asses are sometimes called *E. africanus*.)