



Hippological Museum Slatiňany contains rich material of Kladruber horse (skull n. HMS 233 - Black Kladruber)

Photo by Adéla Novotná.



Skull n. HMS 45 - White Kladruber).

Photo by Adéla Novotná.

Revised catalogue of the Equidae (Mammalia, Perissodactyla) in the collection of the Hippological Museum, Slatiňany and several other collections of domestic equids in the Czech Republic

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This catalogue is dedicated to prof. František Bílek who established Przewalski horse breeding in Czechoslovakia and saved black Old Kladruber horse from its extinction.

INTRODUCTION

Equids (Equidae, Hippomorpha) are reflected as beautiful creatures and moreover useful animals in their domestic representatives (e.g. Groves 1974, Willoughby 1974, Clutton-Brock 1992). Considering their rich fossil record, they are one of the most attractive models for demonstration of evolutionary processes in the past (e.g. Špinar & Burian 1988), albeit their current diversity represents only a very small rest of their former diversity (e.g. Groves 1974, Janis 1976, Franzen 1984, Forstén 1988a, 1989). Their current diversity is very similar to the diversity of Ceratomorpha (Groves & Grubb 2011), i.e. 11 recognized equid species x 10 tapir and rhinoceros species, and they are favorite flagship mammalian species from the conservation point of view (e.g. IUCN, WWF).

Despite their attractiveness and significant portion of ecological plasticity, several equid taxa became extinct during the last centuries, and several others are endangered (e.g. Groves 1974, Moehlman 2002). They have suffered mainly from habitat destruction, hunting, competition and hybridization with their domestic counterparts – fortunately several equid taxa have been saved from the extinction (e.g. Przewalski horse, Cape mountain zebra, Somali wild ass) using an active conservation management in the captivity or in protected areas in the wild (Moehlman 2002). Czech zoos have been very active in breeding of several wild equids for a long time (i.e. Przewalski horse, kulan, Somali wild ass and zebras), and Czech zoological gardens have collaborated well with Czech museums, so some rare or otherwise valuable specimens have been preserved in the museum collections. Considering below mentioned Przewalski horses, Praha Zoo had been one of the most important breeders of Przewalski horse for many decades along the Hellabrunn Zoo (München) and Askania Nova (Ukraine) (Boyd 1994). Additionally, the Praha Zoo has published the International Studbook of the Przewalski horse since 1960 (Kůs 2008).

We have tried to tame and domesticate a majority of extant wild equids, but only two attempts were successful – domestic donkey and domestic horse (Groves 1974, Clutton-Brock 1992, 1999, see also Eisenmann 1996, Beja-Pereira et al. 2004, Olsen 2006, Outram et al. 2009, Bendrey 2012). Since that time, we have been taking advantage of these domestic equids in many different ways (e.g. hard work, war, amusement). Do-

mestic equids are, as all domestic animals, very variable in their somatic parameters and behavioural features, following many different criteria within artificial selection and possibly also some portion of regional-specific parameters of wild populations (e.g. Ebhardt 1958, 1962, Groves 1974, Edwards 1994; for horses see also review Robovský 2009). In effect, many races are distinguished in domestic horses and donkeys. As many as seven horse races were established in our small country due to the old breeding history and also several excellent hippologists (e.g. František Bílek – Gotthardová et al. 2012). The most famous and oldest race is Old Kladruber horse, in its white and black variants (Antonius 1934, David 1987, Misař 2011).

Additionally, our small country had/has several specialists in equid breeding, taxonomy, behaviour and genetics, for example Josef Prokop Pražák (1870–1904, see Mlíkovský 2011), František Bílek (1885–1972, see Gotthardová & Bílek 2012), Vratislav Mazák (1937–1987, see Hanák 2007), Luděk J. Dobroruka (1933–2004, see Bartoš 2006), and currently Jiří Volf (see Kůs 2006), Evžen Kůs (coordinator of equid committee of UCSZOO), Petr Hořín (genetic of equids), Jan Pluháček (behaviour of equids) and many skillful curators in zoos and stud farms. František Bílek, Vratislav Mazák, Luděk J. Dobroruka, Jiří Volf, Evžen Kůs and curators in zoos initiated or enhanced collection of valuable specimens for Czech collections.

Considering all above mentioned factors, one could expect that equids are well present in the Czech collections. The two largest and most important collections are housed in the collection of the National Museum (Praha) and Hippological Museum (Slatiňany), but additional important specimens are located in other institutions in the Czech Republic (Robovský et al., in prep. – catalogue of wild equids in the National Museum Praha and other collections). The material of some equids housed in the collection of Hippological Museum Slatiňany and National Museum Praha has been published in several partial catalogues (Volf 1965, Spasskaya 2000, Hanák et al. 1999, Hanák et al. 2003, Hanák 2005, Volf 2010), or in short reports (Heráň 1966, 1968a,b, Štěpánek 1975, Havlíček 2000, Volf 2011), but none of these catalogues and reports includes all equid specimens housed in mentioned collections.

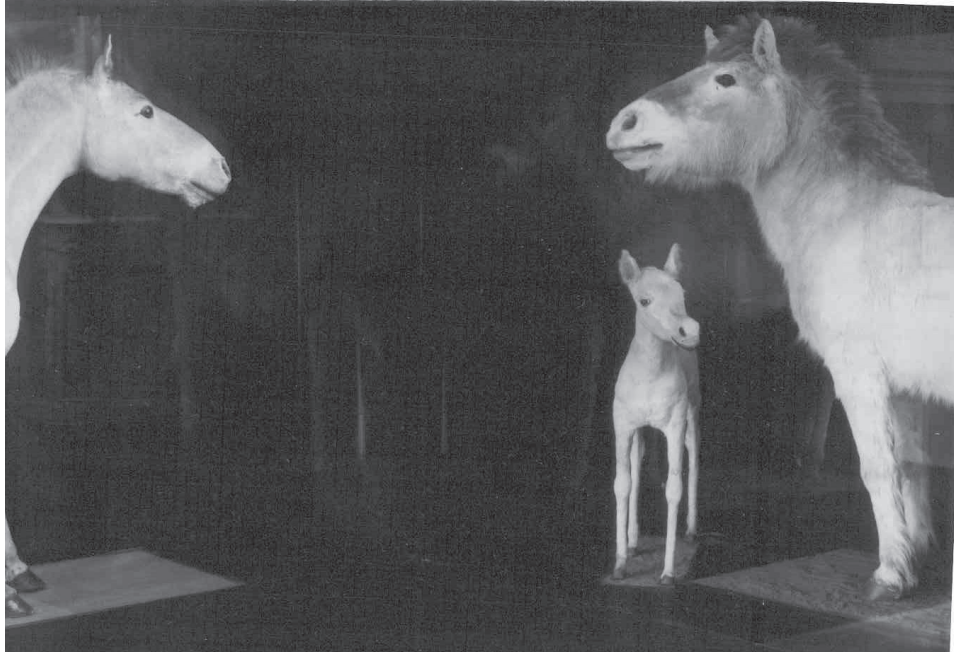
Catalogues of preserved material (e.g. Volf 1965, Spasskaya 2000, Oriani & Castiglioni 2003, Zharkikh & Yasynetska 2007, 2009) are of the great importance, because they make all proposed scientific works much more efficient. Here, we specified material stored in the Hippological Museum Slatiňany, and other collections of domestic equids in the Czech Republic.

MATERIAL AND METHODS

We attempt to identify, verify or comment on collection specimens primary deposited in the below mentioned collections. Species/subspecies identity was (re-)determined by the first author (JR) according to the following literature and all information associated with the specimens: Cooke 1943, Gromova 1959, Trumler 1959, Frechkop 1965, Azzaroli 1966, Groves et al. 1966, Frechkop 1967, Groves & Mazák 1967, Eisenmann & de Guili 1974, Gentry 1975, Eisenmann 1976, Bennet 1980, Groves & Willoughby 1981, Penzhorn 1988, Thackeray 1988, Churcher 1993, Groves 1994, Klein & Cruz-Urbe 1996, Eisenmann & Churcher 1997, Eisenmann 2002, Groves 2002, Eisenmann 2006, Grinder et al. 2006, Müller & Wussow 2010.

We operationally define “normal condition” for skulls as follows: (adult) skull is complete (skull + mandible), undamaged, without roughening in the diastema region (see Bendrey 2007a), normal dental formula with no wolf teeth (rudimentary P¹, Groves & Mazák 1967) is present and teeth are undamaged or of the normal shape; for metapodials as: no apparent evidence for the ossified ligaments between the metapodials (see Bendrey 2007b); for skins as: complete undamaged skin with head, tail and hooves. We only note exceptions from these states and other unusual conditions in our basic descriptions of specimen. Diastema region and ossification of the ligaments between the metapodials is scored according to the system made by Bendrey (2007a,b). When the ossification of ligaments varies in the specimen, the most advanced score observed is specified.

Number of supra-orbital foramina (Eisenmann 1986) and presence of canines and their relative sizes (very small x small x large) are specified for all taxa (Vollmerhaus et al. 2003). The state of the infundibulum of the lower incisors (see Bennett 1980) is specified for plains zebras (Groves & Bell 2004), and anterior enamel/dentine exposures and bevel measurements (see Bendrey 2007a, and also Anthony & Brown 1991) are specified, when detectable, for Przewalski horses. All characters (diastema region, wolf teeth, supra-orbital foramina, canines, infundibulum, enamel/dentin exposures and bevel) were scored only for adults, i.e. individuals with erupted third molars + fused basicranial suture, or closed fused epiphyses in postcranial bones. Synthetic (anatomical) models are not specified.



Hippological museum in Slatiňany includes also the taxidermy exhibition of founders of the Prague breeding line (stallion 62- Ali, foal 68 -Praha 1 and mare 65-Minka). Photo by Archive of Hippological museum Slatiňany

We attempted to specify the age of all specimens based on available collection informations or dental criteria estimations proposed by: Klingel & Klingel (1966) and Smuts (1974) – for plains zebra, and Červený et al. (1999) – for all specimens mentioned, although it is associated with the domestic horse; for review of age estimation methods see also Klevezal (2007).

In the catalogue, we present the available information on the respective specimen origin as well as original description and notes translated to English filled under Origin (O), basic description of specimens is mentioned under Description (D), and different specific notes (species/subspecies and age determination, some additional observation or speculations) filled under Notes (N). If the identification is only approximate, the uncertainty is stressed (cf.).

Although several measurements were obtained for the determination of equid taxa, only two measurements, condylobasal length = aboral border of the occipital condyles – prosthion, greatest breadth of skull and greatest mandible length = from the angle (gonion caudale – infradentale = ML) (only when condylobasal length was not measurable), in general according to von Driesch (1976), were specified in this catalogue as basic orientational indicator of approximate body size of particular specimens. The dimension values are given in millimetres.

In some cases, the exact measurements couldn't be obtained because of the way the skull was preserved or because of the improper condition of the skull (e.g. damages, mobility of some regions) and/or inaccessibility (e.g. solid/permanent montage of skull with mandible or logistic inaccessibility). Majority of exhibition specimens were not analysed in detail due to the permanent installation. If some measurements are only approximate, the uncertainty is stressed (approx.). The recognised breeding lines (A, B, M) are specified for the Przewalski horse specimens (cf. Zimmermann 2009), A/B- lines are associated with genetic influence of Horymir and his male offsprings to the Old Prague line (B-Line) of horses.

