

內蒙古龟鳖类化石的新材料*

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一、前言

关于我国內蒙古自治区龟鳖类化石的記錄,以前比較主要的是基尔摩的“蒙古的龟鳖类化石”(Gilmore, 1931)。他在这篇論文中,綜合研究了“中亚古生物考察团”历年在蒙古人民共和国和我国內蒙古自治区境内发现的龟鳖类化石材料,其中除去发现于蒙古人民共和国的材料不計外,有关我国內蒙古自治区的材料,一共記述了5科、7属、9种以及一些未定种¹⁾。三年后,他又发表了第二次报告(Gilmore, 1934)。在这篇报告中,有关內蒙古自治区的材料仅只两种。

本文記述的材料,是繼基尔摩之后在內蒙古自治区采获的較多的一次。可惜大部标本保存都不太好,仅少数标本比較完整或部分完整,可資属种鉴定。这批材料是中苏古生物工作者1959和1960年在阿拉善旗、二連、通古尔和錫拉木伦等地采集的,分別产自中生代和新生代地层中。

二、材料的来源及其保存情况

1. 中生代的材料 中生代的材料共两个地点,即二連和阿拉善旗的毛尔图。二連的标本不多,并且都很破碎,不能詳作鉴定。毛尔图的标本有两件保存較好,代表两种不同的鳖类;另一件由一甚为破損的背甲印痕和部分殘破的腹甲为代表,可能代表另一龟类。其余的标本都为甲壳碎片或殘破肢骨,无法作出属种鉴定。

2. 新生代的材料 新生代的材料較多,除个别碎片外,主要包括以下5个地点,即:錫拉木伦的烏拉烏苏、烏兰錫林、烏尔丁鄂博,二連的伊尔丁滿哈,以及通古尔。烏拉烏苏的材料最多,个别标本保存也較好,主要为陆龟。烏兰錫林的材料也不少,主要以一个巨大的鳖类的背甲和一个非常破損的陆龟等为代表。伊尔丁滿哈的材料都是些破碎甲片和肢骨,大多可归鳖类。通古尔的材料很少,只有少許陆龟类和鳖类的破碎甲片。烏尔丁鄂博的材料最少,只有数片陆龟类的破碎甲片。

* 1964年8月6日收到。

1) 原文把无盾龟属和其他属一起归入泥龟科,共4科。根据目前龟鳖类的分类,无盾龟属应归两爪鳖科,故多一科,共5科。

三、标本記述

(一) 中生代的龟鳖类

1. 毛尔图的标本

科 Trionychidae

属 *Aspideretes* Hay

Aspideretes maortuensis, sp. nov.

(插图 1; 图版 I, II)

标本 鳖类甲壳一件, 包括背甲和与其相連的腹甲。背甲上頸板和左侧第四块肋板完全缺失, 左侧第三、五块肋板和左右两侧第八块肋板以及第四椎板部分殘缺。腹甲各骨板业已受压錯动, 左侧下腹甲缺失, 左右上腹甲和內腹甲前端殘缺。在腹甲上可以看到部分肩、腰带, 部分肱骨、两个頸椎以及右脚掌骨等。野外号 12051。古脊椎所标本登記号 V. 2864。

