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(République tchèque) redécouvert*

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Predmostí 21 : Un fragment de mandibule humaine de Predmostí u Prerova (République tchèque) redécouvert

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Introduction

- 1 By a lucky coincidence, the incomplete mandible of Predmostí 21, from Predmostí u Prerova, was found in the collections of the Olomouc Museum (Czech Republic) in the summer of 2000 by Pavlína Procházková. This mandible was assumed to have been lost for more than fifty years, since most of the remains from Predmostí u Prerova were burned in 1945 during World War II in Mikulov Castle (Czech Republic). The burned objects which were recovered from Mikulov Castle are currently in the Moravian Museum in Brno. The manner in which this mandible came to the Olomouc Museum is unknown. But the explanation may be simple. In Matiegka's original (1926) description of the Predmostí 21 mandible, it was noted that it was the property of the Olomouc Museum, Moravia (*fig. 1*), and was therefore never the property of the Moravian Museum and was not in the Moravian Museum's collections in Mikulov Castle, a fact which was long forgotten. It is also possible that the mandible, deposited in the Olomouc Museum for more than 50 years, was considered to be a plaster cast, and consequently ignored. Its authentic nature was then recognized by Pavlína Procházková.
- 2 The mandible was originally discovered at the Palaeolithic site of Predmostí u Prerova by Wankel, who wrote about the find: "I picked it out of ash" (Wankel, 1884, p. 96). Subsequently Matiegka included some information on the mandible in his monograph on the Predmostí human remains: *Homo predmostensis. Fossilní člověk z Predmostí na Moravě* (Matiegka, 1934), although he did not provide a detailed description or measurements

of the specimen. Thus a detailed description of the mandible and comparison to some similarly dated specimens from the Czech Republic is presented here.

Authenticity of mandible No. 21

- 3 In his monograph, Matiegka discussed the atypical wear of the Predmostí 21 mandible's first right molar, providing an illustration (*fig. 2*). He cited Wankel's description of the bone and the context of its discovery. A different photograph of the mandible had previously been published by Matiegka in his article for the Prague 2nd session of the International Anthropological Institute (Matiegka, 1926) concerning the atypical dental wear (*fig. 1*). Today the mandible (*fig. 3*) differs from both of Matiegka's photographs (*fig. 1, 2*). In the published pictures, the mandible has a additional tooth, but today the alveolar region and the tooth are absent. The tooth in Matiegka's photograph (an incisor according to Matiegka's description, but in the photo it appears to be placed in the canine alveolus) was probably glued into the mandible between the time of Wankel's discovery and Matiegka's study, since Wankel only described five teeth in the mandible. Matiegka (1934) stated that the incisor was glued in an incorrect position. Perhaps for this reason the tooth was later removed. In other details the current appearance of the mandible agrees with both of Matiegka's photographs (*fig. 1, 2*). Based on these facts, there is no doubt that the specimen is the original mandible of Predmostí 21.

Fig. 1 - Reproduction of Matiegka's photograph of mandible No. 21 from Predmostí u Prerova published in his article of 1926.

Fig. 1 - Reproduction de la photographie de la mandibule n° 21 de Predmostí u Prerova publiée par Matiegka en 1926

Source Matiegka 1926.
D'après Matiegka, 1926.

Fig. 2 - Reproduction of Matiegka's photograph of mandible No. 21 from Predmostí u Prerova published in his monograph *Homo predmostensis*.

Fig. 2 - Reproduction de la photographie de la mandibule n° 21 de Predmostí u Prerova publiée par Matiegka dans la monographie *Homo predmostensis*

Source Matiegka 1934.
D'après Matiegka, 1934.

Description of the mandible

- 4 The mandible consists of an extremely slender fragment of a human lower jaw — corpus mandibulae, angulus mandibulae and ramus mandibulae— from the right side. In the region of angulus mandibulae and ramus mandibulae there is extensive damage. The middle of the corpus mandibulae, the protuberantia mentalis and the whole left half of the mandible are absent. Dimensions of the specimen are listed in table I.

Table 1 - Dimensions of mandible No. 21 from Predmostí u Prerova.

Tabl. 1 - Dimensions de la mandibule n° 21 de Predmostí u Prerova.