The taxonomic arrangement follows Groves & Grubb (2011), domestic horse follows *E. przewalskii*, the nomenclature of domestic horse and donkey follows Gentry et al. (2004).

ABBREVIATIONS

Collections (in order of their use in the catalogue per species account): HMS – Hippological Museum, Slatiňany (for detail concerning the collection see Havlíček 2000, Gotthardová & Bílek 2012); IAMF – Institute of Anatomy, First Faculty of Medicine, Charles University, Praha (for details see Seichert et al. 2006); ISZ – Department of Zoology, Charles University, Praha (for details see Robovský & Benda 2006); NMP – National Museum (Natural History), Praha (collection numbers with prefixes 'P6V'; for detail see e.g. Štěpánek 1975); for all these collections see also Robovský et al. 2010.

The first author personally visited all these collections and attempted to document, measure and revise all specimens.

Others: a. n. – accession number; (D) – right side; (S) – left side.

CATALOGUE

Equus przewalskii Poliakov, 1881

HMS 105

O: *Equus przewalskii*, IC 105, ♀, studb. nr. 2994, studb. name Slatiňany 1, house name Chrudimka, born 19. 06. 1997, died 5. 3. 2005.

D+N: Complete skull + complete skin in the exhibition. Anterior enamel/dentine exposures: 0; bevel: 0. Exhibition specimen. M-Line.

HMS 216

O: K216, ♀ *Equus przewalski*, special register – n. 225, also "foal of Przewalski horse, from Czech University of Life Sciences" (Vysoká škola zemědělství a lesního inženýrství).

D+N: Complete juvenile skull (third molars in evidence) + post-cranial skeleton (one scapula absent), deep crack in the frontal region, first upper incisors and first + second lower (S) incisors absent. Age estimation: 2-2.5 years. This specimen was identified by SPASSKAYA (2000) as ♂ Leo (stubb. n. 92) and she also associated skin of the Przewalski horse in Hippological Museum Slatiňany (n. 225, K216) with this individual.

Considering all morphological parameters and associated evidence (e.g. VOLF 2010, our survey in the National museum Praha), the skull probably belongs to Leo, but the skin in Hippological museum does not, because the skin of Leo is deposited in the National Museum Praha (NMP 52910). A/B-Line.

HMS "unnumbered" (or not detectable)

O: ♂, studb. n. 411, studb. name Hellabrunn 64, house name Simon, born 25.5. 1969, died 16. 8. 1993.

D+N: Head of the Przewalski horse (taxidermic specimen in the exhibition). A-Line.

HMS "unnumbered" (or not detectable)

O: absent.

D+N: Skin in the exhibition, hooves absent, leg skin incomplete. SPASSKAYA (2000) noted two skins (n. 225 and n. 48/50) deposited in the Hippological museum Slatiňany and associated them with Leo and Horymir, but both skins are stored in the National Museum Praha (our survey), under these numbers NMP 52910 and NMP 12774. This skin belongs to stallion Yper (stubb. n. 2500, studb. name Praha 184, house name Yper, born 26. 6. 1993, died 13. 5. 1999). M-Line.

HMS "unnumbered" (or not detectable)

O: *Equus przewalskii*, ♂, studb. nr. 62, studb. name Halle 5, house name Ali, born 22. 5. 1917, died 1. 4. 1933.

D+N: Taxidermy specimen in the exhibition. Founder of the Praha line of Przewalski horse breeding (B-Line).

HMS "unnumbered" (or not detectable)

O: *Equus przewalskii*, ♀, studb. nr. 65, studb. name Halle 8, house name Minka, born 20. 5. 1920, died 5. 2. 1949.

D+N: Taxidermy specimen in the exhibition; winter coat. Founder of the Praha line of Przewalski horse breeding (B-Line).

HMS "unnumbered" (or not detectable)

O: *Equus przewalskii*, ♀, studb. nr. 68, studb. name Praha 1, born 1. 1. 1928, died in 1928 - exact date of death unknown

D+N: Taxidermy specimen in the exhibition. First Praha foal. B-Line.

cf. Equus przewalskii

HMS "unnumbered" (or not detectable) (no. "1" in Table 1)

O: absent

D+N: Complete skull, one small round hole in the interorbital region, first upper incisor (S) absent. Wolf tooth: present (both sides). Age estimation: 8-9 years. This specimen was not considered as *E. przewalskii* by SPASSKAYA (2000); specimen shows partial similarity to both Przewalski and domestic horse (e.g. FRECHKOP 1965, AZZAROLI 1966, GORGAS 1966). Considering the breeding history of the "Praha/Halle" line, we therefore use rather tentative working determination "*cf. Equus przewalskii*" to draw attention to this specimen in all future comparisons.

Equus przewalskii x *Equus caballus*

HMS 72

O: C-1c-72.

D+N: Complete skull, second and third upper molars (D) absent, anterior parts of second lower premolars much higher than the posterior. Age estimation: 20 years (ČERVENÝ et al. 1999), 17-18 (SPASSKAYA 2000). Hybrid status of this specimen was proposed based on detailed morphological comparisons made by SPASSKAYA (2000). We tend to accept this well-supported determination.

Equus caballus Linnaeus, 1758

HMS 1

O: F1, ♂ 9 Veröfény, English thoroughbred horse, also C-1c-1, Slatiň. 1873.

D+N: Complete skull, first upper incisors and second upper incisor (S) absent. Age estimation: 9 years.

HMS 6

O: F6, ♀ 90-Generalissimus, white Kladruber. XIV, also C-1c-2, n. 25, special register – n. 1864.

D+N: Complete skull, several perforations inside the orbit (S). Age estimation: 16 years.

HMS 7

O: F7, ♂ Castor, Norik, also C-1c-3, Slatiň 1854.

D+N: Complete skull, advanced tooth wear. Age estimation: 10-12 years.

HMS 8

O: F8, ♂ Georg, Norik, also C-lc-4, n. 8, Slatiň. 1878.

D+N: Complete skull, one small round hole in the interorbital region, second lower molar (S) broken labially. Age estimation: 16 years.

HMS 9

O: F9, ♂ Schagya IX-12, Orient. half-thoroughbred, also C-lc-5, 10, Slatiň. 1887.

D+N: Complete skull. Age estimation: 12-16 years.

HMS 10

O: F10, ♂ 221 Furioso IX-13, English half-thoroughbred horse, also C-1C-6, n. 24, Slatiň. 1850.

D+N: Complete skull, interorbital region with one small round hole, first lower (S) incisor absent, second upper premolar (S) absent, very advanced tooth wear. Age estimation: 16 years.

HMS 12

O: F12, ♂ Furioso – 16, English half-thoroughbred horse, also C-lc-8, n. 11, Slatiň 1856.

D+N: Complete juvenile skull (first molars starting the eruption), two irregular holes inside the orbit (D), first upper incisors and first lower incisor (S) absent. Age estimation: 9 months.

HMS 13

O: F13, ♂ Jay Lothair, Hackney, C-lc-9, n. 15, Slatiňany 1862.

D+N: Complete skull. Age estimation: 10 years.

HMS 14

O: F14, ♂ 566 Karl, oldenb. imp.

D+N: Complete skull, third and fourth premolar (S) absent. Age estimation: 12-16 years.

HMS 18

O: F18, ♂ orig. belg., also C-lc-12, Slatiň. 1851.

D+N: Complete skull, braincase absent, three upper incisors isolated, three lower incisors absent. Age estimation: 10-12 years.

HMS 21

O: Slatiň. 21, racehorse?, 88?

D+N: Complete skull + postcranial skeleton, first upper incisors absent. Age estimation: 16 years.

HMS 22

O: F22, ♀ 256 Gerlar, oldenb., also C-lc-14, n. 22 Slatiň. 1843.

D+N: Complete skull. Age estimation: 7 years.

HMS 24

O: F24, ♀ Kladruber.

D+N: Complete skull, first upper incisor (S) absent. Age estimation: 10 years.

HMS 28

O: F28, ♂ 46-Nonius XXXVI-19, also C-lc-16, n. 20, Slatiň 1880.

D+N: Complete skull, two round holes in the interorbital region, first upper incisors absent, third upper premolar (S) with an advanced wear – preserved as isolated tooth. Age estimation: 16 years.

HMS 31

O: F31, ♀ Sacramoso 71, Kladruber., C-lc-18, n. 21, Slatiň. 1845.

D+N: Complete skull, one large round hole in the frontal region + associated crack (S), first upper incisors + second upper incisor (S) absent, third lower molars very high – they suppress counterpart region on the maxilla, one irregular bulge on the angular mandibular process. Age estimation: 12-16 years.

HMS 34

O: F34, ♂ English thoroughbred horse, from Tlumačov, special register – n. 26.

D+N: Complete skull + postcranial skeleton + hooves. Age estimation: 16 years.

HMS 37(21)

O: F37, ♀ 117 Generale (Kladruber × English), C-lc-21, n. 23, Slatiň. 1863.

D+N: Complete skull, one small round hole in the interorbital region, first upper incisor (S) absent. Age estimation: 10-12 years.

HMS 37

O: ?, C-lc-37.

D+N: Complete juvenile skull (first molars starting the eruption), first upper incisor(S) and both first lower incisors absent. Age estimation: 9 months.

HMS 38

O: F38, ♂ Jean de Lavy, orig. belgik, also C-lc-22.

D+N: Complete skull, frontal and interorbital region with several cracks, upper incisors absent. Age estimation: 12-16 years.

HMS 39

O: F39-6, ♂ Gidran XXVI-6, orig. half-thoroughbred, 1930.

D+N: Complete skull, advanced tooth wear (first and second incisors, second upper premolar (S) and fourth upper premolar (D) absent), dorsal part of the braincase (S) broken, first lower incisor (S) absent. Round protuberance on the lingual side of the mandible (R). Age estimation: 16 years.

HMS 40

O: F40, ♂ Ehrenberg, orig oldenb., C-1C-24, n. 4, Slatiň. 1889.

D+N: Complete skull, dorsal part of the braincase (S) broken, first upper incisor (S) absent. Age estimation: 8? years.

HMS 41

O: F41, ♂ Admiral, orig oldenb., C-1C-25, n. 7, Slatiň. 1403?

D+N: Complete skull, first and second upper incisors (S) and third upper molars (D) absent. Age estimation: 8? years. One supernumerary lower incisor is present.

HMS 43

O: F43, ♀ Giderlhar 3, oldenb., also C-lc-2c, n. 12, Slatiň 1861.

D+N: Complete juvenile skull (first molars starting the eruption) with first cervical vertebra, *os parietale* (D) with small round hole. Age estimation: 4 months.

HMS 50

O: K50, ♀, Kladruber, 76 Sacramoso.

D+N: Complete skull, wolf tooth: present at least D, left side not observable. Age estimation: 12 years.

HMS 51

O: K51. Kladruber.

D+N: Complete skull, frontal region (S) with a round depression, first (S) and third (D) upper incisors absent. Rostrum of the mandible broken/cut away and pieced back together with the rest of mandible. Age estimation: 10-16 years.

HMS 52

O: F52, foal of half-thoroughbred horse, C-lc-29, Slatiňany 1871.
D+N: Complete juvenile skull (third molars starting the eruption), dorsal part of the braincase broken. Age estimation: more than 2,5 years.

