

## A NOTE ON THE GEOLOGY OF THE MAMMALIAN FOSSIL BED OF ELMADAĞI-EVCİLER AĞILLARI <sup>1</sup>

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The mammalian remains were first found<sup>2</sup> at a spot approximately two hundred meters west of the willow grove which is at the point where the Gökdere stream leaves the narrow valley it has excavated in the relatively old and hard rocks of Elmadağı (Elmadağı mountain) and just over one kilometer east of the village of Evciler Ağılları. The elevation of the fossil beds is between 1050 and 1100 meters above sea-level. If one goes there by following the Ankara-Bâlâ highway and turns off onto the cart road at the 49th kilometer, the village of Evciler Ağılları is about 60 kilometers south-east of Ankara (fig. 1).

The vilage of Evciler Ağılları is on the line of junction of the southern slopes of Elmadağı and the plain of Balaban (Balaban ovası) which stretches south-east of this mountain (fig. 1). The slopes of Elmadağı are made of Eocene *flysch*, and especially limestone, resting discordantly on the mixed series composed of serpentine and radiolarites at the base (fig. 2), and of the red-colored gypsiferous sandstone and conglomerates of Oligocene period resting over them. At the region of the village of Evciler Ağılları, the older rocks forming the slopes of Elmadağı begin to sink, in a south-easterly direction, under the Miocene-Pliocene deposits of the plain of Balaban. On the southwestern slopes of the mountain, at a few places, there are outliers of lacustrine limestone which, in comparison with other

<sup>1</sup> See also Oğuz Erol: The mammalian fossil bed of Elmadağı-Evciler Ağılları. Appendix in M. S. Şenyürek's "A note on Gökdere (Elmadağı) fauna". Ankara Üniversitesi Dil ve Tarih-Coğrafya Fakültesi Dergisi, IX, 1951, p. 71.

<sup>2</sup> In 1951, however, Prof. Dr. Muzaffer Şenyürek found two more fossiliferous pockets west of this point toward the village of Evciler Ağılları. Thus it may now be said that the fossils are found in an area of just over one kilometer in length and 200-300 meters in width.

outcrops, must be of Miocene Age. In this limestone, to date, only some fossil Gastropods have been found, at a place about one kilometer west of the village of Evciler.

The mammalian fossils are embedded in a lacustrine series of calcareous marls, especially marls, which are below the Pliocene deposits of gravel, sandstone, clay and a small amount of gypsum, filling the syncline of the Plain of Balaban. This series, together with the still older base, outcrops on the north-western flank of the syncline of the Plain of Balaban. At the bottom of the fossiliferous series sometimes fragments are found of Eocene (Lutetian) limestone and sandstone, which lie below the fossiliferous series. In the marls, also, sometimes are encountered fragments of radiolarite derived from the still older serpentine-radiolarite series.

The fossiliferous series mostly consists of white-greenish marls. But sometimes in this series red marls and thin layers of brown clay and coarse lacustrine limestones are also encountered. At the bottom of the fossiliferous series, above a thin layer containing detritus, are found red marls. Above this comes a white-colored stratum of marly limestone. Further up are found strata of white-greenish marls, occurring as layers of 0.50 to 2-3 meters of thickness. These strata are interbedded with layers of red marls and thin beds of marly limestone.

The perpendicular thickness of the part of the fossiliferous series seen on the surface may be estimated to be about 100 meters. The mammalian fossils are found about 40-60 meters above the base. However, the surface of junction between the lacustrine series and the basal Lutetian limestones, northwest to it, is quite steep. Thus, it is possible that there may be a fault between them. We must be cautious, for this reason, about our last estimate.

The dip of the lacustrine series is quite steep (70-80) degrees near this line of junction, but as one goes further away, toward the southeast, the dip decreases. In places where the series disappears from view under the later Pliocene gravels, the dip falls to as low as 20 degrees.

