日本古生物學會報告

(Transactions of the Palaeontological Society of Japan)

10. *On A Fossil Elephant, Palaeoloxodon aomoriensis, from Shichinohe, Kamikita-gun, Aomori Prefecture, Japan.*

By

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Thirty years ago, some fossil remains of an elephant were unearthed from a Pleistocene deposit at Tenjinbayashi, on the right bank of the Shichinohe-gawa, near the entrance to the town of Shichinohe, Kamikita-gun, Aomori prefecture. Recently the senior writer was informed of this excavation by Mr. Yaichiro YAMAGUCHI, and received two photographs of these fossil remains and of the locality of the excavation from Mr. Kenji ARAKAWA, instructor at the Aomori Normal School. He later learned that the fossil specimens are now preserved at the Tokyo Agricultural College through the efforts of Mr. Shuzo ISHIDA, one of its professors. They consist of a complete right lower cheek-tooth, many fragments of the next cheek-tooth (unworn), an almost complete right incisor tooth, a fragment of a right mandible, and a left ulna together with many fragments of bones that had belonged to the same animal. The senior writer then reported the occurrence of these remains, together with the description of a new species *Palaeoloxodon aomoriensis* TOKUNAGA and TAKAI, in the Journal of Geography, published by the Tokyo Geographical Society.

According to Mr. Kinji KANEHARA, this Pleistocene deposit, which is developed extensively on the environs of, and along the eastern part of the town of Shichinohe, consists chiefly of alternations of grayish coloured clay and sand, and gravel, intercalated

with lenses of dacitic pumice, and covered with volcanic detritus from Mts. Hakkoda and Iwaki. In the western part of Yamadate near the town of Shichinohe, basal conglomerate nearly one meter thick covers the Tertiary formation unconformably. The pebbles of the conglomerate bed consist of liparite, two-pyroxene andesite, quartzite, and slate. At Saiichida and Sakainosawa there is a bed of *Ostrea gigas* THUMBERG. Mr. Junzo ÔHINATA reported *Ostrea denselamellosa* LISCHKE from the neighbourhood of Furumaki. Judging from the fossil remains of the elephant and the topography of the region, the geological age of the deposit of this district may be Upper Pleistocene.

Acknowledgement and thanks are due to Messrs. S. ISHIDA and K. ARAKAWA for their courtesy in permitting the writers to study the collection and the photographs, as also to Mr. Y. YAMAGUCHI for having kindly informed us of the excavation. The writers have the further pleasure of expressing here their thanks to Mr. K. KANEHARA for his geological investigation and to Mr. H. KUNO for his determination of the volcanic rocks.

***Palaeoloxodon aomoriensis* TOKUNAGA and TAKAI, 1936.**

Plates 13 (3), 14 (4)

1936. *Palaeoloxodon aomoriensis*, Journ. Geogr. Soc. Tokyo, Vol. XLVIII, No. 564, pp. 67-70, pl. 1.

INCISOR

The almost complete right incisor tooth measures 770 mm long and is twisted slightly to the right. The diameter at the middle is about 52 mm and at its proximal part about 65.5 mm. Its curvature approximately equals that of the circumference of a circle of 800 mm diameter.

LOWER MOLAR

This complete and excellently preserved cheek-tooth belongs to the right ramus of the mandible described below. The grinding surface of this molar has the form of an elongated ellipse. The present specimen retain fourteen ridge-plates. If the fore- and hindmost ones are assumed to be the fore and aft talons respectively, the ridge-plate formula is $\times 12 \times$. The length of the molar on its grinding surface measures 126 mm, its width is 47 mm at

the fifth ridge-plate, while the distance between the base of the crown and the grinding surface is 96 mm at the twelfth unworn ridge-plate. At the well worn anterior ridge-plates the enamel figures expand in their mesial parts and show a distinct lozenge outline. The lateral sides of each ridge-plate slightly curve in anterior direction. The cement layer is generally thin, the posterior angle of one touching the anterior angle of its neighbour. The plication of the enamel layer, which is 1.9-2 mm thick, is very strong. The lamellar frequency is nine-and-a-half in a standard length of one hundred millimeters. This specimen may be the first true molar. Besides, there are preserved some broken ridge-plates of an unworn next molar. One of them measuring 87.5 mm high, 51 mm wide, and 13 mm thick, has six mammilae.