HMS 53

O: F53, ♂ Schagya IX.2., Orient. half-thoroughbred, also C-lc-30, n. 3, Slatiň 1884.
D+N: Complete skull. Age estimation: 16 years.

HMS 54

O: K54, Hamdani-Semri 19, special register – n. 25.
D+N: Complete skull + postcranial skeleton, second upper premolar (D) and second lower premolar (S) and third lower molar (S) absent. Age estimation: ? (more than 4,5 years).

HMS 58

O: F58, *Equus caballus*, cold blooded horse from America, C-lc-31, Slatiň. 1888.
D+N: Complete skull, third upper incisor (S) absent. Age estimation: 12 years.

HMS 62/73

O: 62, n. 73.
D+N: Proximal half of autopodium with distal part of the tibia (S), with many small exostoses. Exhibition specimen.

HMS 63

O: F63, ♂ Lipizzaner horse, also C-lc-33, Slatiň. 1866.
D+N: Complete skull, third upper incisor (S) absent; wolf tooth: present (both sides). Age estimation: 12 years.

HMS 64

O: F64, ♀ English half-thoroughbred, also C-lc-34, Slatiň. 1876.
D+N: Complete skull (third molars and fourth premolars finishing the eruption). Age estimation: 3,5-4,5 years.

HMS 65

O: F65, ♂ half-thoroughbred of oriental type, C-lc-35, Slatiňany 1865.
D+N: Complete skull, canines absent (except for the lower (S)). Age estimation: 7-8 years.

HMS 66

O: F66, ♂ Schagya VII, orient. half-thoroughbred horse, C-lc-36, n. 6, Slatiň 1868.
D+N: Complete skull, all upper incisors absent or very abraded. Age estimation: 16? years.

HMS 70

O: K70, *Equus shetlandinus*, also 3457, special register – n. 229.
D+N: Complete juvenile skull (first molars starting the eruption), braincase base and first upper incisors broken (and absent). Age estimation: 4-9 months.

HMS 75

O: K75, ♂ Kladruber. "Generalissimus", also special register – n. 243.
D+N: Complete skull, frontal region somewhat cracked, apices of the nasal bones broken. Age estimation: 10-12 years.

HMS 94

O: K94, ♂ "Thar" (Nemačice, olden. imp.), special register – n. 233.
D+N: Complete skull, frontal region with crack, anterior part of mandible (with incisors and diastema) broken, but pieced back together with rest of the remaining mandible, one small hole below the coronoid mandibular process (S), basal part of the braincase broken, first lower incisors absent. Age estimation: 10 years.

HMS 95

O: F95, ♀ Kladruber, also C-lc-44, Slatiň. 1882.
D+N: Complete juvenile skull (first molars starting the eruption), large round hole in the interorbital region, basal part of the braincase broken. Age estimation: 6-9 months.

HMS 95(35)

O: K95, ♂ 571 Robert de Bawichove, Belg., special register – n. 35.
D+N: Complete skull, one small round hole in the interorbital region; wolf tooth: present (S); canines: very small (skull)-large (mandible). Age estimation: 12-16 years.

HMS 97

O: K97, ♂ Belgique, special register – n. 65.
D+N: Complete skull + postcranial skeleton + hooves, first upper incisors absent. Age estimation: 16 years.

HMS 104

O: F104, Furioso XXVII – 10, English half-thoroughbred horse, also C-lc-46, n. 28, Slatiň. 1870.
D+N: Complete skull, two upper incisors absent. Age estimation: 8 years.

HMS 105

O: K105, ♂ Generale – Alata XXX, Kladruber, special register – n. 251.
D+N: Complete skull, one small round hole in the frontal region, second (both sides) and third upper premolars (S) absent. Age estimation: 10 years.

HMS 106

O: K106, ♂ Ebony, Hackney z Nemošic.
D+N: Skull without mandible, roots of the cheektooth row (D) exposed, small round hole in the interorbital region. Age estimation: 12-16 years.

HMS 107

O: K107, English half-thoroughbred, special register – n. 291.
D+N: Complete skull, frontal region (D) with a long crack, first upper incisors absent, some perforations are present in the middle of nasals and on the posterior edge of the braincase; wolf tooth: very small. Age estimation: 10 years.

HMS 108

O: K108, ♀ black Kladruber, after Napoleone (line), special register – n. 254.
D+N: Complete skull (third molars finishing the eruption), frontal region with several cracks, one perforation inside the orbit (S). Age estimation: 3,5-4,5 years.

HMS 109

O: K109, ♂ orig. belg., special register – n. 239.
D+N: Skull without mandible, one small round hole in the interorbital region. Age estimation: 12-16 years.

HMS 110

O: F110, 2 Generalissimus Alata, mare of the Old Kladruber horse.

D+N: Complete skull, first upper incisors and third upper incisor (D) absent, one small protuberance in front of the orbit (S). Age estimation: 12 years.

HMS 112

O: K112, ♂, Lipizzaner, Maestoso, "Ted Rermaby"?. "Old-Spanish type" according to AMBROŽ et al. 1958.

D+N: Complete skull in the exhibition. Age estimation: 20 years.

HMS 114

O: F114, ♀, 243 Kapland?, oldenbur., also C-lc-48, n. 30, Slatiň. 1844.

D+N: Complete skull, first upper incisors and second upper incisor (S) absent. Age estimation: 12 years.

HMS 116

O: K116, Napoleone Sola (Kladruber), special register – n. 63.

D+N: Complete skull + postcranial skeleton + hooves, first lower incisors absent. Age estimation: 16 years.

HMS 119

O: ♂, GXXXIII., 104 G, 1920-1937, GXXX Ala-ta, Slatiň. ac. 119.

D+N: Complete skull. Considering the morphology of this specimen and other evidence, the G indicates probably Generalissimus lineage in Old Kladruber horse.

HMS 119(255)

O: K119, ♂ Kladruber, special register – n. 255.

D+N: Skull without mandible, one large round hole in the interorbital region and one on the dorsal surface of braincase (D), second premolar (S) and both third premolars absent, one third incisor isolated, one absent. Age estimation: 16-20 years.

HMS 120

O: K120, Kladruber, special register – n. 246.

D+N: Complete skull; wolf tooth: present (S). Age estimation: 10 years.

HMS 121

O: K121, ♂ Kladruber, also C-lc-16, n. 20, Slatiň. 1880.

D+N: Complete skull, first upper incisor (D) and first lower incisor (D) absent, one small round hole in the middle of nasal bone (S), one round hole below the coronoid process (S) of the mandible. Age estimation: 12-16 years.

HMS 122

O: K122, Kladruber.

D+N: Complete juvenile skull (second molars starting the eruption), majority of incisors absent (only two lower are present). Age estimation: 6-9 months – 2-2,5 years.

HMS 123

O: K123, Kladruber ♂, special register – n. 32.

D+N: Complete skull, interorbital region with one large round hole, the frontal region with several cracks, all upper incisors absent. Age estimation: 16? years.

HMS 125

O: F125, ♀ Generalissimus XXII-1, Kladruber., also C-lc-50, Slatiň. 1872.

D+N: Complete juvenile skull (second molars erupting), several perforations on the maxilla (both sides) above premolars. Age estimation: 2-2,5 years.

HMS 126(33)

O: F126, ♀ ?Pottorturguis (Watsch), ?ckovelarpská?, also C-lc-51, n. 33, Slatiň. 1875.

D+N: Complete skull. Age estimation: 8 years.

HMS 126(231)

O: K126, ♂ Kladruber, special register – n. 231.

D+N: Complete skull, all upper incisors (except for second incisor), first lower incisors and third lower incisor (D) absent. Age estimation: 8 years.

HMS 130

O: F130, ♂ from Tlumačov, C-lc-52. Slatiň 2054, special register – n. 93.

D+N: Complete skull (posterior part of the braincase broken) + postcranial skeleton. Age estimation: 12 years.

HMS 130

O: K130, orig. Mongol. ♂, 7 years, from the vicinity of Charbina/Charbino (1924) and also as: ♂ of Przewalskii horse, Mongolia.

D+N: Complete skull in the exhibition, dorsal part of the braincase (D) partly absent. This specimen was not considered as *E. przewalskii* by SPASSKAYA (2000); this specimen exhibits similarity to the Przewalski horse based on several parameters (e.g. FRECHKOP 1965, AZZAROLI 1966, GORGAS 1966), but some important parameters could not be scored properly or at all (e.g. AZZAROLI 1966, GORGAS 1966). This original inscription and the specimen from the same locality (HMS 131, see below) indicate also the possibility that this specimen could be domestic horse of the Mongolian race.

HMS 131

O: K131, orig. Mongol., (17 years), ♀ from the vicinity of Charbina (1924), special register – n. 155.

D+N: Complete skull, braincase cracked (dorsal view) only third (S) and second (D) upper incisors present. Age estimation: 10 years. This specimen was not considered as *E. przewalskii* by SPASSKAYA (2000); in spite of the partial similarity to the Przewalski horse based on the skull parameters (not mandible), the majority of species-specific characters (e.g. FRECHKOP 1965, AZZAROLI 1966, GORGAS 1966) indicates that this specimen is domestic horse. The mandible shape is concordant with ♀ of Mongolian domestic horse "E mgl. 4" depicted by VOLF (1967). We tend to determine this individual as domestic horse of the Mongolian race. See also specimen HMS 130.

HMS 134

O: F134, Marivaux, ♂ orig. belg., Pisek, also C-lc-55, Slatiň. 1853.

D+N: Complete skull. Age estimation: 7 years.

HMS 135

O: K135, Domherr, ♂ oldenb. import., Nemošice, also C-lc-56, Slatiň. 1881.

D+N: Complete skull. Age estimation: ? (more than 4,5 years).

HMS 137

O: F137, ♂ Generalissimus XXII, Kladruber, special register – n. 64, "Old Kladruby white horse" according to AMBROŽ et al. 1958.

D+N: Complete skull + postcranial skeleton + hooves, one small round depression in the frontal region (S). Age estimation: 10 years.

HMS 144

O: K144, ♂ Norbert – Norik (Opava), special register – n. 161.

D+N: Skull without mandible, one small round hole in the interorbital region, first incisors absent, area between right pre-maxilla and maxilla cracked. Age estimation: 12 years.

HMS 148

O: F148, ♂ 298 Ocelot, belg. import, Nemošice, C-Ic-57.

D+N: Complete skull in the exhibition, one small round hole in the interorbital region. Age estimation: ? (more than 4,5 years). Braincase surface atypically rough.

HMS 156

O: K156, ♂ 49 Heino (older. imp.), special register – n. 84.

D+N: Complete skull, one large hole (partly covered by bone, partly open) in frontal and interorbital regions; wolf tooth: present (D). Age estimation: 12-16 years.

HMS 157

O: K157, ♂ 227, "Rotbart", "olden. import"

D+N: Complete skull + complete skeleton + hooves, all incisors absent, advanced tooth wear (especially in lower cheektooth rows), nasal bones absent, two relatively large holes in the interorbital region. Age estimation: ? (more than 4,5 years, certainly much older).

HMS 159

O: K159, ♂ 159 Held (olden. imp.).

D+N: Complete skull, nasal bones cracked, medium-sized round hole in the interorbital region, first upper incisors absent. Age estimation: 12 years.

HMS 161

O: K161, Kladruber horse ♀, 30 Generale XXX-6, special register – n. 31.

D+N: Complete skull; wolf tooth: present (S). Age estimation: 10 years.

