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FAN MEMORIAL INSTITUTE OF BIOLOGY

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A
MZ

BULLETIN

OF THE

FAN MEMORIAL INSTITUTE OF BIOLOGY

VOLUME I

NUMBER 13

HERPETOLOGY

NOTES ON THE SHELL OF A LAND TORTOISE
FROM THE ANCIENT RUINS OF ANNYANG

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PUBLISHED BY THE INSTITUTE

November 30, 1930

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Ping, Chi 1930 Shell of Land Tortoise from Ancient Ruins of Annyang

NOTES ON THE SHELL OF A LAND TORTOISE FROM
THE ANCIENT RUINS OF ANNYANG

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The present specimen was obtained from the ancient ruins in Annyang Hsien, Honan Province, by the Excavation Party of the Central Ministry of Research. Dr. C. Li, Director of the Anthropological Laboratory of that Ministry, requests me to make investigations on it in order to ascertain the Zoological position of this form. Although the bones of the head and neck and of all the appendages are missing, the shell decidedly shows its terrestrial characters by its strongly arched carapace and its broad bridge that united the carapace and plastron. The essential characters of this shell suggest this form to be of the family Testudinidae and of the genus *Testudo* and very close to the species *Testudo graecae* of Merrem, but the fifth or last neural shield is only slightly broader than any of the preceding one, not so much as that of *Testudo graecae* and the size of our specimen is much too great for the "Greek Tortoise". The following new name is proposed for its species.

Testudo anyangensis Ping, sp. nov.

Shell very highly convex dorsally. Margin of the carapace smooth. Plastron somewhat concave along the region of its median line and gently convex on its lateral portions. *Nuchal plate* large, hexagonal, with anterior margins slightly concave, longer than any of the other margins, antero- and postero-lateral almost straight, the former slightly larger than the latter, posterior concave, shortest. *First neural plate* tetragonal, longer than broad, all margins convex, lateral margin longest, and posterior margin longer than anterior. From *second neural plate* to *eighth* inclusive, each one hexagonal. Second and third neural plate each with its anterior margin slightly

concave, posterior slightly convex, and antero- and postero-lateral straight. Fourth with its anterior margin slightly concave, all the rest of its margins almost straight. Fifth with all margins straight, and a little trace of short keel along its median line. Sixth

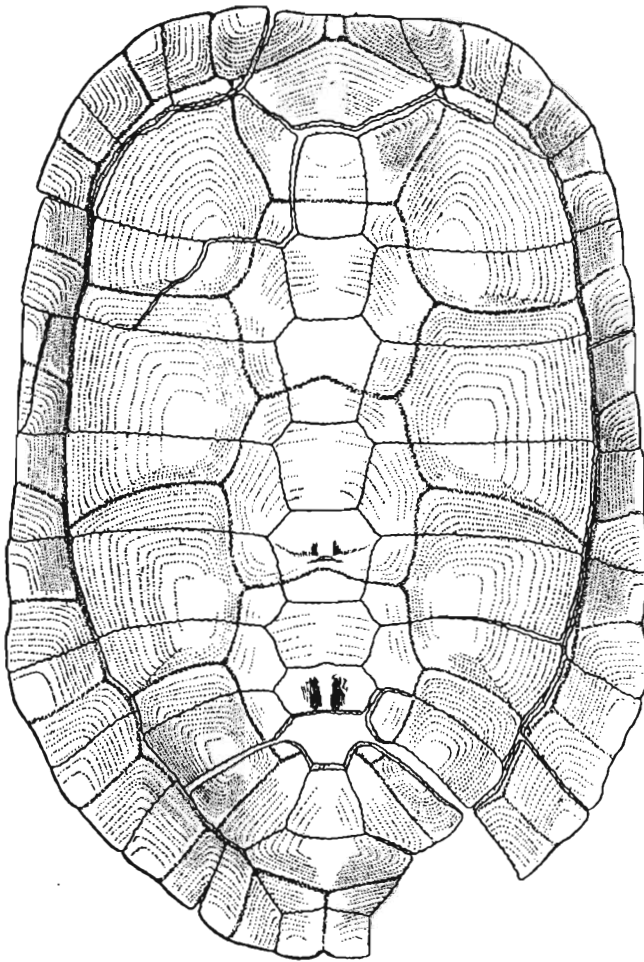


Fig. 1. *Testudo anyangensis* Ping, sp. nov.
Dorsal view of carapace, $\times \frac{1}{2}$.

