

TERTIARY MAMMALS OF KAZAKHSTAN

BY J. A. ORLOV

For the past 20 years paleontological expeditions of the Academy of Sciences of the USSR have obtained abundant Tertiary mammalian remains in Kazakhstan. The results of the work by these expeditions during the last few years is sufficiently important to warrant a detailed summary. An account is given here of the localities, horizons, and the mammalian remains as far as they have been worked out.

1. **Kievsky Settlement.**—Right bank of the Bala Kundusda River, tributary of Ulkun Kundusda River, which is the right tributary of the Nura River, 130 kilometers south of Aknolinsk. Discovered by J. Moshkara, explored by the Paleontological Institute of the Academy of Sciences of the USSR in 1935.

Character of site.—A few meters below the surface in compact spotted marly clay, identical in appearance with that of Pavlodar, Irtysh River (Orlov 1930, 1936; *Hipparion* fauna = Pontian). The bone beds extend below the water level of the Bala Kundusda River. Only broken bones and teeth are found. They are strongly mineralized, heavy, and dyed in dark color by the ferric oxides.

Mammalian remains.—Hipparions, Rhinoceroses, Giraffidae, and other representatives of the Hipparion fauna.

Horizon.—Pontian, lower Pliocene.

2. **Kulan Utmes River.**—Tributary of Lake Kurgalzin. Exact location: right bank of river, upstream from the mouth of Sonala River. Discovered by J. Moshkara.

Character of site.—Bony remains in surface deposits eroded from bank of river. Solid gypsum-bearing clay comprising base of bank, overlain by soft grayish-green clays.

Horizon.—Upper Tertiary.

3. **Tyul-Kulyusai.**—A ravine which descends into one of the tributaries of the Kara Turgay River; on the slope of the Ishim-Turgay watershed. Discovered by N. Volkova in 1935, explored by J. A. Orlov.

Horizon.—Pontian, lower Pliocene.

4. **Kara-Kol River.**—A tributary on the left side of the Ishim River. Discovered by N. Volkova in 1931.

Horizon.—Pontian, Lower Pliocene.

5. **Chuldak River.**—Right bank of river, 30 kilometers east-northeast of Bertchegur station, on the Orenburg-Tashkent railroad; east slope of Mugodzar Mountains. Discovered by G. Vodorezov.

Character of site.—Clays containing unionids.

Horizon.—Pontian, lower Pliocene.

6. **Myn-Su-Almas.**—Northwest Ust-Urt Plateau. Discovered by M. Zhukov in 1936.

Mammalian remains.—Mastodon and a few other remains.

Horizon.—Upper Tertiary.

7. **As-Kazan-Sor (= As-Kazany Sor).**—Salt pan in Bedpak-Dala Oasis, Golodnaya Steppe, about 300 kilometers east of Kyzyl-Orda (= Perovsk). The same beds are found in the basin of the Sary-Su River, northwest of As-Kazan-Sor. Discovered by D. Jakovlev in 1929, explored in 1936 by an expedition of the Academy of Sciences of the USSR, led by J. A. Orlov, and operating with Kyzyl-Orda as base.

Character of site.—Situated in desert country at south shore of salt pan, on slope of

As-Kazan Plateau. Limnic deposits with a top layer, horizontally deposited, of barren sands, about 3 meters thick, and a gravel layer, diagonally deposited, rather thin, dyed a brown color by ferric oxides, and cemented into sandstone. Bones in the lower (gravel) layer, highly silicified, ferruginous and whitish.



FIG. 1. Localities where Tertiary mammals have been found in Kazakhstan. 1. Bala Kundusda River. 2. Kulan Utmes. 3. Tyul-Kulyusay. 4. Kara-Kol. 5. Berckegur. 6. As-Kazan-Sor.

Mammalian remains.—Chalicotheriidae.—A large form closely resembling, if not identical with, the North American genus *Moropus*.

Rhinocerotidae.—Numerous remains. Of the two forms provisionally determined by Academician A. A. Borissiak one is closely related to *Brachypotherium* known from the lower Miocene Dzilantchik layers in the Turgay region, and the other apparently is identical with *Dicerorhinus tagicus* Roman, from the upper Oligocene and lower Miocene of western Europe.

Artiodactyla.—*Hemimeryx* sp.; *Anthracotherium* sp.

Proboscidea.—The complete absence of this group seems remarkable.

Carnivora.—*Amphicyon* sp., a species as large as a bear.—A representative of the Machairodontinae as big as a tiger.—Two carnivora of smaller size, not yet determined.

Rodentia.—One incisor, not yet determined.

Reptilia.—Undetermined remains of tortoises.

Plants.—Fragments of wood have been determined by A. Jarmolenko as a broad-leaved species of the lime tree type.

Horizon.—Identical with the Harrison beds of North America, that is, lower Miocene (Simpson 1933). The fauna is more recent than the upper Oligocene *Indricotherium* fauna, but probably older than the lower Miocene Dzilantchik fauna, described by A. A. Borissiak.

8. Agypte.—Fishery station, Lake Aral. Discovered by Prof. A. Alekseev; to be explored by the Academy of Sciences of the USSR.

Horizon.—Upper Oligocene.

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NOTE ON THE PINEAL GLAND OF THE HUMPBACK WHALE

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Six pineal glands were furnished for study by Dr. Hans Löwenbach, of the S. S. "Frango," operated by the American Whaling Company, New York. They were preserved in 95% alcohol directly after their removal from the whales. The glands had been dissected free from their connective tissue and vascular investments before fixation. Since the glands are rather small the state of fixation is reasonably good. The data contained in this article, then, apply only to the alcohol fixed specimens; conclusions based on them may have to be modified as fresh glands or material preserved in more suitable fixatives become available for study.

The pineal glands of humpback whales are elongated egg-shaped objects with a slight constriction in their middle. Their surface is rough and bears the impression of blood vessels present in the capsule (see fig. 1). Note also in fig. 1 that the gland is attached to the epithalamus by a broad circular or oval base about 6 mm. in diameter. The same photograph illustrates also the fact that the pineal recess does not penetrate into the substance of the gland. The glands displace about 1 cc. of fluid. Their dimensions are somewhat variable; the table on p. 478 includes measurements on four of the preserved specimens.

For microscopic study, the glands were embedded in celloidin, one half being sectioned serially at 12 μ . They were stained in haematoxylin and eosin and mounted on large slides in gum damar. The observations that strike one at first glance are: 1) The arrangement of the parenchymatous cells

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