HMS 163

O: K163, ♀ "Wesebeh"?, English thoroughbred 7, special register – n. 160.

D+N: Complete skull, advanced tooth wear. Age estimation: 10-12 years.

HMS 164

O: F164.

D+N: Complete skeleton of the adult horse (canines absent), postured on hind limbs in comparison with human skeleton. Exhibition specimen.

HMS 165

O: F165, ♂ 3 Obluženik, import oldenb., 1930

D+N: Complete skull, interorbital region damaged. Age estimation: ? (more than 4,5 years).

HMS 166

O: F166, ♂ 305 Pol de Malaise, import. Belgik, 1930, also C-Ic-59, Slatiň. 1869.

D+N: Complete skull, third upper incisor (S) absent. Age estimation: 9 years.

HMS 169

O: F169, ♂ 341 Grunbard, import oldenb., 1900, also: C-1c-60, Slatiň. 1848.

D+N: Complete skull, frontal region somewhat cracked; wolf tooth: present (D). Age estimation: 8 years.

HMS 171

O: K171, ♂ Schagya X. (Arabian half-thoroughbred), special register – n. 27.

D+N: Complete skull + postcranial skeleton, small round hole in the frontal region, one small round protuberance on the lower ramus of mandible (D), cheekteeth are of different heights, so not much compact, and tooth wear is irregular. Age estimation: 9-10 years.

HMS 176

O: K176, ♀ Hucul, special register – n. 224.

D+N: Complete skull + postcranial skeleton + hooves, first upper incisors absent. Age estimation: 12 years.

HMS 179

O: K179, ♀ Generale, special register – n. 234.

D+N: Complete skull, one large round hole in the interorbital region, one crack in the frontal region, first upper incisors absent. Age estimation: 10 years.

HMS 182

O: K182, Nordic ♀ 23 I., studb. n. 649, special register – n. 250.

D+N: Complete skull, one small round hole in the frontal region, first upper incisor (D), second (both sides) and third upper premolar (S) absent. Age estimation: 12? years.

HMS 183

O: K183, Nordic ♀ 231, fjord race, studb. n. 622, also special register – n. 252.

D+N: Complete skull, basal part of the braincase broken, second lower premolar (S) absent; wolf tooth: present (on both sides). Age estimation: 12-16 years.

HMS 186

O: K186, ♂ Dahoman 221., 230.

D+N: Complete skull in the exhibition. Age estimation: 16 years.

HMS 194

O: K194, ♀ Tátika, English thoroughbred, n. 16, special register – n. 242.

D+N: Complete skull, one great relatively round hole on the dorsal part of braincase, second upper incisor (S) and four lower molars absent. Age estimation: 16 years.

HMS 206

O: K206, ♀ Hucul, special register – n. 156.

D+N: Complete skull. Age estimation: 10 years.

HMS 207

O: K207, Angloarab.

D+N: Skull without mandible, one large round hole in the interorbital region, nasal bones have several perforations in their middle portion, first and third upper incisors absent. Age estimation: 16 years.

HMS 223

O: K223, ♂ Drahý 321, olden., also special register – n. 33.

D+N: Complete skull. Age estimation: 12 years.

HMS 227

O: K227.

D+N: Complete skull in the exhibition + complete skeleton + hooves (in the depository room), fracture on the mandible (D) in the diastema region, abnormal occlusion in some teeth (last molars). Age estimation: 12 years. This specimen was not considered as *E. przewalskii* by SPASSKAYA (2000); in spite of the partial similarity to the Przewalski horse, the majority of species-specific characters (e.g. FRECHKOP 1965, AZZAROLI 1966, GORGAS 1966) indicates that this specimen is domestic horse.

HMS 233

O: K233, ♂ Sacramoso XXIX, special register – n. 253.

D+N: Complete skull, advanced tooth wear. Age estimation: 16 years.

HMS 234

O: K234, ♀ 1 Gidran XXXIII, Kladruby, special register – n. 153.

D+N: Complete skull, several cracks in the frontal region, one small round hole in the interorbital region, first upper incisors absent, maxillary bone above the third premolar-second molar (S) broken, fourth upper premolar atypically high (it suppresses the counterpart region). Age estimation: 16 years.

HMS 239 (throughbred)

O: K239, ♂ Angl. 1/1 (thoroughbred), Ossian-Fells, special register – n. 228.

D+N: Complete skull, several cracks in the frontal region. Age estimation: 16 years.

HMS 239 (Norik)

O: K239, ♂ Caslop Norik, Slatiňany 1854.

D+N: Complete skull, robust "sagittal crest". Age estimation: 12 years.

HMS 240

O: ♂ Ehrenberg (olden. Imp.), special register – n. 240.

D+N: Complete skull, one small round hole in the interorbital region. Age estimation: 10 years. One narrow short protuberance is placed on the labial side of the mandible (S, in the diastema region).

HMS 252

O: F252 (on the skull, name unreadable), also K-419 (on the mandible), special register n. 70302.

D+N: Complete skull, second premolars (upper and lower) with very advanced wear, first and second lower incisors absent. Canines: medium-sized (upper), absent (lower). Age estimation: 12-16 years. Skull (F252) and mandible (K-419) could belong to two different individuals.

HMS 253

O: K253, ♀ Hucul, 26 Goral I-2, special register – n. 159.

D+N: Complete skull. Age estimation: 10 years.

HMS 286

O: K286, ♀ Kladruher, special register – n. 257.

D+N: Complete skull, frontal region with crack, anterior part of mandible (with incisors and diastema) broken, but pieced back together with the remaining mandible, one small hole below the coronoid mandibular process (S), basal part of the braincase broken, first lower incisors absent. Age estimation: 12 years.

HMS 407

O: K407, ♀ English thoroughbred (1/1), Bulante, special register – n. 67.

D+N: Complete skull + postcranial skeleton. Age estimation: 12 years.

HMS 408

O: K408, cheval Barbe; Né en 1922: Départ de Constan, Mort en Mai 1930 = Tunisie, special register – n. 82. "Barbary stallion from Tunisia, 8 years old" according to AMBROŽ et al. 1958.

D+N: Complete skull. Age estimation: 8 years.

HMS 415

O: K415, 70304, Berliner Droschssenpferd, Franz Bier + V.,

D+N: Skull without mandible, third premolar (D) absent. Age estimation: 10? years. Premaxilla with incisors is shifted ventrally in 90 degrees angle, as if a consequence of injury, the fracture is well healed.

HMS 486

O: F486, ♀ Kladruher. "Generalissimus", special register – n. 226.

D+N: Complete skull + postcranial skeleton, four cheekteeth and third lower incisor (S) absent, two cheekteeth isolated, upper rostrum broken and without teeth. Age estimation: 12-16 years.

HMS 499

O: F499, orig. Old Kladruher horse, Sakramoso, gelding (Chrast).

D+N: Complete skull, frontal region cracked (D), one small round hole in the interorbital region. Age estimation: 7-8 years.

HMS 784

O: ♂, Slat 784.

D+N: Complete skull + postcranial skeleton, small round hole in the interorbital region, perforation inside the orbit (D), basal part of the braincase broken. Age estimation: 16 years.

HMS 803

O: Slat. 803.

D+N: Right half of the skull without mandible, third upper incisor (S) absent. Age estimation: ? (more than 4,5 years) .

HMS 862

O: Slatiň. 862.

D+N: Complete postcranial skeleton. Ossified ligaments between the metapodials: 2.

HMS 863

O: 863, foal skeleton.

D+N: Complete juvenile skull + postcranial skeleton. Age estimation: around birth-first week .

HMS 879

O: Shagya-Bojanov, Or./2., Slatiňany 879.

D+N: Complete skull, one small round hole in the interorbital region, second lower premolar (S) absent. Age estimation: 12 years.

HMS 880

O: Mercurio (orig. Lipizzaner horse), Slatiň. 880.

D+N: Complete skull, one small round hole in the interorbital region. Age estimation: 9-10 years.

HMS 1821(Sabina)

O: ♀ Sabina, Slatiň. 1821.

D+N: Complete skull + postcranial skeleton, basal part of the braincase perforated, one small round hole in the interorbital region, first lower incisors absent, third lower molar (S) very high, suppressing counterpart region. Age estimation: 12 years.

HMS 1821(Tiger)

O: Noric ♂ Tiger, Slatiň 1821.

D+N: Complete skull + postcranial skeleton, dorsal part of the braincase wrinkled and with several small round perforations, second upper incisor (D) broken, first lower incisor (D) absent. Age estimation: 8-9 years.

HMS 2053

O: Mare, white Kladruher, 2053, Slatiňany.

D+N: Pelvis + sacrum.

HMS 2098

O: ♂ Kladruher, Sacramoso XXIX 3 Solo, Slat. 2098.

D+N: Complete skull (third upper molars absent) + postcranial skeleton, one small round depression in the frontal region (S). Age estimation: 16 years.

HMS 11383

O: K403, special register – n. 113.

D+N: Complete juvenile skull (only premolars in cheektooth rows are erupted), two isolated hemimandibles. Age estimation: 4 weeks.

HMS 11384

O: K1985 (♂ Slavata 3, from Gilla 239), 15 days, special register – n. 114.

D+N: Complete juvenile skull (only premolars in cheektooth rows are erupted), basal part of the braincase broken. *Anguli mandibuli* abraded.

HMS 11385

O: K66, foal skeleton.

D+N: Complete juvenile skull (only premolars in cheektooth rows are erupted). Age estimation: 4 weeks. *Campylorhinus lateralis* ("bent nose" to the left).

HMS 11386

O: K46, foal, Uhříněves, special register – n. 116.

D+N: Complete juvenile skull (only premolars in cheektooth rows are erupted). Age estimation: 4 weeks.

HMS 11387

O: K409, Ba24, Ponny, 10 Monate (months), special register – n. 117.

D+N: Complete juvenile skull (only premolars in cheektooth rows are fully erupted), upper rostrum broken. Age estimation: 6-9 months.

HMS 11388

O: K190, special register – n. 118.

D+N: Complete juvenile skull (only premolars in cheektooth rows are fully erupted). Age estimation: 6-9 months. Little "bent" nose to the right.

HMS "unnumbered" (or not detectable) (no. "II" in Table 1)

O: ♂ Mongol.

D+N: Complete skull without mandible, very advanced tooth wear (both second premolars divided in two parts). Age estimation: 16-20 years. This specimen exhibits partial similarity to the both Przewalski horse or domestic horse (e.g. FRECHKOP 1965, AZZAROLI 1966, GORGAS 1966) and some characters exhibit an intermediate condition. The original inscription indicates (in comparison with other specimens) that this specimen could be domestic horse of the Mongolian race.

HMS "unnumbered" (or not detectable) (no. "III" in Table 1)

O: ♂ Mongol.

D+N: Complete skull. Age estimation: 20 years. This specimen was not considered as *E. przewalskii* by SPASSKAYA (2000); the majority of species-specific characters (e.g. FRECHKOP 1965, AZZAROLI 1966) indicates that this specimen is domestic horse (probably of the Mongolian race according to the original inscription).

HMS "unnumbered" (or not detectable) (no. "IV" in Table 1)

O: H7?, ♀?, import olden., 8309?, C-Ic-61.

D+N: Complete skull. Age estimation: 12 years.

HMS "unnumbered" (or not detectable) (no. "V" in Table 1)

O: foal, 17.5. 1922, V. FRIČ.