Dimensions	mm
Greatest length of the fragment	92
Greatest height of the fragment	52
Processus coronoideus height	18
Dimensions after Martin (Knussmann 1988)	mm
69(1)-Height of corpus mandibulae in level of right foramen mentale	24
69(2)-Height of corpus mandibulae in level of right M2	24
69(3)-Thickness of corpus.mandibulae in level of right foramen mentale	11
69b-Thickness of corpus mandibulae in area of right second molar	16

Lateral side (*Fig. 3, 4*)

- 5 The color of the bone is ecru-gray. There is only minimal surface damage, but in the lower portion there are two longitudinal cracks. The anterior crack is 27 mm long and goes under the foramen mentale. The second crack runs posteriorly under the molars and ramus; it is 51 mm long.
- 6 The preserved portion of the corpus mandibulae is extensively damaged; the protuberantia mentalis is broken and largely absent. The corpus begins just in front of the right P1. On the buccal side of the first premolar a piece of trabecular bone is attached to the surface of the root, even though this piece of trabecular bone is not apparent in Matiegka's photographs.
- 7 The foramen mentale is single and pronounced. The linea obliqua is clearly manifested, and it terminates at the level of the second molar.
- 8 Of the ramus mandibulae, only the right processus coronoideus is present, which had been broken and was reattached. The incisura mandibulae is partially present. Only the part composed by the collum mandibulae is missing.
- 9 Of the mandibular teeth, the P₁, P₂, M₁, M₂, M₃ are present. All of them have exposed cervical regions due to alveolar resorption. The cervical region is also damaged postmortem, and the roots of the teeth are exposed.

Fig. 3 - Mandible No. 21 from Predmostí u Prerova, view from lateral side.

Fig. 3 - Vue latérale de la mandibule n° 21 de Predmostí u Prerova.

Fig. 4 - RTG of mandible from Predmostí u Prerova No. 21.

Fig. 4 - Radiographie de la mandibule n° 21 de Predmostí u Prerova.

Medial side

- 10 The bone surface has a crack throughout the length of the mandible, 7 mm from the lower edge (*fig. 5*). The body has a ridged surface in the areas of P_1 , P_2 , M_1 and M_2 , comprised of short impressions, evidently the result of plant roots growing at the place where the mandible was deposited. In the lower part of the mandible these impressions are present as far as the area of M_3 . The alveoli of M_3 are dented and cracked. Only the lower portion of the sulcus mylohyoideus is preserved, 11 mm in length. Other parts of the sulcus are absent, because the angulus and the ramus mandibulae are broken off. At the medial edge of the mandible, the bone ends with the damaged remains of the alveoli for the canine. This area is stained by adhesive.
- 11 On the medial surface of the mandible a crack similar to the one on its lateral side is present. It runs from the processus coronoideus to the main part, 17 mm in length.
- 12 The bone color is identical to that of the lateral side.

Fig. 5 - Mandible No. 21 from Predmostí u Prerova, view from medial side.

Fig. 5 - Vue médiale de la mandibule n° 21 de Predmostí u Prerova.

Teeth

- 13 Because the mandible is fragmentary, only the right side being preserved, all of the existing teeth come from the right side: P_1 , P_2 , M_1 , M_2 , M_3 . The dimensions of the teeth are listed in table II, and their degrees of attrition, following Molnar's criteria, are listed in table III.

Table II - Dimensions of teeth of mandible No. 21 from Predmostí u Prerova, in mm.

Tabl. II - Dimensions (en mm) des dents de la mandibule n° 21 de Predmostí u Prerova.

Right tooth	m-d crown diameter	b-l crown diameter	Crown height at lingual side	Crown height at buccal side
P_1	6,1	7,1	3,0	4,8
P_2	6,6	7,7	2,4	5,0
M_1	10,2	9,9	3,1	4,0
M_2	9,9	10,0	4,0	4,8
M_3	9,9	10,0	5,1	6,8

Table III - Scoring of tooth wear after Molnar (1971).

Tabl. III - Usure des dents cotée selon la méthode de Molnar (1971).