with its anterior, antero- and postero-lateral margins almost straight, and posterior slightly concave. Seventh with its anterior margin slightly convex and posteriorly slightly concave, all the other margins almost straight. A blunt keel along its median line which probably extends to the following plate. Eighth missing, its outline showing its anterior margin slightly convex, postero-lateral slightly concave and antero-lateral and posterior almost straight. Greatest width of each of the above mentioned seven plates either equal to or greater than, its greatest length. *First suprapygal* with anterior

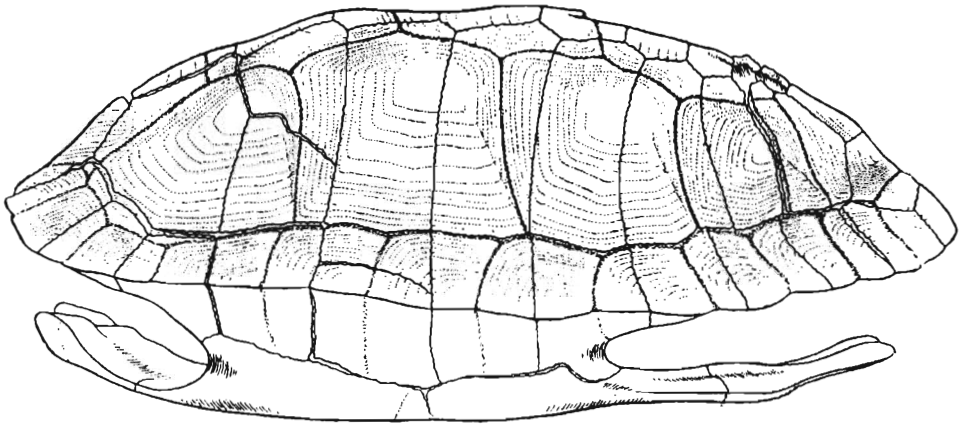


Fig. 2. *Testudo anyangensis* Ping, sp. nov.
Lateral view of carapace, $\times \frac{1}{2}$.

margin straight, antero- and postero-lateral almost forming a straight line and each slightly convex, posterior slightly convex, and longer than anterior, its greatest length slightly greater than greatest width. *Second suprapygal* hexagonal, anterior margin slightly concave, antero- and postero-lateral straight and latter slightly longer than former, posterior concave, longer than anterior, width much greater than length. *Pygal* somewhat rectangular in outline, anterior margin convex, lateral straight and posterior almost straight with a notch at its middle, wider than long.

The *costal plates* have their lateral margins coincide with those of the *costal shields*, but that of the anterior portion of the first one does not reach the anterior margin of the first costal scute. *First costal plate* somewhat septagonal, its medial and each of the three sections constituting the anterior margin concave, or slightly so while posterior and lateral convex or slightly so, medial extremity much longer than lateral, posterior margin longest, and postero-lateral straight and shortest. *Second to eighth* inclusive all pentagonal in outline. Medial extremity of each of them shorter than lateral. Anterior margin of second and third concave, of fourth and fifth straight and of sixth, seventh and eighth convex or slightly so. Posterior margin of second plate convex, of third and fourth straight, of fifth, sixth and seventh concave. Lateral margins of them straight or slightly convex, except those of second and sixth which are slightly concave. Antero- and postero-medials of second to seventh plates inclusive all straight, the former much longer than latter. *Eighth costal plate* shorter than any of the preceding plates. Anterior margin, antero-medial and lateral slightly convex, postero-medial slightly concave, and posterior straight.