D+N: Complete juvenile skull (only premolars in cheektooth rows are erupted). Age estimation: 4 weeks. Very pronounced *campylorhinus lateralis* ("bent nose" to the left).

HMS "unnumbered" (or not detectable)

O: Mare pelvis in the exhibition.

D+N: Pelvis.

HMS "unnumbered" (or not detectable)

O: Comparison of incisor shapes during the ontogeny of horse (based on prof. PEŠINA).

D+N: Comparative box with shapes of incisors associated with specific ages in the exhibition

HMS "unnumbered" (or not detectable)

O: Hoof bones

D+N: *Phalanx distalis* (S + D) in the exhibition.

HMS "unnumbered" (or not detectable)

O: ♀ Energica, (Gss XXIX)

D+N: Complete skin of white horse in the exhibition, hooves absent.

HMS "unnumbered" (or not detectable)

O: Squelette d'embryon d'un cheval. V. FRIČ.

D+N: Complete skeleton of horse embryo (liquid preserved specimen) in the exhibition.

HMS "unnumbered" (or not detectable)

O: Horse embryo, 4 1/4, months old.

D+N: Horse embryo (liquid preserved specimen) in the exhibition.

HMS "unnumbered" (or not detectable)

O: Longitudinal section of the horse hoof.

D+N: Longitudinal section of the horse hoof in the exhibition.

Equus asinus x Equus caballus

HMS 15

O: F15, ♂ mule, C-Ic-11, Slatiň. 1855.

D+N: Complete skull, two very narrow perforations (=cracks) in the middle of both nasal bones, all upper incisors except for the second absent. Age estimation: 10 years.

HMS 21

O: F21, ♀ mule, C-Ic-13, Slatiň. 1852.

D+N: Complete skull, very advanced tooth wear, cheektooth rows not compact (e.g. third upper premolar (S) much higher and suppresses counterpart region on the mandible), only small rudiment of the third upper molar (D) present, second and third lower premolars deformed. Age estimation: 16 years.

HMS 29

O: F29, ♂ mule, also C-Ic-17, n. 30, Slatiň. 1879.

D+N: Complete skull, one small round hole in the interorbital region, frontal region with several cracks, first and second upper incisors absent (one is preserved as an isolated teeth), second upper molar (S) absent (counterpart lower molar much higher). Canines very sharp. Age estimation: 16 years.

HMS 32

O: F32, ♂ mule, C-1c-19, special register – n. 1857 (or 1837).
D+N: Complete skull, frontal region with several cracks. Age estimation: 10 years. Irregular protuberance in front of the *crista facialis* (S).

HMS 33

O: F33, ♀, Mul.
D+N: Complete skull. Canines: absent (except for one small lower canine (D)). Age estimation: 10 years.

HMS 154

O: K154, mule, gelding, Ruženberk., 258.
D+N: Complete skull in the exhibition. Age estimation: 10? years.

HMS 162(152)

O: F162, ♀ mule from Kladruhy, 1930, special register – n. 152.
D+N: Complete skull (third molars finishing the eruption) + postcranial skeleton + hooves, two incisors isolated. Age estimation: 3,5-4-5 years.

HMS 162(241)

O: K162, mule gelding, special register – n. 241.
D+N: Complete skull, first and third upper incisors (D) absent; wolf tooth: very small present (S). Age estimation: 10 years.

***Equus asinus* Linnaeus, 1758**

HMS 14

O: K14, ♂ donkey, special register – n. 238. "donkey from northern Africa" according to AMBROŽ et al. 1958.
D+N: Complete skull, first and third upper incisor (S) and all lower incisors (S) absent; left lower canine is lying in the diastema region. Age estimation: 10-12 years. *Angulus mandibulae* (S) fractured and healed?, in any case more robust and irregular in shape.

HMS 164

O: K164, ♀ donkey (at least father was Poitou donkey), from stud farm Lukov, special register – n. 24.
D+N: Complete skull + postcranial skeleton, frontal region with a long crack. Age estimation: 10 years.

HMS 175

O: K175, donkey of the race Marlin Franca, Italic, special register – n. 244.
D+N: Complete skull, one medium-sized hole in the braincase region (D), frontal region with several cracks, first lower incisor (S) absent; wolf tooth: present (D). Age estimation: 9-10 years. Both orbits are relatively small due to upper and posterior bone "shelves".

***Equus quagga* Boddaert, 1785 (plains zebra)**

HMS 15

O: K15, ♀ zebra, 5232?, special register – Slatiň. n. 157.
D+N: Complete skull, small perforations – below coronoid mandibular process (D), nasal bone (D), first (S) and second (S) upper incisors, first lower incisor (S) and fourth upper premolar + second upper molar (S) absent. Infundibulum of the lower incisors: present. Age estimation: 10-12 years (ČERVENÝ et al. 1999), 9-11 years (KLINGEL & KLINGEL 1966), 12 years (SMUTS 1974).

HMS 99

O: F99, ♀ *Equus boehmi*, special register – n. 80.
D+N: Complete juvenile skull (second molars erupting) + postcranial skeleton, basal part of the braincase broken, first upper incisor (D) broken. Age estimation: 2-2,5 years (ČERVENÝ et al. 1999), 3 years (KLINGEL & KLINGEL 1966), ? (SMUTS 1974). Determination: *Equus quagga* (plains zebra) – northern complex (GROVES & BELL 2004).

***Equus* – subgenus *Hippotigris* (sensu GROVES & GRUBB 2011)**

HMS "unnumbered" (or not detectable)

O: *Equus zebra*, embryo of zebra, 3,5 months old.

D+N: (zebra) embryo (liquid preserved specimen) in the exhibitoin, without striping.

***Equus* sp.**

HMS 9-57

O: 9-57, V. FRIČ.

D+N: Complete hind limb skeleton (liquid preserved specimen) in the exhibition.

HMS 19

O: K19, 68.

D+N: Proximal half of autopodium with distal part of the tibia (S) in the exhibition, with many small exostoses.

HMS 189

O: P 189

D+N: Proximal half of autopodium with distal part of the tibia (D) in the exhibition, with many small exostoses.

HMS 252

O: K252, special register – n. 67.

D+N: Postcranial skeleton. Ossified ligaments between the metapodials: 0.

HMS 259

O: K259, horse skull excavated – Dušná ulice, u sv. Davida [Dušná Street, near St. David], 6 m deep, special register – n. 120.

D+N: Skull without mandible, well preserved, only left zygomatic arch broken. Canines: large alveoli. Age estimation: 6 years. *Equus* sp. (horse), western group (see GROVES 1974).

HMS 796

O: Slatiňany 796.

D+N: Forelimb and hind limb autopodia (D) in the exhibition.

HMS 796

O: Slatiňany 796.

D+N: Deformed phalanx III in the exhibition, with many small exostoses.

HMS "unnumbered" (or not detectable)

O: Slatiňany 873.

D+N: pelvis, perhaps ♀.

HMS11391+11392+11393

O: 11391+11392+11393

D+N: three hooves (two black and relatively small, one "yellow" and wide).

HMS "unnumbered" (or not detectable)

O: absent

D+N: Complete skeleton of the foal in the exhibition.

N: *Equus* sp. Exhibition specimen.

HMS "unnumbered" (or not detectable)

O: absent.

D+N: pelvis, perhaps ♂.

Additional notes:

This collection includes several dissociated parts from remaining skulls/skeletons, specifically three narrow hooves, dorsal part of the braincase, two cervical vertebrae, approx. 20 teeth and several postcranial bones (or their parts). The association with stored specimens is impossible (and not recommended without clear specifications which parts were added etc.).

Several taxidermy specimens of domestic horses are also present in HMS for a demonstration of harness in the exhibition, specifically one with the colouration of the leopard pattern (Roman nosed pacer), one Arab, one white (perhaps also Arab), and one chestnut coloured individual of the warm-blooded type plus several ponies.

DISCUSSION

The history of the Hippological Museum Slatiňany collection was summarized by Havlíček (2000) and Gotthardová & Bílek (2012). In general, it was created by fusion of many confiscated collections after the WWII (especially works of art) in order to demonstrate horses from the palaeontological, zoological, anatomical and cultural points of view.

Accumulation of the zoological material was initiated by František Bílek. This museum was opened on October 1 1950 in the Slatiňany Chateau, in the close vicinity of the Slatiňany stud farm. Unfortunately, some depository rooms are not well suited for osteological specimens.

In summary, collection of the Hippological Museum contains 162 specimens of four equid species including the Przewalski horse, domestic horse and donkey, plus two types of hybrids (Przewalski x domestic horse, domestic horse x donkey). This collection contains relatively small portion of living equids (Groves & Grubb 2011), but because it was created as a systematic equid collection (mostly of domestic equids), it is certainly very important for comparative purposes.

Unfortunately, we were unable to definitely support/reject all presumptions associated with several specimens in the Hippological Museum in Slatiňany. Every additional information, if available in future, would be certainly very important, for example corrections of our age estimations based on tooth wear. This could be very important especially in case of Przewalski horses, because this collection certainly contains several founders of the B-line of Przewalski horse, and perhaps some other individuals from the some other founders of the line, and all such specimens are of great scientific importance.

The majority of valuable specimens includes the information concerning their origin and/or specimen breeding history. Such material is of high scientific value and it is interesting from several major points of view. Collection of equid specimens are highly important for the comparative morphological investigations, including e.g. confrontation of fossil and extant species (e.g. Tobien 1992), detecting of pathology and anomaly incidence (e.g. Rotschild et al. 2001, Spasskaya 2014), deciphering of equid domestication (e.g. Forstén 1988b, Hemmer 1990, Bendrey 2012) and phylogenetic relationships (e.g. Groves & Willoughby 1981, Groves & Ryder 2000, Oakenfull et al. 2001, Eisenmann & Baylac 2000).

Several morphological comparisons of the exterior parameters, skull and mandible morphology or braincase capacity of wild equids have demonstrated the significant influence of captivity conditions on the morphology of the species investigated, e. g. Lundholm 1949, Groves 1966, Volf 1967, Röhrs & Ebinger 1993, Volf 1995, Röhrs & Ebinger 1998, Spasskaya & Orlov 1999, Spasskaya 2000, Spasskaya & Kůs 2003, Spasskaya 2007, Rossel et al. 2008. The weaker mandible, lower braincase capacity and brain weight and changed breeding parameters in the Przewalski horse are probably most prominent examples of such "domestic features" (Volf 1989, 1995; Röhrs & Ebinger 1998).

Morphological comparisons between the wild and domestic equids are also very important for detecting the expression of some pathologies in unworked and worked animals (e. g. Bahn 1980, Bendrey 2007a, b, see also Rogers & Rogers 1988). Our basic screening of skull and dental pathologies/abnormalities detected marked changes in domesticated animals (e.g. *campylorhinus lateralis*, roughening of the diastema region and ossification of the ligaments between the metapodials), but the incidence of other marked skull/dental pathologies seems to be lower in our sample than in older sample described by Groves (1965), the better nutritional and breeding management could be probably an influential factor.