Right tooth	A - Degree of wear	B - Direction of wear surface	C - Form of wear
P_1	6	2	3
P_2	6	6	3
M_1	6	6	5
M_2	4	6	2
M_3	2	6	2

Description of the individual teeth

- 14 **Right P₁.** The crown surface is highly worn. Neither cusp is observable. The occlusal surface slopes in a lingual direction. The enamel color is white with yellow staining in the lower part of the crown on the buccal side. On the mesial and distal sides it is yellow in color. On the lingual side the enamel is damaged on the cervical margin, and is also yellow. On the mesial side of the crown a piece of trabecular bone is attached. There are no pathological changes on the crown, cervix or root.
- 15 **Right P₂.** The crown surface is highly worn. The two cusps are not observable. The occlusal surface is narrow with a slight slope towards the distal end. There is a crack through the center of the occlusal surface. On the buccal side there is another crack through the crown surface in a longitudinal direction. The enamel is white in color with yellow staining towards the cervix. On the lingual side the dental enamel is yellow. The root is exposed on the buccal side; it is yellow-brown in color but there is no damage on its surface. There are no pathological changes on the crown, cervix or root.
- 16 **Right M₁.** The crown surface is highly worn. The number of cusps cannot be precisely determined. On all of the occlusal surface dentine is present with small islands of enamel. The degree of wear decreases towards the distal end. The crown shows additional wear on the mesial half of the buccal side of the crown (*fig. 6*), where the dentine is exposed. The wear is triangular in shape with the apex pointed towards the root. The enamel is yellow- white in color on the buccal side, whereas on the lingual side it is bright yellow. The enamel surface exhibits cracks on all sides of the crown. Dental plaque is not present. The occlusal surface exhibits an early stage of a dental caries (on the distal part of the occlusal crown surface). On the buccal side are exposed roots, and the surface of the mesial root has abrasions.
- 17 **Right M₂.** The occlusal surface of the crown is only slightly worn. All four cusps are worn to the dentine. The occlusal surface is narrow in shape, with cracks in the enamel. The enamel is yellow-white on the occlusal and buccal sides, but bright yellow on the lingual side. The lingual surface shows slight traces of dental plaque. Dental wear is less than on the M1 dx, has no anomalies, and is present on the occlusal surface only. Dental caries are not present. The exposed roots are not damaged; they are yellow-brown in color.
- 18 **Right M₃.** The cusps on the occlusal surface are worn, but the enamel is present and the dentine layer is not exposed. The lingual side presents cracks. The enamel is white on the buccal side and yellow on the lingual side. There are three cusps. Dental plaque and caries are not present.

Fig. 6 - The teeth from buccal side. Buccal surface of right M_1 shows anomalous dental wear of buccal crown side. Predmostí u Prerova No. 21.

Fig. 6 - Predmostí u Prerova n° 21. Face buccale des dents. La face buccale de la couronne de M_1 droite montre une usure anormale.

Determination of sex and age

- 19 Wankel wrote that Predmostí 21 is the mandible of a female who was 24 years of age at death. Matiegka did not express his opinion of Wankel's statement, only repeated it.

Fig. 7 - Detail of dental wear on occlusal surface. Predmostí u Prerova No. 21.

Fig. 7 - Predmostí u Prerova n° 21. Détail de l'usure de la surface occlusale des dents.

- 20 Determination of sex for the mandible was difficult, because the fragment does not retain any of the areas necessary for a morphometric method of sex determination for the human lower jaw. The few existing morphoscopic features of the mandible indicate that it could be female. Age was assessed according to Lovejoy's method for determining the degree of dental wear (White, Folkens, 1991). Dental attrition was relatively high (fig. 7), and according to Lovejoy's criteria this individual was 40 to 50 years old. But the individual could be younger, because the method is based on

contemporary populations, whose dental wear could differ from that of the Paleolithic population.