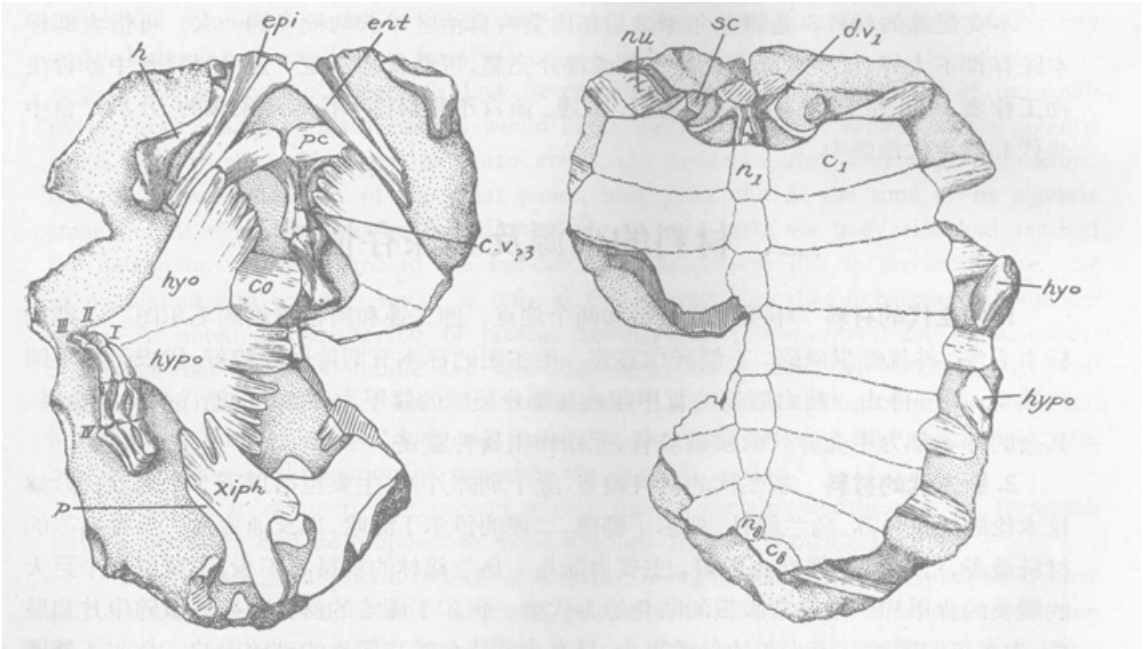


插图 1. *Aspideretes maortuensis*, sp. nov. V. 2864. ca. $\times 1/4$.

左, 正型标本腹甲及部分內骨骼腹视; 右, 正型标本背甲背视
(Left, ventral view of plastron and parts of endoskeleton; right, dorsal view of carapace).

c_1 , c_8 , 肋板 (costal plate), co, 鸟喙骨 (coracoid), c.v ?3, 第 ?3 颈椎 (?third cervical vertebra), d, v_1 , 第 1 背椎 (first dorsal vertebra), ent, 內腹甲 (entoplastron), epi, 上腹甲 (epiplastron), h, 肱骨 (humerus), hyo, 舌腹甲 (hyoplastron), hypo, 下腹甲 (hypoplastron), n_1 , n_8 , 椎板 (neurals), nu, 颈板 (nuchal), p, 耻骨 (pubis), pc, “前鸟喙骨” (“precoracoid”), sc 肩胛骨 (scapula), xiph, 剑腹甲 (xiphoplastron), I—IV, 趾骨 (digits).

产地及时代 内蒙古巴彦淖尔盟阿拉善旗毛尔图。早白垩世。

特征 甲壳低平,长大于宽。八对肋板,八块椎板。第八块椎板退化甚小,第八对肋板在中线处相连。除最后一对肋板保存不全外,其余肋板的外端长度都大于其内端长度。第一肋板内端和颈板之间有一对孔洞。颈板远端复压第一肋板的肋条。背甲表面除边缘外满布网状纹饰。舌腹甲和下腹甲的内端指状突起众多。