The *first marginal plate* with its peripheral margin much longer than central, and medial longer than lateral, all margins almost straight. Its anterior margin is thinly edged and the plate becoming thickened posteriorly. *Second marginal plate* in almost similar case except the peripheral margin slightly convex. *Third* with the peripheral margin of its dorsal surface longer than central, the former slightly convex and the latter slightly concave, and the other two margins straight. Its ventral portion constituting the anterior end of the bridge that unites the carapace and the plastron. *Fourth, fifth and sixth* somewhat similar in shape and size, their dorsal portions all more or less rectangular in outline with somewhat straight margins and their ventral portions convex, constituting the main part of the bridge. *Seventh* with dorsal portion rectanguloid in outline and all margins somewhat straight except a gentle concavity on its peripheral margin which is longer than central. Its ventral portion gradually thined posteriorly and its anterior thick portion constituting the posterior

end of the bridge. *Eighth*, *ninth* and *tenth* all tetragonal, the former one with its peripheral margins longer than central, while each of the latter two with peripheral margin almost equal to central, and all margins almost straight. *Eleventh* pentagonal, only its peripheral margin slightly convex, all the rest margins straight. The last four marginal plates all comparatively thinly edged and becoming gradually thickened centrally.

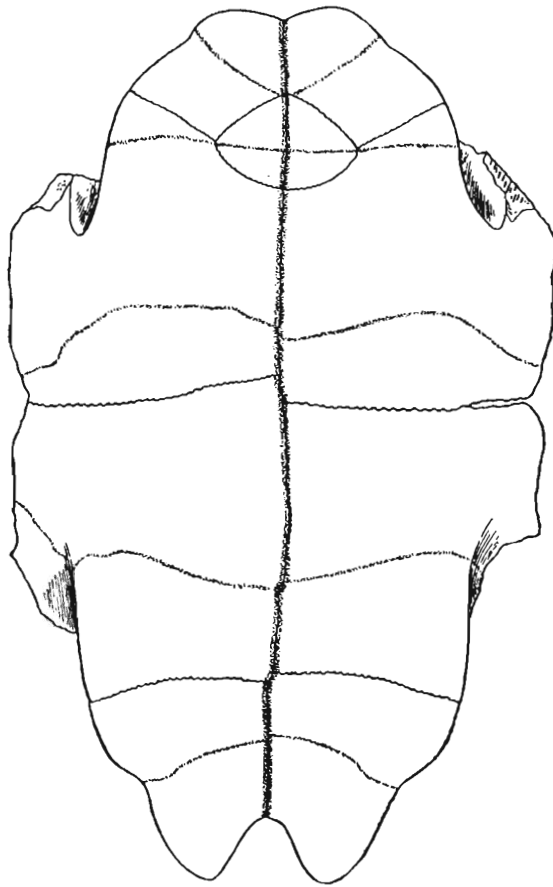


Fig. 3. *Testudo anyangensis* Ping, sp. nov.
Ventral view of carapace, $\times \frac{1}{2}$.

The bony plates of the *plastron* are quite clear. *Epiplastron* somewhat pentagonal, its peripheral margin consisting of two sections of which the medial one is convex and comparatively thick and the lateral one is only slightly convex and thinner but longer than the medial, the central margin slightly concave, and other two margins straight. *Endoplastron* somewhat trianguloid, with all margins convex and the angles blunt, wider than long. *Hyoplastron* with anterior margin oblique and straight and antero-medial concave. Anterior third of its lateral margin free, of which the anterior half convex and posterior half concave. The free edge is rounded and comparatively thick. The rest of its lateral portion extending latero-dorsally, forming *axillary process (buttress)* and the antero-ventral part of the bridge, medial about straight, posterior slightly convex. *Hypoplastron* about equal to *hyoplastron* in size or slightly longer. Its anterior and posterior margins slightly concave, medial not quite straight. Anterior half of its lateral portion extending latero-dorsally, forming the postero-ventral part of the bridge and *inguinal process (buttress)* and posterior half of the lateral portion forming a smooth, gently convex margin. Average length of either *hyoplastron* or *hypoplastron* about equal to its average width. *Xyphiplastron* with anterior margin slightly convex, medial about straight, posterior concave and lateral margin in two sections each of which is convex especially the anterior one. The anterior margin is more than twice the posterior in length.