The presented collection material is certainly very important in above mentioned topics. Moreover, the preserved material of Przewalski horse could be helpful in comparisons of several breeding lines. All living Przewalski horses are derived from only 12 pure-bred Przewalski horses and some domestic horses (see below and e.g. Groves 2009; Robovský 2009). Originally, two main lines of Przewalski horses contributed to the preservation of this last wild horse in the world – the A-line (also called the Munich

line) and the B-line (also called the Praha line) (for more details see e.g. Bouman & Bouman 1994). Horses of the two lineage are not identical, neither in external appearance nor in molecular genetics, and have different histories of introgression (e.g. Groves 2009, Robovský 2009, 2012). As mentioned, marked morphological differences are reported for Przewalski horses bred in captivity. Concerning the decreased braincase volume in captive Przewalski horses (Röhrs & Ebinger 1998), it is not known whether the two lines differ in this parameter. Anyhow, possible domestic characters should be analysed for both lines, while taking into account the number of generations since the origin of the stock's (Groves 2009). It is also important for conservation of this species, because the A-line is perilously close to total extinction. This line has played an important part in improving the former B-line (Mazák & Dobroruka 1967), and it could well be without introgression from domestic horses (for more details and discussions see Groves 2009, Zimmermann 2009, Robovský 2009, 2012).

Hippological Museum Slatiňany also contains rich material of domestic equids, above all of domestic horses of specific races, including "Czech treasure": White and black variants of the Old Kladruher horse (e.g. Antonius 1934, Ambrož et al. 1958). Such material can be very important for detailed comparisons among and within some specific horse races. In spite of maintenance of some race-specific standards, race characters vary based on specific breeding stallions and mares in specific periods of the breeding (David 1987, Misař 2011) – collection material could be reference control for detecting such changes.

Equids in other collections

Presence of domestic equids in the Czech collections could be associated with several factors: education and/or comparative purposes (e.g. domestic horse skulls and/or limbs and/or hooves are often present in school collections, pers. observ.), scientific collection and remains of some valuable specimens. Despite our effort, it is possible, that additional valuable material of equids could be present in other museum or school collections, and maybe in some cabinets of curiosities in castles. Some material is probably also present in private collections. We would be indebted to anybody for every information about such material in the Czech Republic.

Here, we briefly mention all institutions known to us as containing material with material of domestic equids – collection of wild equids will be specified in the catalogue which is being prepared for the journal *Lynx* (Praha):

- 1) Zoological Museum Protivín: skull of *E. caballus* (Old Kladruher horse, n. Li4), for photo of particular specimen see <http://www.krokodylizoo.cz/zoologicke-muzeum>. The collection of ZMP is a new private institution associated with the Protivín Crocodile Zoo and the enthusiastic activity of Miroslav Procházka. The collection now comprises more than 1 200 specimens, mostly of vertebrates (e.g. crocodiles, cats, elephant, rhinoceroses, cetaceans) and is very important from the scientific point of view.
- 2) Museum of Eastern-Moravia (Zlín): fragmented mandible of domestic horse collected by Miroslav Zikmund and Jiří Hanzelka in Pamir (Kirgizian part, Fergana valley, Hun burial site); skull and mandible of domestic horse (ZM 4191303/01+02, 4/87, Malenovice S11c+b).
- 3) Mendel University of Agriculture and Forestry Brno: skull of *Equus caballus* (without any additional information) (Hudeček & Hanák 2003).
- 4) Třebíč Regional Museum: one skull of *Equus caballus* (probably ♂, estimation of age – 6 years), with anatomical description of particular bones). This specimen is exhibited at „Craft Museum“ in Moravské Budějovice.
- 5) Praha Zoo, skull of the old ♀ *Equus caballus* (Old Kladruher horse – Energica, condylobasal length = 602, greatest skull breadth = 230; the skin is deposited in HMS).
- 6) Hrdlička Muzeum of Man: several teeth, postcranial bones and long bones of the forelimb of large individuals of *Equus caballus* were identified during one short visit) and subfossil equids are present in this collection primary concentrated on the anthropological material, revision of all specimens from zoological point of view is therefore needed.
- 7) Institute of Anatomy, Histology and Embryology, Faculty of Veterinary Medicine, University of Veterinary and Pharmaceutical Sciences, Brno: many (osteological and liquid preserved) valuable specimens of domestic equids, as comparative scientific and educative material.

- 8) Kačina Castle under National Museum of Agriculture Letná, Praha (based on survey of the third author): skull (with wolves teeth on both sides) + complete skeleton + taxidermic specimen of the ♂ *Equus caballus* (English thoroughbred breeding stallion Gradivo); skull + complete dissociated skeleton (n. 39986) of the *Equus caballus* (Old Kladruber horse with a greatly concave nasal region), this specimen was obtained before the WWII and it is specified as a mare, but this specimen exhibits large canines; skull of old *Equus caballus* (possibly of Old Klaruber horse based on collection evidence), with large canines.

Our survey across literature and web pages indicate the presence of other specimens in the Czech Republic:

- taxidermy specimens: „Amore Mio“ – horse of Albrecht von Waldstein that died during the battle in Lützen in 1632 (Municipal Museum in Cheb, one of the oldest taxidermy specimens in the Europe); horse that belonged to the Heřman Černín which saved his life during his escape from the Praha in 1618 (Petrohrad State Castle, one of oldest taxidermy specimens in the Europe); „Nikolas“ - stallion of the pony type that belonged to the baron Jiří Haas, put down because of its aggressivity in 1935, (Bítov State Castle); one specimen without more detail (Jezeří Castle).
- skeletons: one of the horse which belonged to Zikmund II. Berchtold in 19th century (Buchlov State Castle); one in Střední zemědělské učiliště Kroměříž.

Appendix – collection material of domestic equids in NMP, IAMF and ISZ collections

(in the similar detail as collection of Slatiňany collection, for more details see section “Abbreviations”).

Equus caballus Linnaeus, 1758

NMP 24/2014/1 – O: inv. n. 83, C245/94, Zemská odborná škola hospodářská v Litomyšli (High School on Economy in Leitomyšl). D+N: Incisors with associated parts of maxilla and mandibula (cut away before cheektooth rows), for domestic horses of these specific ages: 6 months, 1 year, 5 years, 7? years, 8 years, 12 years, 14 years, 15 years, 19 years, 21 years (Amurat 32).

NMP 9884 – O: *Equus caballus caballus*, a. n. 161/1895, n. 2798, purchased from V. FRIČ for six gulden. D+N: Complete skull. Age estimation: 12-16 years. Mandible seems to be not compatible with the skull.

NMP 9983 – O: *Equus caballus*, n. 2784, teeth, Equidae, A 157. D+N: Complete dentition composed from isolated teeth (canines very small-absent) in two glass boxes. Age estimation: 9-10 years.

NMP 10795 – O: *Equus caballus caballus*, n. 3973, also 39. D+N: Complete skull, mandible broken in two hemimandibles. Age estimation: 10 years.

NMP 12201 – O: *Equus caballus caballus*, Ministry of Education, a. n. 14/603500, n. 5379, V. FRIČ. D+N: Femur.

NMP 12202 – O: *Equus caballus caballus*, Ministry of Education, a. n. 14/603500, n. 5380, V. FRIČ. D+N: Tibia.

NMP 12203 – O: *Equus caballus caballus*, Ministry of Education, a. n. 14/603500, n. 5381, V. FRIČ. D+N: Metatarsus III.

NMP 21920 – O: *Equus przewalskii caballus*, a. n. 46/64, Poděbrady Museum. D+N: Complete skull, dorsal part of the braincase cut away (not preserved); wolf tooth: present (D); *campylorhinus lateralis* (for details see HERÁŇ 1973 and VOLF 2011). Age estimation: more than 4,5 years.

NMP 22163 – O: *Equus caballus caballus*, ♂, a. n. 86/73, Chrudim × Slatiňany, 1965, “Beduin”. D+N: Complete skull partially damaged, two teeth isolated, 8 teeth absent, left apical part of mandible (with incisors) broken, but preserved. Age estimation: 20 years.

NMP 22804 – O: *Equus caballus*, 170/70, 1970. D+N: Femur (D).

NMP 22805 – O: *Equus caballus*, 170/70, 1970. D+N: Femur (S).

NMP 22806 – O: *Equus caballus caballus*, a. n. 170/70. D+N: Femur.

NMP 23860 – O: *Equus caballus caballus*, a. n. 170/70. D+N: Metacarpals + phalanx, sagittal section.

NMP 36307 – O: *Equus caballus*, purebred Hucul, adult ♀, obtained on 7 November 1975, a. n. 177/75, purchased by the Hucul Club Praha. D+N: Complete light grey-brown skin, complete skull + pelvis + vertebrae + some limb bones + hooves. Age estimation: 10 years.

NMP 46094 – O: *Equus caballus*, *dentes molariformes*, a. n. 14/603574, Ministry of Education, 1960, V. FRIČ. D+N: Cheekteeth – 12 teeth (11 from the lower cheektooth row, 1 from the upper row).

NMP 47158 – O: *Equus caballus caballus*, Togo pony, ♀, obtained from J. VOLF on 10 November 1971, a. n. 52/93, Prague Zoo. D+N: Complete skull, third lower molar (D) isolated. Age estimation: 16 years.

NMP 47159 – O: *Equus caballus caballus*, Togo pony, ♂, obtained from J. VOLF on 10 November 1971, a. n. 52/93, Prague Zoo. D+N: Complete skull, third upper molar (S), second lower premolar (S) absent, second upper incisor (S) broken, first lower incisor (D) isolated; wolf tooth: present (S). Age estimation: 20 years.

NMP 47325 – O: *Equus caballus caballus*, Shetland pony, ♀, obtained on 10 July 1981, born in Dvůr Králové Zoo, a. n. 66/91, DK 197, juvenile. D+N: Complete juvenile skull (all premolars finishing erupting), dorsal part of the braincase cut away (but preserved), right zygomatic arch broken. Age estimation: before birth to one week of age.

NMP 47350 – O: *Equus caballus caballus*, Shetland pony, ♀, obtained on 20 May 1987, born in Dvůr Králové Zoo, a. n. 66/91, DK 859. D+N: Complete skull. Age estimation: 12 years.

NMP 47351 – O: *Equus caballus caballus*, Shetland pony, ♀, obtained on 26 June 1986, born in Dvůr Králové Zoo, a. n. 66/91, DK 792. D+N: Complete juvenile skull (first molars erupting). Age estimation: 6–9 months.

NMP 47352 – O: *Equus caballus caballus*, Shetland pony, ♂, obtained from England on 8 June 1981, a. n. 66/91, DK 483. D+N: Complete skull; wolf tooth: present (D). Age estimation: 10 years.

NMP 47401 – O: *Equus caballus caballus*, Shetland pony, ♂, obtained on 1 July 1981, born in Dvůr Králové Zoo, a. n. 66/91, DK 484. D+N: Complete juvenile skull (mesial molars finishing the eruption, second molars in evidence). Age estimation: 2–2.5 years.

NMP 47418 – O: *Equus caballus caballus*, Shetland pony, obtained on 3 October 1987, a. n. 66/91, DK 899, age – 3 years. D+N: Complete juvenile skull (third molars starting the eruption).

NMP 47889 – O: *Equus caballus caballus*, a. n. 14/60488, V. FRIČ. D+N: Forelimb (skeleton) of a foetus in liquid.

NMP 57191 – O: *Equus caballus f. caballus*, a. n. 240/2003, "Hektor, Tomáš Garrigue MASARYK'S horse (?)" [i.e. of the first Czechoslovakian president]. D+N: Mounted head of domestic horse with a white "star" on the forehead. Perhaps associated with a skull and skeleton (unnumbered).