MANDIBLE

The mandible is a fragment of the right mandibular ramus containing a well-worn molar (above mentioned). The condyloid and the coronoidal processes, the symphysis, the lingual side of the fragmentary ramus, and the anterior part of the alveolar margin are broken off. The anterior border of the upper portion of the coronoidal process is almost perpendicular to the alveolar margin. The lower border of the horizontal ramus and the posterior border of the ascending ramus is curved, its curvature being approximately equal to that of a circle of about 250 mm radius. The alveolar border and the lower border of the horizontal ramus converge backward at an angle of about 25°. The height of the horizontal ramus is smallest at the base of the coronoidal process. The mandibular ramus measures as follows (in mm.):

Length from anterior end of the broken coronoidal process to	
posterior end of the broken condyloid process.	205 mm
Depth of horizontal ramus just in front of the base of the	
ascending ramus.	106
Height to the broken condyloid process.	ca 240
Height to the broken coronoidal process.	ca 180
Distance between grinding surface and alveolar margin.	38

ULNA

The specimen belongs to the left side, the anconaeus process having broken off. Its measurement is as follows (in mm.):

Total height.....	310 mm
Greatest breadth of proximal plane of articulation.	124
Greatest breadth of distal extremity.	100
Girth at middle.....	174

Judging from the size of the molar, the number of ridge-plates, and the length of the left ulna, the present species is the smallest type of palaeoloxodont group ever described from Japan or elsewhere. On account of the very distinct lozenge-shaped enamel figures, the species resembles *P. tokunagai* MATSUMOTO, but it has a higher lamellar index. Neither *P. naumanni* MAKIYAMA, *P. namadicus setoensis* MAKIYAMA, *P. namadicus yabei* MATSUMOTO, nor *P. yokohamanus* TOKUNAGA has the higher lamellar frequency that is found in the present species, nor has the distinct loxodont enamel figures. The writers therefore regard the present fossil species as a new undersized *Palaeoloxodon*. It is considered that *Palaeoloxodon namadicus* FALCONER and CAUTLEY probably migrated from India to Japan during Upper Pliocene or Lower Pleistocene. After that migration several Japanese *Palaeoloxodon* was derived. According to the assumption that the lamellar frequency is an indication of the evolutionary stage of an elephant and to Mr. K. KANEHARA's opinion that the bed containing the fossil remains belongs to Upper Pleistocene, the writers suppose that the present species may be the Upper Pleistocene type of *Palaeoloxodon*.

Palaeoloxodon amoriensis に就いて (摘要)

徳永重康 高井冬二

青森縣上北郡七戸町天神林にて約 30 年前用水路開鑿の際更新統中から發見されたものである。當時同一動物體に屬すると思はれる頭骨、下顎骨、象牙、尺骨、脊椎骨、肋骨等多數發掘されたが、皆四散し僅かに右象牙、第一後臼齒付右下顎骨、左尺骨、及び二、三の骨片が東京農業大學に保存されて居る。

地質は金原均二理學士の調査に依るもので其報告は筆者の一人徳永が地學雜誌 2 月號に掲載した。其結果によれば象含有層の年代は上部更新世に屬すといふ。

Palaeoloxodon amoriensis TOKUNAGA and TAKAI

下顎骨に附著せる第一後臼齒の咀嚼面は長橢圓形をなす。前後の「タロン」及び 12 の稜

を有す。咀嚼面に於ける長さは 126 mm, 幅は第五稜にて 47 mm, 齒冠と咀嚼面との間の高さは第十二稜にて 96 mm である。よく磨削された稜は著しき菱形をなし, 其中央部は前後に突出し各尖端部は(特に第五, 第六稜に於て)互に接近する。本種は日本に普通な *Palaeoloxodon namadicus* の何れよりも稜の形は菱形を呈する。珥瑯質の皺は非常に強く, 稜の厚さは 1.9-2 mm ある。100 mm に含まれる稜数は 9.5 である。

猶ほ下顎骨中にあつて未だ磨削の域に達して居らない第二後臼齒の破片數個がある。

門齒は殆んど完全にて長さ 710 mm, 直徑中央部にて 52 mm, 根元にて 65.5 mm, 屈曲率は直徑 800 mm の圓周の一部に相當する。右牙である。

下顎骨は烏喙突起, 踝狀突起, 縫合部及び内側片の全部缺損して居る。

尺骨は長さ 310 mm にて, 鷹嘴突起は破損して居る。

第一後臼齒の大いさ, 100 mm に含まれる稜數及び左尺骨の大いさ等より本種は從來日本及び外國に於て發表された *Palaeoloxodon* 屬に比し小型の象である。上部鮮新世, 或は下部更新世に印度より渡來したる後日本に於て數種の象に分化したのである。100 mm に含まれる稜數が本屬の時代を表はすものと假定すれば, 本種は上部更新世に屬するものと想像され, 其點に就ては金原學士の地質調査の結果と何等矛盾しない。

Explanation of Plates 13 (3), 14 (4)

Palaeoloxodon acmoriensis TOKUNAGA and TAKAI.

- Fig. 1. Crown view of first true molar. $\times 2/3$.
- Fig. 2. Outer view of same. $\times 2/3$.
- Fig. 3. Left ulna. $\times 1/3$.
- Fig. 4. Outer view of right mandible. $\times 1/3$.
- Fig. 5. Incisor. $\times 1/6$.