Discussion

- 21 Because the Predmostí 21 mandible from Predmostí u Prerova is fragmentary, it was compared with other similarly dated specimens from the Czech Republic on the basis of dimensions of teeth crowns: mesio-distal and bucco-lingual. Comparisons were made to the human skeletal remains from Predmostí u Prerova (Matiegka, 1934), Dolní Věstonice, Svitávka (Vlček, 1997) and Brno 3 (Matiegka, 1929). The results are presented in graphs 1-5.
- 22 In the preserved teeth of Predmostí u Prerova 21, we can see the distinctly small size of the tooth crowns, even though all of their dimensions are within the variability of the crown dimensions of the other Paleolithic specimens, especially of the females. The graphs show that both premolars of Predmostí u Prerova 21 are smaller than all of the comparative premolars, although their dimensions are similar to the dimensions of premolars of the female Brno 3, Predmostí 4, Predmostí 10, the male Predmostí 14 and the probably male Dolní Věstonice 15. The first molar is similar in size to the female Predmostí 10 and the male Predmostí 1, the second molar is similar to the female Predmostí 4 and the male Predmostí 1. The third molar is similar in its crown dimensions only to the female Brno 3 and to Predmostí 4 and 10.
- 23 Only some dimensions of the mandible from Predmostí u Prerova 21 were measured. And it was not possible to compare them with those of other individuals. From the comparison of the dental dimensions it is evident that the mandible belonged to a dentally extremely gracile individual.
- 24 The crown of the first molar of Predmostí u Prerova 21 shows anomalous dental wear on the buccal side. The wear extends from the occlusal surface and continues on the buccal side of the crown and covers it over all the buccal surface (*fig. 5*). The wear decreases towards the alveolar area. This anomalous wear was mentioned by Matiegka, who explained it: "It is no doubt that this is a case of artificial intervention, because the buccal side of the tooth rests against soft tissues, which couldn't be the cause of such wear. But this wear was not intentional, because intentional dental wear on this hidden spot is unlikely. The wear was caused by a hard object, located in the mouth at this place for a long time, perhaps throughout life" (Matiegka, 1934, p. 86). He proposed that the hard object was a stone pebble, inserted into the mouth for better pronunciation (as in the example of Demosthenes). Later Matiegka abandoned this theory and followed the view of his colleagues Comte Bégouen and E. Pittard, who explained this wear as deriving from little stones placed in the mouth to promote salivation and so inhibit thirst. Similar dental wear was described by Matiegka on most of the skulls found in Predmostí u Prerova. Interestingly it is more frequent on the right side than on the left. It could be a manifestation of laterality. Right-handed individuals prefer to chew on the right side of the jaw and left-handed individuals on the left side.
- 25 Similar dental wear was present on the teeth of Brno 3, as mentioned by Matiegka. The wear on Brno 3 was more marked and involved the two first upper right molars. Wear is less intense on the crowns of the two first lower right molars (Matiegka, 1929). Because the Brno 3 specimen was burned during World War II in the Mikulov Castle, we

must depend on Matiegka's description. On a preserved cast of Brno 3 anomalous dental wear is not observable.

- 26 Matiegka's interpretation seems to be likely. This interpretation suggests wear of the teeth one after another and the presence of this anomalous wear in individuals of all age categories. Matiegka found such wear on the teeth of an adolescent individual 12–14 years old at Predmostí u Prerova. Since the molars of this young individual had erupted recently, the wear on the buccal side of the crown must have been created very quickly, over 5 to 7 years. However, this interpretation need to be further investigated.

Graph 1. Comparison of mesio-distal and bucco-lingual dimensions of right P_1 from Predmostí u Prerova No. 21 with dimensions of right P_1 of other similar dated finds in the Czech Republic.

Graph. 1 - Comparaison des dimensions mésio-distale et bucco-linguale de la P_1 droite de Predmostí u Prerova n° 21 avec celles de P_1 droites appartenant à des fossiles tchèques contemporains.

◆ - male
● - female
■ - indeterminate

Graph 2 - Comparison of mesio-distal and bucco-lingual dimensions of right P_2 from Predmostí u Prerova No. 21 with dimensions of right P_2 of other similar dated finds of the Czech Republic.

Graph. 2 - Comparaison des dimensions mésio-distale et bucco-linguale de la P_2 droite de Predmostí u Prerova no 21 avec celles de P_2 droites appartenant à des fossiles tchèques contemporains.

◆ - male
● - female
■ - indeterminate

Graph. 3 - Comparison of mesio-distal and bucco-lingual dimensions of right M1 from Predmostí u Prerova No. 21 with dimensions of right M1 of other similar dated finds of the Czech Republic.

Graph. 3 - Comparaison des dimensions mésio-distale et bucco-linguale de la M1 droite de Predmostí u Prerova n° 21 avec celles de M1 droites appartenant à des fossiles tchèques contemporains.

- ◆ - male
- - female
- - indeterminate

Graph. 4. Comparison of mesio-distal and bucco-lingual dimensions of right M2 from Predmostí u Prerova No. 21 with dimensions of right M2 of other similar dated finds of the Czech Republic.