NMP 91080 – O: *Equus sp.*, a. n. 123/2006, n. Z 357, from the Department of Zoology, Charles University, Praha. D+N: Complete skull, very advanced tooth wear. Age estimation: 16 years.

NMP 91081 – O: *Equus sp.*, a. n. 123/2006, n. Z 358, II A 140, from the Department of Zoology, Charles University, Praha, 35? Jahre alt. D+N: Complete skull, very advanced tooth wear (especially in lower cheekteeth), *angulus mandibulae* (D) broken; number of supra-orbital foramina: ? – several (minute) foramina + one main foramen on both sides. Age estimation: 12 years (ČERVENÝ et al. 1999), the original specified age is improbable.

NMP 94271 – O: 942, Shetland pony, ♂, 23 years, Dvůr Králové Zoo, purchased from Ruhe in 1972. D+N: Complete skull with very advanced tooth wear. Fourth upper premolars and second lower molars abnormally high (they suppress the counterpart teeth in upper tooth rows).

NMP 94901 – O: *Equus caballus*, FRIČ, C333. D+N: Complete skull + postcranial skeleton + hooves. Age estimation: 16 years.

NMP 94902 – O: *Equus caballus*, FRIČ 3. D+N: Skull without mandible. Age estimation: 16 years.

NMP 24/2014/2 – O: *Equus caballus*, right forelimb, n. 5, FRIČ. D+N: Autopodium bones of a forelimb (S), without carpals. Ossified ligaments between the metapodials: 1b?

NMP 24/2014/3 – O: *Equus caballus*, left forelimb, n. 6, FRIČ. D+N: Autopodium bones of a forelimb (S), without carpals. Ossified ligaments between the metapodials: 2.

NMP 24/2014/4 – O: *Equus caballus*, left forelimb, n. 10, 29, 12, 1914, FRIČ. D+N: Autopodium bones of a forelimb (S). Ossified ligaments between the metapodials: 2.

NMP 94903 – O: *Equus caballus*, 14/60, FRIČ n. 10, n. 3607. D+N: Complete skull + postcranial skeleton + hooves, first upper and lower incisors absent. Age estimation: 16 years.

NMP 94904 – O: *Equus caballus*, FRIČ n. 11, I.Q., m. D+N: Complete subadult skull (third molars erupting) + postcranial skeleton. Age estimation: 3.5–4.5 years.

NMP 24/2014/5 – O: *Equus caballus*, left forelimb, n. 12, FRIČ (two identical numbers, see below). D+N: Autopodium bones of a forelimb (S) without carpals. Ossified ligaments between the metapodials: 0.

NMP 24/2014/6 – O: *Equus caballus*, left forelimb, n. 12, FRIČ (two identical numbers, see above). D+N: Autopodium bones of a forelimb (S) without carpals. Ossified ligaments between the metapodials: 2.

NMP 24/2014/7 – O: *Equus caballus*, left + right forelimbs, n. 13, whitened by the chlorine, FRIČ. D+N: Complete forelimb autopodium bones + distal part of the zeugopodium bones (S) + forelimb autopodium bones without carpals (D). Ossified ligaments between the metapodials: 2 (S)/1c(D).

NMP 24/2014/8 – O: *Equus caballus*, right forelimb, n. 14, FRIČ. D+N: Autopodium bones of a forelimb (D) without carpals. Ossified ligaments between the metapodials: 2.

NMP 24/2014/9 – O: *Equus caballus*, left hind limb, n. 17, FRIČ. D+N: Autopodium bones of a hind limb (S) without tarsus. Ossified ligaments between the metapodials: 2.

NMP 24/2014/10 – O: *Equus caballus*, left hind limb, n. 18, FRIČ. D+N: Autopodium bones of a hind limb (S), without carpals. Ossified ligaments between the metapodials: 2.

NMP 24/2014/11 – O: *Equus caballus*, right hind limb, n. 19, FRIČ. D+N: Autopodium bones of a hind limb (D), without carpals. Ossified ligaments between the metapodials: 0.

NMP 24/2014/12 – O: *Equus caballus*, right hind limb, n. 20, FRIČ. D+N: Autopodium bones of a hind limb (D), without carpals. Ossified ligaments between the metapodials: 2.

NMP 24/2014/13 – O: *Equus caballus*, left forelimb, n. 22, FRIČ. D+N: Complete forelimb skeleton (D). Ossified ligaments between the metapodials: 2.

NMP 24/2014/14 – O: *Equus caballus*, right forelimb, n. 23, FRIČ. D+N: Forelimb skeleton (D) without phalangi. Ossified ligaments between the metapodials: 1c.

NMP 94905 – O: *Equus caballus*, left limb, n. 24, FRIČ. D+N: Hind limb skeleton (S). Ossified ligaments between the metapodials: 2.

NMP 24/2014/15 – O: *Equus caballus*, left forelimb, n. 24, 11 July 1903, FRIČ. D+N: Autopodium bones of a forelimb (S).

NMP 24/2014/16 – O: *Equus*, n. 24, right hind limb, FRIČ. D+N: Autopodium bones of a hind limb (D).

NMP 94906 – O: *Equus*, n. 26, FRIČ. D+N: Complete forelimb skeleton (S), ossified ligaments between the metapodials: 2.

NMP 94907 – O: *Equus*, n. 27, left hind limb, FRIČ. D+N: Autopodium bones of a hind limb (S), ossified ligaments between the metapodials: 2 (including exostosis).

NMP 24/2014/17 – O: *Equus*, n. 27, FRIČ. D+N: Autopodium bones of a forelimb (D), ossified ligaments between the metapodials: 1b.

NMP 24/2014/18 – O: *Equus*, n. 28, FRIČ. D+N: Autopodium, ossified ligaments between the metapodials: 0.

NMP 24/2014/19 – O: *Equus*, n. 29, D+N: Autopodium bones of a forelimb (S), ossified ligaments between the metapodials: 2.

NMP 24/2014/20 – O: *Equus caballus*, left limbs, n. 30, FRIČ. D+N: Forelimb skeleton without phalanx (S) + autopodium bones of a hind limb (S). Ossified ligaments between the metapodials: 2 (forelimb), 0 (hind limb).

NMP 24/2014/21 – O: *Equus*, n. 31, FRIČ. D+N: Autopodium bones of a hind limb (S), ossified ligaments between the metapodials: 2.

NMP 24/2014/22 – O: *Equus caballus*, n. 32, left forelimb, FRIČ. D+N: Autopodium bones of a forelimb (S), ossified ligaments between the metapodials: 0.

NMP 24/2014/23 – O: *Equus*, n. 36, D+N: Autopodium bones of a forelimb (D), ossified ligaments between the metapodials: 0.

NMP 94908 – O: *Equus caballus*, ♂, n. 40, IQ, purchased from (Mr.) NEŠVARA in 1929, za/for Khs/so. D+N: Complete skull. Age estimation: 20 years.

NMP 94909 – O: horse, Hloubětín depository, "from (Mr.) NEŠVARA, skull + sacrum. D+N: Complete skull + pelvis, first upper incisors absent. Age estimation: 8 years.

NMP 94910 – O: 14/60. D+N: Complete skull, all right upper incisors and first lower incisor (S) absent. Age estimation: 12–16 years

NMP 94911 – O: "zebra", changed to *Equus caballus* by V. EISEMANN (5 September 1997). D+N: Complete skull partially damaged, several teeth absent (first upper incisors, third upper incisor (D), second upper premolars, third and fourth upper premolar (D), first lower incisor (S), second lower premolar (S)). Age estimation: 12–16 years.

NMP 94912 – O: obtained from library, 5 November 1945. D+N: Complete skull, mandible broken in hemimandibles, ventral parts of mandible burned, first and second upper incisors (D) absent. Age estimation: 10–12 years.

NMP 94913 – O: *Equus caballus* f. c. , m 38, FRIČ, I.Q. . D+N: Complete skull, first lower incisor (S) isolated, advanced tooth wear, swelling on the labial side of the left mandible (at the level of third and fourth premolars). Age estimation: 16 years.

NMP 94914 – O: absent. D+N: Complete skull, large hole in the frontal region (D). Age estimation: 16–20 years.

NMP 94915 – O: absent. D+N: Complete skull. Age estimation: 16 years.

NMP 94916 – O: *Equus*, ♂, SMS. D+N: Complete skull (sagittally cut to halves) + postcranial skeleton + hooves. cf. Kladruber horse (according to the nasal region shape). Age estimation: 12 years.

NMP 94917 – O: *Equus caballus*, FRIČ. D+N: Complete skull, very advanced tooth wear in cheekteeth, two incisors (first upper) and 10 cheekteeth isolated, only three cheekteeth *in situ*, *angulus mandibulae* (S) broken. Age estimation: 12 years.

NMP 94918 – O: *Equus caballus*, FRIČ. D+N: Complete skull + postcranial skeleton + hooves. *Angulus mandibulae* (S) broken, the right with cracks.

NMP 94919 – O: *Equus*. D+N: Complete skull + postcranial skeleton, anterior parts of both nasals broken. Age estimation: 4.5–6 years.

NMP 94920 – O: *Equus caballus*, FRIČ, Hektor. D+N: Complete skull partially damaged, + hyoid bones + postcranial skeleton, mandible broken to two hemimandibles, a perforation in the middle of the nasal bone (D), second upper premolar (S) absent, all upper incisors absent except for the second one (S); second and third lower (S) and third lower (D) premolars absent, first lower incisors absent, altogether 7 incisors and two cheekteeth preserved isolated. Age estimation: 16 years. This individual could be a favorite horse of the first Czechoslovakian president Tomáš Garrigue MASARYK; possible associated with head skin (NMP 57191).

NMP 94921 – O: *Equus caballus* f. *caballus*, FRIČ, PR 3. D+N: Complete skull, a large hole in the frontal region, third premolar (S) and first molar (S) isolated, very advanced tooth wear. Age estimation: 16 years.

NMP 94922 – O: *Equus caballus* f. *caballus*, FRIČ, PR 4. D+N: Complete skull, one large hole in the frontal region. Age estimation: 12 years.

NMP 94923 – O: *Equus caballus*, FRIČ. D+N: Complete skull, two symmetrical small holes in the interorbital region, all upper and all left lower (plus first lower right) incisors not present *in situ*; three incisors preserved as isolated teeth. Age estimation: 10? years. Kladruber horse? (according to the nasal region shape).

NMP 94924 – O: *Equus*, n. 342, Army Art Ensemble. D+N: Complete skull, cracked in all portions and secondary pieced together; number of supra-orbital foramina: one or three (if also some minute foramina are counted) foramen on both sides. Age estimation: 6–10 years.

NMP 94925 – O: 90195 (wrongly marked the number of Martin, the Przewalski horse, studbook n. 2169). D+N: Complete skull, cheektooth rows not compact (teeth varying in their heights), fourth lower premolar (D) and second lower molar (S) shifted lingually, right upper cheektooth row sharply bent. *Equus caballus*. Age estimation: 16 years.

NMP 94926 – O: absent. D+N: Complete skull + half of pelvis, all upper incisors absent. Age estimation: 10? years. Kladruber horse? (according to the nasal region shape).

NMP 94927 – O: *Equus caballus* juv., 14/60 3395, FRIČ. D+N: Complete foetal skull, teeth not erupted. Age estimation: before the birth.