The horny shields of the carapace could be readily made out. *Nuchal scute* small, rectangular in outline, longer than wide, its anterior margin shorter than posterior, and all margins slightly concave. All the *vertebral scutes* large and hexagonal. *First vertebral scute* with its anterior and antero-lateral margins slightly concave, postero-lateral slightly convex and posterior straight. Anterior margin shortest, postero-lateral longer than antero-lateral. *Second, third and fourth vertebral scutes* all similar in shape and size, Except that the anterior margin of the second is straight and different

from these of the following two which are convex. All the other margins of each of them similar to the corresponding ones of the other. Each of the antero-lateral margins of them slightly convex at its anterior half and then concave at its posterior half, and each of postero-lateral margins slightly concave at its anterior half and convex at its posterior half. *Fifth vertebral scute* not perfectly preserved, but as far as we can make out from the specimen this scute appears to be septagonal, its antero- and postero-lateral margins straight.

There are four costal scutes. The last one is the smallest. *First costal scute* irregularly hexagonal and its posterior margin longest. *Second and third* similar to each other in outline, the former is larger than the latter. They are pentagonal. The anterior and posterior margins of the second concave, its lateral margin slightly convex or about straight and its antero- and postero-medial convex near the anterior posterior angles respectively and concave toward the middle angle where they meet each other. Third with its anterior margin convex and posterior concave and other margins similar to those corresponding ones of the second. *Fourth* different from either second or third by its smaller size, it also pentagonal in outline. Its anterior margin convex, antero- and postero-lateral concave, medial slightly concave and posterior straight. The areola in each of the costal scutes quite large, situated at its postero-medial portion. There are about eleven lines of growth which are very distinct on its lateral side.

There are twelve marginal scutes, except the first one which has its medial margin very short and is irregularly tetragonal, all the scutes more or less rectangular in outline, the twelfth one being the smallest. Some of the areola quite distinct situated at postero-lateral portion of the scute and about eleven lines of growth could be traced from it to the medial margin.

The horny shields of the plastron all distinct. *Gular scute* small, somewhat wedge-shaped, its central apex just meeting the apex of the *endoplastron*. *Humero-pectoral sulcus* almost straight, traversing the middle of the *endoplastron*. The antero- and postero-medial margins

of the *humeral scute* slightly concave antero-medial convex, and postero-lateral straight, its size almost twice that of the gular. *Pectoral scute* much larger than gular and humeral taken together, its anterior and medial margins straight, and posterior concave. Its lateral portion expanded slightly dorsally. The sulcus between itself and *axillary scute* not distinct in this specimen. *Abdominal scute* somewhat larger than pectoral, its medial margin not quite straight, anterior convex and posterior concave, lateral portion expanded slightly dorsally, with the sulcus between itself and *inguinal scute* concave forming its short postero-lateral margin. *Femural* somewhat quadrangular, smaller than either pectoral or abdominal. Its medial margin straight, lateral and anterior convex, and posterior concave. *Anal* smaller than *femural*, about equal to or slightly larger than humeral, quadrangular, medial margin straight, lateral and anterior gently convex and posterior concave. Both *axillary* and *inguinal scutes* are narrow and long.

Length of the carapace along its median line (in straight line) 247 mm; length of the plastron along its median line (in straight line) 215 mm; width of the shell across its middle (in straight line) 164 mm.; height of the shell at its middle (in straight line) 97 mm.