Graph. 4 - Comparaison des dimensions mésio-distale et bucco-linguale de la M2 droite de Predmostí u Prerova n° 21 avec celles de M2 droites appartenant à des fossiles tchèques contemporains.

- ◆ - male
- - female
- - indeterminate

Graph. 5 - Comparison of mesio-distal and bucco-lingual dimensions of right M3 from Predmostí u Prerova No. 21 with dimensions of right M3 of other similar dated finds of the Czech Republic.

Graph. 5 - Comparaison des dimensions mésio-distale et bucco-linguale de la M3 droite de Predmostí u Prerova n° 21 avec celles de M3 droites appartenant à des fossiles tchèques contemporains.

◆ - male
● - female
■ - indeterminate

Conclusions

- 27 The fragment of mandible No. 21 from Predmostí u Prerova was rediscovered in the summer of 2000 in Olomouc Museum. Through comparison with Matiegka's photographs it was unambiguously verified as mandible No. 21 from Predmostí u Prerova, described by Matiegka (Matiegka, 1926, 1934) and assumed for a half a century to be lost. Re-examination of the Predmostí u Prerova 21 mandible fragment confirmed its gracility, and that its dimensions and degree of dental wear suggest that it belonged to an older woman aged between 40 and 50 years. The comparison of crown dimensions of this specimen and other similarly dated specimens from the Czech Republic showed that the teeth of Predmostí u Prerova 21 are relatively small compared to the other individuals and that their dimensions approximated those of the other females.
- 28 A comparison with Matiegka's photograph revealed that the mandible had lost a right incisor between 1934 and today. There is no mention of this tooth in Wankel's original description of the mandible.
- 29 Anomalous dental wear on the buccal side of the first molar was caused artificially, by a hard object in the mouth, but the reason for this and the identity of the object it caused are questions for further discussion.

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BIBLIOGRAPHY

- DOKLÁDAL (M.) 1994, *Anatomie zubu a chrupu*, Masarykova univerzita, Fakulta lékařská.
- KNUSSMANN (R.) 1988, *Anthropologie, Handbuch der vergleichenden Biologie des Menschen* (4 Auflage des Lehrbuchs der Anthropologie begründet von Rudolf Martin), Band I und II, Gustav Fischer Verlag, Stuttgart, Jena, New York.
- MATIEGKA (J.) 1926, Un égrisage artificiel des dents observé sur les crânes quaternaires de Predmosti, *II^e Session de l'Institut International d'Anthropologie*, Librairie E. Nourry, Paris, p. 289-293.
- MATIEGKA (J.) 1929, The skull of fossil man Brno III, and the cast of its interior, *Anthropologie* VII, 1-2: 90-107.
- MATIEGKA (J.) 1934, *Homo predmostensis, Fossilní člověk z Predmostí na Moravě*, Díl I. Nákladem České akademie věd a umění, Praha.
- MOLNAR (S.) 1971, Human tooth wear, tooth function and cultural variability, *Am. J. Phys. Anthropol.* 34: 175-190.
- VLCEK (E.) 1997, Human Remains from Pavlov and the Biological Anthropology of Gravettian Human Population in South Moravia, in J. Svoboda (ed.), *Pavlov, Northwest, Upper Paleolithic Burial and its Settlements Context*, Dolnovfstonické studie, svazek 4, Česká akademie věd., Brno, p. 53-153.
- WANKEL (J.) 1884, První stopy lidské na Moravě, *Casopis Muzejního spolku olomuckého* 1-3: 89-100.
- WHITE (T.D.), FOLKENS (P.A.) 1991, *Human Osteology*, Academic Press, Inc. San Diego.

ABSTRACTS

The paper presents a right mandibular fragment of Predmosti 21, recently rediscovered in the Museum of Olomouc (Moravia). It is a Gravettian fossil thought to have been destroyed during the Second World War. The authenticity of the fossil and its description are discussed and it is also compared with other fossils of the Moravian Upper Palaeolithic.

L'article présente un fragment de mandibule droit de Predmosti 21 récemment re-découvert dans le Musée d'Olomouc (Moravie). Il s'agit d'un fossile gravettien que l'on a cru détruit à la fin de la deuxième guerre mondiale. L'authenticité du fossile ainsi que sa description sont discutées et accompagnées d'une comparaison métrique avec d'autres fossiles du Paléolithique supérieur de Moravie.

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