NMP 94928 – O: *Equus caballus*, foal, 14/60, coll. V. FRIČ, Ing. ČECH. D+N: Complete juvenile skull (all premolars fully erupted). Age estimation: 3–4 weeks.

NMP 94929 – O: *Equus caballus*, foal, V. FRIČ. D+N: Complete juvenile skull partially damaged + hyoid bones, nasals and two maxillae with toothrows and two hemimandibles isolated. Age estimation: before birth to one week of age.

NMP 94930 – O: *Equus caballus*, 22/3, 1924, from (prof. F.) BÍLEK. D+N: Complete skeleton, advanced tooth wear, altogether 14 teeth isolated, including the majority of incisors; wolf tooth: on one side (D); two exostoses in front of both orbites. Age estimation: 16 years.

NMP 94931 – O: *Equus caballus*, German University (Karl-Ferdinand University Praha), ICH 1. D+N: Complete skull + sacrum + pelvis. Age estimation: 12 years.

NMP 94932 – O: *Equus caballus*, Hucul breed, ♂, obtained on 4 January 1977, TIS (Union for Nature and Landscape Protection), Zmrzlík near Reporyje, a. n. 177/75. D+N: Complete skull + sacrum + long limb bones + hooves. Age estimation: 16 years.

NMP 94933 – O: *Equus caballus*, III/2901. D+N: Complete forelimb skeleton (S), ossified ligaments between the metapodials: 2.

NMP 24/2014/24 – O: *Equus caballus*, molars. D+N: Five maxillary cheekteeth.

NMP 94934 – O: *Equus*, SMS. D+N: Hind limb skeleton (D), ossified ligaments between the metapodials: 1c.

NMP 94935 – O: „Gidran“, 4 September 1928, F, young mare, skull with the depicted „David's star“-symbol. D+N: Incisors associated with parts of maxilla and mandibula (cut away before cheektooth rows), canines very small, absent in general. F could indicate the name FRIČ. Age estimation: 2 years.

NMP 24/2014/25 – O: *Equus caballus*. D+N: Forelimb skeleton (S) without autopodium.

NMP 24/2014/26 – O: *Equus caballus*, 1944. D+N: pelvis.

NMP 24/2014/27 – O: *Equus caballus*, right limb. D+N: Autopodium bones of a forelimb (D) without carpals. Ossified ligaments between the metapodials: 1c.

NMP 24/2014/28 – O: *Equus caballus*, Prag 1544 – II, 25?, from V. FRIČ. D+N: Autopodium bones of a forelimb (S). Ossified ligaments between the metapodials: 2.

NMP 24/2014/29 – O: *Equus caballus*, FRIČ. D+N: Half of metapodium + calcaneus + distal third of the tibia (D). Ossified ligaments between the metapodials: 2. Metatarsus III is covered by many small exostoses in its apical portion.

NMP 24/2014/30 – O: absent? D+N: Autopodium bones of a hind limb (D). Ossified ligaments between the metapodials: 2.

NMP 24/2014/31 – O: *Equus caballus*, FRIČ. D+N: Phalanx III (S?), hind limb.

NMP 94936 – O: *Equus caballus*, left forelimb, n. 12, 5 November 1904, FRIČ. D+N: Forelimb skeleton (S). Ossified ligaments between the metapodials: 1c-2.

NMP 94937 – O: *Equus caballus*, FRIČ, deformation of hoof bones. D+N: Phalanx III (S), forelimb?

NMP 94938 – O: 293 – Furioso – 28, mare, born on 15 June 1922, died on 22 June 1931, F. D+N: Incisors associated with parts of maxilla and mandibula (cut away ahead of the cheekteeth), canines small. F could indicate the name FRIČ.

NMP 94939 – O: „Žana“, gelding, died on (2 January) 1931, F, National Museum of Agriculture Praha. D+N: Incisors associated with parts of maxilla and mandibula (cut away ahead of the cheekteeth), canines large. F could indicate the name FRIČ. Age estimation: 9 months.

NMP 94940 – O: mare, Oldenburg race, 5 year, F. D+N: Incisors associated with parts of maxilla and mandibula (cut away ahead of the cheekteeth), canines absent. F could indicate the name FRIČ.

NMP 94941 – O: „Slavata 5“, stallion, 6 months, 4 233, Günther, National Museum of Agriculture Praha, F. D+N: Incisors associated with parts of maxilla and mandibula (cut away ahead of the cheekteeth), canines absent, three incisors isolated. F could indicate the name FRIČ.

NMP 24/2014/32 – O: *Equus caballus*, FRIČ. D+N: Autopodium bones of a hind limb (S), ossified ligaments between the metapodials: 2.

NMP 94943 – O: *Equus caballus*, III/2904, 4944. D+N: Parts of the postcranial skeleton (limb bones incl. scapula, pelvis).

NMP 94944 – O: *Equus caballus*, 294. D+N: Complete postcranial skeleton.

NMP 94945 – O: *Equus caballus*, Hucul breed, TIS (Union for Nature and Landscape Protection), „Edo-GU 290/95“. D+N: Complete skin, chestnut brown coloured pelage, hooves absent.

NMP 94954 – O: 794, *Equus caballus*, Shetland pony, 8 years. D+N: Complete skull, from Dvůr Králové Zoo.

IAMF D1/69 – O: *Equus caballus*. D+N: foetus in a liquid, head and body length ca. 30 cm.

IAMF D1/131 – O: *Equus caballus*. D+N: brain in a liquid. Photo in SEICHERT et al. (2006).

IAMF D1/132 – O: *Equus caballus*. D+N: brain in a liquid. Photo in SEICHERT et al. (2006).

IAMF D16/46 – O: *Equus caballus*, Václav FRIČ. D+N: Skeleton of a forelimb and hind limb (D) of a foetus in liquid.

IAMF D16/47 – O: *Equus caballus*, Václav FRIČ. D+N: Forelimb (skeleton) (S) of a foetus in liquid.

IAMF D16/63 – O: *Equus caballus*, Václav FRIČ. D+N: Three autopodia + one phalanx, associated with hooves. Distal part of one autopodium is composed of doubled phalanx, both phalanges are narrow and shifted laterally.

IAMF D16/64 – O: *Equus caballus*, hoof, 670. D+N: Hoof of a horse.

IAMF D16/61 – O: hind limb of the *Equus caballus*. D+N: Autopodium bones of a hind limb (D) + short distal part of a zeugopodium (cut away).

IAMF D31/14 – O: *Equus caballus*. D+N: Complete skeleton of a juvenile individual (all premolars erupted). Basilar length = approx. 380 mm. Age estimation: 4 weeks.

IAMF D31/14a – O: *Equus caballus*. D+N: Complete juvenile skull (all premolars erupted). Basilar length = approx. 330 mm. Age estimation: 4 weeks.

IAMF D31/23 – O: *Equus caballus*. D+N: Complete skull. Basilar length = 518 mm. Age estimation: 12 years.

IAMF D31/23 – O: *Equus caballus*. D+N: Complete skull. Basilar length = 518 mm. Age estimation: 12 years.

IAMF D31/25 – O: *Equus caballus*. D+N: Complete skull. Basilar length = 462 mm. Age estimation: 7 years.

IAMF D31/26 – O: *Equus caballus*. D+N: Complete skull, advanced tooth wear. Basilar length = 542 mm. Age estimation: 16 years. Photo in SEICHERT et al. (2006).

IAMF D31/29 – O: *Equus caballus*. D+N: Complete skull, nasal bone (S) cracked. Basilar length = 517 mm. Age estimation: 7 years.

IAMF D31/30 – O: *Equus caballus*. D+N: Complete skull, braincase cut away (but preserved), second molar (S) absent, third molar (D) shifted lingually. Basilar length = 537 mm. Age estimation: 12-16 years.

IAMF D31/31 – O: *Equus caballus*. D+N: Complete skull, first incisor (D) and second molar (D) absent. Basilar length = 556 mm. Age estimation: 12-16 years.

IAMF D33/27+28 – O: *Equus caballus*, right side, labial view. D+N: Horse dentition (upper and lower tooth row presented by isolated teeth).

IAMF D33/26+29 – O: *Equus caballus*, left side, lingual view. D+N: Horse dentition (upper and lower tooth row presented by isolated teeth).

ISZ 23/69 – O: *Equus caballus*, left side, lingual view. O: *Equus caballus*, V. FRIC. D+N: Skull of foetus (direct length approx. 14 cm), in liquid.

ISZ 23/69a – O: *Equus caballus*, skeleton of embryo (♀) of the Old Kladruber horse. D+N: Complete skeleton of embryo (direct length from nose to the end of tail – approx. 17 cm) + heart, both in liquid.

ISZ 23/70 – O: *Equus caballus*, skeleton of the right forelimb. D+N: Complete forelimb (D) skeleton (direct length approx. 25,5 cm), in liquid.

ISZ 23/71 – O: *Equus caballus*, pankreas pars. D+N: Part of the pancreas (direct length approx. 10 cm), in a liquid.

ISZ 61 – O: *Equus caballus*, left hind limb with hoof. D+N: Autopodium bones of a hind limb (S) with hoof. Ossified ligaments between the metapodials: 1c.

ISZ 162 – O: *Equus caballus*, skull. D+N: Complete skull; wolf tooth: both sides. Basilar length = 508 mm. Age estimation: 9 years.

ISZ 307 – O: *Equus caballus*, skull. D+N: Complete skull, first incisor (S) absent. Basilar length = 543 mm. Age estimation: 7 years. Diastema formation: 1-2 (BENDREY 2007a); number of supra-orbital foramina: one foramen on both sides. Canines: large. N: *Equus caballus*.

cf. *Equus caballus*

NMP 94946 – O: *Equus caballus*, n. 35, 1913. D+N: Complete juvenile skull (premolars fully erupted, first molars in evidence) + hyoid bones. Age estimation: 9 months.

Equus asinus Linnaeus, 1758

NMP 10796 – O: *Equus asinus*, n. 3974, n. 2. D+N: Complete skull. Age estimation: 10 years.

NMP 49008 – O: *Equus asinus*, Gobba, Socotra, Yemen, –, leg. B. PRAŽAN, 2000, a. n. 83/2001. D+N: Complete skull. Age estimation: 4.5? years.

NMP 94947 – O: absent. D+N: Complete skull, third molars nearly fully erupted. Age estimation: 3,5-4,5 years.

NMP 94948 – O: *Equus asinus*. D+N: Long bones of a forelimb (S).

NMP 94949 – O: *Equus asinus*, two carpi. D+N: Two carpi.

NMP 94950 – O: *Equus asinus*, 4950. D+N: Parts of the postcranial skeleton + hooves.

NMP 94951 – O: *Equus asinus*, ♀ 152. D+N: Pelvis

IAMF D1/132 – O: hind limb of the *Equus asinus*, D16/62. D+N: Autopodium (skeleton) of the hind limb (S) + short distal part of the zeugopodium (cut away).

IAMF D31/13 – O: *Equus asinus*. D+N: Complete skeleton. Basilar length = approx. 490 mm. Age estimation: ? (more than 4,5 years).

IAMF D31/22 – O: *Equus asinus*. D+N: Complete skull, braincase cracked (and pieced together). Basilar length = 363 mm. Age estimation: 10 years.

IAMF D31/27 – O: *Equus asinus*. D+N: Complete skull; wolf tooth: present (D). Basilar length = 363 mm. Age estimation: 4,5 years.

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