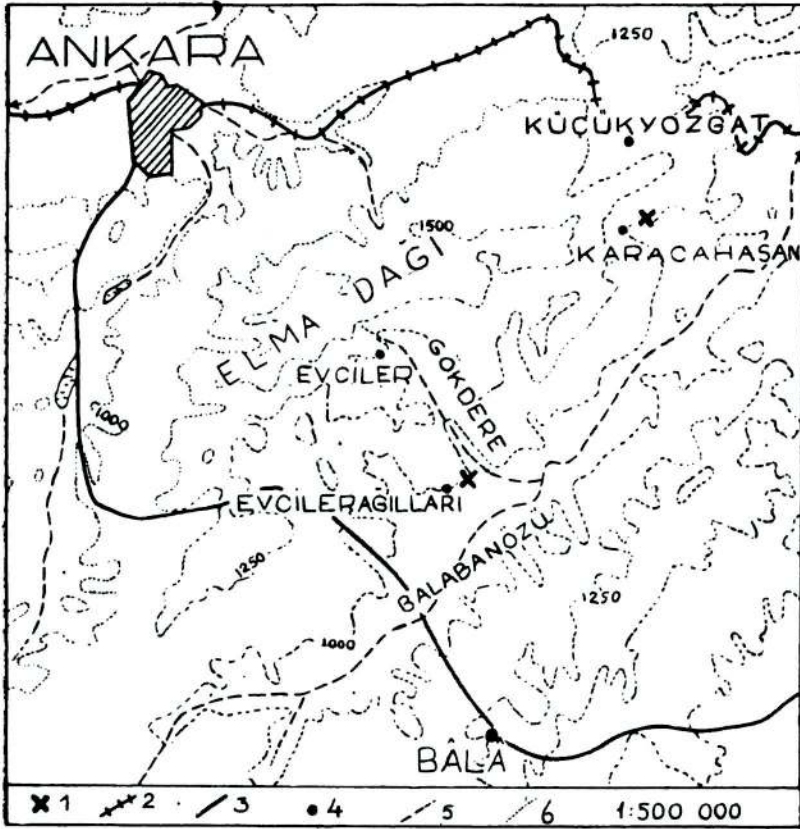


Fig. 1 : This map is taken from the Map of Turkey, scale 1 : 500,000. 1: The spot where the mammalian fossils are found. 2: Railroad. 3: Ankara-Kırşehir highway, passing through Balâ. 4: Settlements. 5: Streams 6: Contour lines (at intervals of 250 meters).



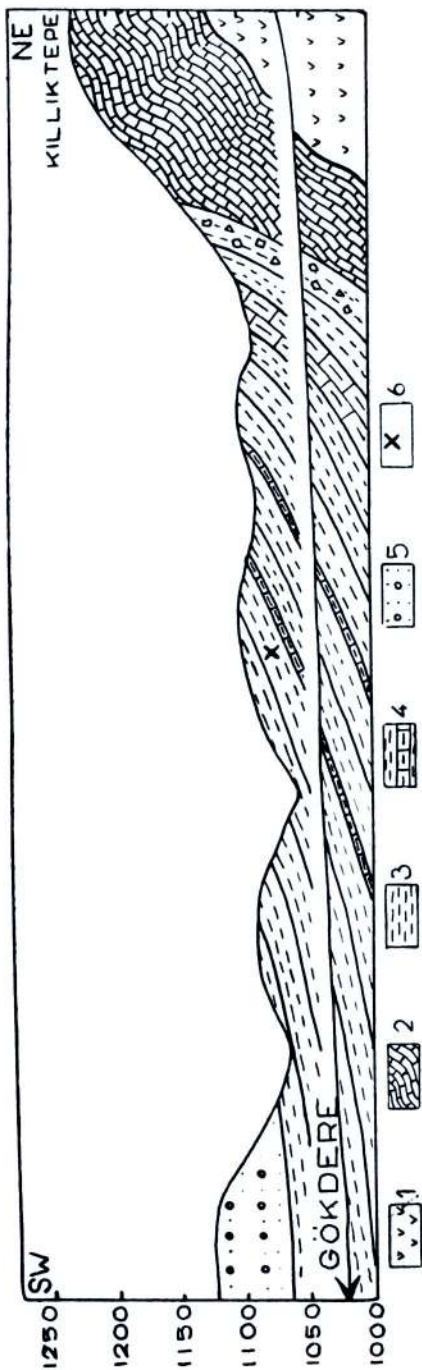


Fig. 2: Section of the fossiliferous series along Gökdere stream (Length scale: 1/2500). 1: Serpentine-radiolarite series. 2: Eocene (Lutetian) limestones 3: The marls of the fossiliferous series. 4: Marly limestones of the fossiliferous series. 5: Pliocene gravels-conglomerates. 6: The spot where the fossils were first found.