The above described characters suffice to show this species different from any one that has been recorded. Whether this form was indigenous or introduced there during Shang Dynasty (about 1500 years B.C.) is impossible to say. Nor is it possible to ascertain it is an extinct or living form, for there is absolutely no record of land tortoise from the locality concerned. In order to settle these questions it requires further investigations on both the fossil and the recent fauna of the province of Honan.

河南安陽之龜殼

秉志

此篇所述。係一田龜之殼。由河南安陽殷墟挖掘所得者。中央研究院歷史語言研究所李濟之博士。以此標本見貸。囑為審定其學名。茲紀其特徵如後。以便後來研究借鑑焉。

殼隆凸。周緣光滑。腹甲之中間稍凹。兩旁稍凹。頸甲頗大。六角形。前緣最長。第一脊甲 (*Neural Plate*) 四角形。長大於寬。第二至第八脊甲。皆六角形。第五第七之中間。有小隆起。第一上尻甲 (*Suprapygals*) 長大於寬。第二六角形。寬大於長。尻甲 (*Pygals*) 四角形。後緣有凹。寬大於長。肋甲 (*Costal Plate*) 與肋盾 (*Costal Shield*) 之邊緣。大部相合。第一肋甲七角形。第三至第八。皆五角形。第八最短。第一邊甲 (*Marginal Plate*) 之前緣較薄。厚度向後漸增。第二大致亦如此。第三之腹面。為骨橋 (*Bridge*) 之前端。第四·五·六等。背面皆四角形。腹面隆起。為骨橋之本部。第七之背面四角形。腹面向後漸薄。其前部為骨橋之後端。第八·九·十。皆四角形。第十一係五角形。最後之四甲。其邊緣皆較薄於中部。

上腹甲 (*Epiplastron*) 五角形。內腹甲 (*Entoplastron*) 似三角形寬大於長。舌腹甲 (*Hyoplastron*) 之前側較厚。後側向上延展。為骨橋之前下端。下腹甲 (*Hypoplastron*) 之面積。與舌腹甲幾相若。前側向上延展為骨橋之後下端。劍腹甲 (*Xyphiplastron*) 之前緣。其長度二倍於後緣。

背甲上各角盾盾板。尚清晰易識。頸板 (*Nuchal Scute*) 漸小。四角形。長大於寬。脊板 (*Vertebral Scutes*) 皆較大。六角形。第二·三·四。形體相似。第七似七角形。肋板 (*Costal Scutes*) 共四。最後者最小。第二·三。形體相似。皆五角形。第二肋板大於第三者。第四者小於第二第三者。亦五角形。每肋板之發長紋。甚清晰。邊板 (*Marginal Scutes*) 共十二。皆四角形。第十二板乃最小者。發長紋甚清晰。腹甲各板。喉板 (*Gular Scute*) 最小。楔形。其尖與內腹甲之尖相接。腕胸縫 (*Humero-pectoral Scutes*) 成直線。橫穿內腹甲。胸板大於喉及腕板。其側部向上延展。腹板 (*Abdominal Scute*) 較大於胸

板。其側部亦向上延展。脛板四角形較小於胸板。臀板 (*Anal Scute*) 較小於脛板。與腕板大小相若。四角形。腋板 (*Axillary Scute*) 與腠板 (*Inguinal Scute*) 皆長而窄。背甲中線長二四七種，腹甲中線長二一五種，殼中部寬一六四種，殼中部高九七種，

此殼之構造。與希臘田龜 (*Testudo Graeceae*) 相近。然第五脊板。比以前各板稍寬。其寬度之相去。非若希臘田龜之甚。且此殼過大。故不能視為希臘田龜之同種。上述各種特徵。與現在已經定名之田龜皆不同。係一未定名之新種。茲特命名為安陽田龜 (*Testudo Anyangensis*) 然此物為安陽之舊產乎。抑三千年前殷人得自他處乎。且此物已絕種乎。或其種仍存在乎。欲解決此等問題。尚須於河南之動物及化石詳細調查。然後可得而言之也。