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州 Alifi 河發現的 *Terrapene putnami* Hay 即是上新世的这類龜的化石，与現代的这類的各种很不相同（依 Oelrich, 1953）。*Terrapene longinsulae* Hay 是第二种这樣的例子。係 Hay (1908b) 根據肯薩斯州長島上新統上部所產標本描述。这种龜已与現生种如 *Terrapene ornata* (Agassiz) 及 *Terrapene carolina* (Linné) 相当近似。这一屬的龜在北美更新世時种類更多。Hay (1908a) 在其有價值的專著中曾記述了好幾种更新世的种。最近，Oelrich (l. c.) 又記述一發現於肯薩斯州西北部的一新种 *Terrapene* (*Terrapene llanensis* Oelrich)。

Terrapene Merrem 屬的各种龜及所有屬於 *Kinosternidae* 類的各族無疑是龜類中在系統發生上最晚分出的枝系之一，直到第三紀末期方在北美發生。与舊北區的各种龜類比較 *Emys* Duméril 屬顯然与这非常接近。Hay (1908a) 可能很正確地認爲这一屬就是 *Terrapene* 的祖先。屬於 *Emys* Duméril 屬的最早的龜類出現於歐洲中部及西部的第三紀晚期。在歐洲第三紀上部地層中这一屬的龜化石非常普遍，和屬於同一時代的 *Terrapene* Merrem 屬的种很相近似。例如：在瑞士上中新統 Mollase Vadoise 層發現的 *Emys heeri* (Portis)。

分佈於亞洲西南部的 *Cyclemys* Bell 屬在甲殼外部形態上和 *Terrapene* Merrem 屬很相近似。尤其是接近於分佈在印度支那的現代种 *Cyclemys amboinensis* (Daudin)。據我所知道 *Emys* 和 *Cyclemys* 兩屬的龜類在中國境內至今还未有过記載。

最後，我应深切地感謝北京中國科学院古脊椎動物研究室主任楊鍾健博士在我寫这篇短文時給予的幫助。

我还要向柏林動物博物館爬行動物部主任 H. Wermuth 博士致謝，他供給了对我研究工作上有很大幫助的現代 *Terrapene* 屬龜類的一些標本。（周明鎮譯）

THE SYSTEMATIC POSITION OF THE PLIOCENE TURTLE FROM TIENSHUI, KANSU (NORTH CHINA)

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C. C. Young in 1950 described a genus and species of fossil turtle new to China under the name *Terrapene sinica* n. sp.. The remains of this turtle are from *Hipparion*-Red Clay in North China (Pliocene). Placing it in the genus Terrapene the author refers to Hay's characteristics of the genus (1908a). It is

difficult to determine the systematic position of this turtle. After thorough investigation of the holotype and after seeing the schematic drawings in Young's work I came to the conclusion that the turtle in question certainly does not belong to the genus *Terrapene* Merrem.

My stand in this case is based on the following morphological features:

A. Carapace.

1. The lack of sutures of bone plates renders it impossible to follow the border of costal (*costalia*) and marginal plates (*marginalia*). One may assume that the suture connecting these plates was in the furrow of the respective (costalo-marginal) shields. It is true that on the left side of carapace there is the mark of the edge of the marginal plate which seems to go beyond the costalo-marginal furrow, but it looks rather like a splitting of the plate similar to the irregular lines on the left side of the nuchal plate (*nuchale*).
2. The pygal part of the carapace is distinctly untypical. In no case does it resemble the pygal part of *Terrapene*, where generally only one suprapygal plate is present (*suprapygale*). In *Terrapene* that plate joins costal plates (*costalia*) 8 and not the last neural plate (*neurale*). The turtle from Kansu has strangely wide suprapygal plates. (On the drawing they are marked by the author with letters P_1, P_2, P_3).

B. Plastron.

1. Plastral bridge is distinctly very wide whereas in the representatives of the genus *Terrapene* it is always narrow. Such type of bridge has the relation to the way of connection of both parts of the shell by means of chondrostosis and ligament bonds characteristic for *Terrapene*.
2. The anterior plastron lobe is not separated from the remaining part of plastron by distinct hinge giving *Terrapene* its ability of perfect movability.
3. *Entoplastron* is not crossed with humero-pectoral furrow.
4. *Xiphiplastrons* have distinct, although not very deep, anal cut.

Some of the mentioned features might be considered as individual aberrations in the structure of the shell of the given specimen. Because, however, we deal here not with one morphological feature but with a whole complex of them, we may state with certainty that this turtle does not belong to the genus *Terrapene* Merrem. The determination of the systematic position of this turtle is rather difficult, the more so when one has at our disposition only a short description and schematic drawing. It is most probably a young deformed specimen, preserved

moreover in incomplete state and showing some aberrations from the normal type of shell structure. Judging from the data available from Young's work I think, on the ground of the following morphological features, that the remains of the turtle from Kansu should be conditionally placed in the genus *Testudo* Linné.

1. The plastral bridge is very wide which points to solid connection of both shell shields.
2. The anterior plastron lobe is permanently connected with the remaining elements of this part of shell.
3. *Entoplastron* is not crossed with humero-pectoral furrow.
4. *Xiphiplastrons* have a distinct anal cut.

The gular part of plastron has irregular and little characteristic shape. Therefore it is difficult to determine to what race-group the discussed turtle belongs. Probably it is not a typical palearctic form of the so-called "*antiqua-graeca*"-group (Glaessner, 1933). The lack of distinct nuchal shield (*scutum nuchale*) and, to some extent, the structure of the pygal part of carapace speak for it, too. The pygal plate is irregular. It is difficult indeed to state whether it is an irregularly built pygal region of a specimen with two suprapygal plates, which numerous representatives of the genera *Testudo* Linné and *Stylemys* Leidy generally have, or irregularly built pygal region of a specimen having as a rule one suprapygal plate, characteristic for the *greaca*-group. In any case in the turtle in question there certainly occur two suprapygal plates. For the belonging to some land genus speaks also the structure of marginal plates and shields.

Unfortunately the morphology of epiplastral plates of plastron is not known to me. I think that they should not be too thick, since we deal with a young or at least juvenile specimen. (The morphology of these parts of the shell is, according to Szalai /1930/, an important taxonomic feature for the genus *Testudo* Linné.)

As the neural and costal plates of the turtle in question are not known we cannot precisely determine its systematic position. For its belonging, however, to the genus *Testudo* Linné speaks also the geological age of the discussed remnants. The genus *Stylemys* Leidy which this turtle might possibly belong to is found in much older formations. On the basis of morphological differences between the turtle from Kansu and other land turtles of the genus *Testudo* Linné described from China by Wiman (1930) and Ping (1929, 1930) and from Mongolia by Gilmore (1933, 1934) we may place it after Young in a separate species. Therefore the right systematic name of the turtle in question should be:

cf. *Testudo sinica* (Young)

Genus *Terrapene* Merrem in which Young (l. c.) placed the discussed species is not known thus far from palearctic region. According to Hay this genus developed just at the end of the Tertiary on the American Continent, because the oldest representatives of this genus known thus far were found in the Pliocene of North America. *Terrapene putnami* Hay, for example, found in Alifi River, Florida is such a Pliocene species. This turtle resembles relatively little the contemporary species (cited after Oelrich /1953/). *Terrapene longinsulae* Hay is a second such Pliocene species. Hay (1908b) described the remnants of this turtle from upper pliocene horizon in Long Island, Kansas. This turtle shows already great resemblance to such contemporary species as *Terrapene ornata* (Agassiz) and *Terrapene carolina* (Linné). The representatives of the discussed genus are much more numerous in North American Pleistocene. Hay (1908a) in his valuable monograph mentions several species from this geological period. Recently Oelrich (l. c.) described a new Pleistocene species of *Terrapene* from North-western part of Kansas (*Terrapene llanensis* Oerlich).

The representatives of the genus *Terrapene* Merrem, like the whole *Kinosternidae*-group are undoubtedly one of the phylogenetically youngest development branches of the order of turtles, which developed only by the end of the Tertiary in North America. From among palearctic forms the genus *Emys* Duméril is distinctly closely related to the discussed genus. Hay (1908a) probably quite rightly considers this genus as the ancestor of the genus *Terrapene* Merrem. The oldest turtles belonging to the genus *Emys* Duméril are known from younger Tertiary of Central and Western Europe. This genus occurs rather numerously in the European Upper Tertiary. Forms with distinctly convex carapace, resembling very much the species of the genus *Terrapene* Merrem are known from that period. *Emys heeri* (Portis), for example, from Swiss Upper Miocene (Mollase Vadoise) is such a species.

South-western Asiatic genus *Cyclemys* Bell resembles very much the genus *Terrapene* Merrem in external morphology of the shell. This is especially evident in the contemporary Indo-Chinese species *Cyclemys amboinensis* (Daudin). As far as I know the fossil representatives of the genera *Emys* Duméril and *Cyclemys* Bell were not found thus far in the territory of China.

To end I should like to express my especially warm thanks to Dr. C. C. Young, Director of the Laboratory of Vertebrate Paleontology of Academia Sinica in Peking

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