标本描述 背甲 背甲低平,长大于宽。估计长约 300 毫米以上,第三肋板处的最大宽(不包括肋条的外突部分)约 240 毫米。椎板 8 块,除最后一块外,其余多少都成六角形,前 5 块前狭后宽,第六、七块后狭前宽,最后一块后端退化,略成圆形,与第 7 块椎板一起位于第 7 对肋板之间。肋板 8 对,除最后一对保存不全外,其余肋板的外端前后长度皆大于其内端的前后长度。第八对肋板较小,彼此在中线处相连。第一对肋板的内端前缘向后凹陷,颈板的内侧后缘向前凹陷,这表示在第一肋板内端和颈板以及第一椎板之间有一对孔洞。孔洞的直径长约 27 毫米。颈板破损,仅部分残迹可见。由于上述孔洞的阻隔,它在背甲中部不可能与第一肋板的前缘接触。颈板远端覆盖第一肋板下的外突肋条。肋条都宽扁,显著突出于肋板之外。椎板和肋板表面满布网状纹饰,这纹饰以椎板上的为粗,逐向肋板外侧变细,至肋板外缘则完全消失,形成一宽约 30 毫米的平滑边缘。前椎板未见,可能为未曾保存。

椎板和肋板测量(单位:毫米)

(Measurements of neurals and costals, in mm)

椎板 (N. P.)	最大长度 (Max. L.)	最大宽度 (Max. W.)	肋板 (C. P.)	近端长度 (Prox. L.)	远端长度 (Dist. L.)	最大宽度 (Max. W.)
1	29	19	1	22	31	89
2	30	19	2	35	40	100
3	30±	18±	3	34	48	113
4	35±	18±	4	37	47	105
5	29+	19	5	31	43	107
6	24	18	6	31	38	91
7	23	15	7	21	40+	72+
8	15	15	8	11+	12+	34+

腹甲 腹甲业已受压,各骨板的原来位置已经错动,有的并已部分损坏,但各骨板的构造都还清楚可见。可能由于次生浸染或标本石化时接受的矿物成分不同,腹甲的某些骨板以及出露于腹面的某些内骨骼显示着两种不同的颜色,一为黑色,一为肉红色。上腹甲的前伸部分左右两侧都没有保存,后部却都完整,并还原生地内腹甲的两臂紧连一起。上腹甲细长,最后端部分仅宽 2—3 毫米,逐渐向前加宽,至内腹甲前角处宽 20 毫米。内腹甲也较细长,并由后向前加宽(后端最狭 5 毫米,前端最宽 16 毫米),臂长 110 毫米,两臂前端合成钝角。舌腹甲和下腹甲以右边保存为好,但其外端部分业已压至背侧,腹视不见,左边的则仅由舌腹甲的内端部分为代表。这两骨板的表面具有细斑纹饰(图版 II, 2),与腹甲其他骨板表面平滑者不同,它们的主要特征是内端部分的指状突起较多。舌腹甲上共 6 条,下腹甲上共 8 条。剑腹甲右侧保存完好,左侧的也仅前端破损。完整的剑腹甲前后长 108 毫米,中部最大宽 44 毫米。左右剑腹甲以其狭长的后突部分围成一梨

形的孔洞。

部分內骨骼 在腹甲各骨板的空隙处,可以看見部分因挤压外露的內骨骼,如左右肱骨、左右“前烏喙骨”、右烏喙骨、两个頸椎、右耻骨以及右脚掌骨等。所有这些骨头都只部分外露。

左肱骨仅近端的骨干部分保存,近端关节面业已损坏。右肱骨保存长 100 毫米,近端关节完整,有一圓球状的关节头,側結节 (lateral tubercle) 和三角稜突 (deltopectoral crest) 也清楚可見,其构造与一般鱉类无异。側結节到三角稜突之間直綫寬 45 毫米。左右“前烏喙骨”和右烏喙骨都仅內端部分出露,都甚寬扁,前者末端寬 24 毫米,后者末端寬 36 毫米。在“前烏喙骨”和烏喙骨之間出露两个頸椎,仍原生地关連一起,前者保存长 36 毫米,后者全长 45 毫米。这两脊椎的椎体都較高而长,腹面前端都具有稜脊(已部分损坏),可能代表第 3—4 或 2—3 个頸椎,椎体后凹型。腰带部分只右耻骨部分出露。耻骨联合处前后长 51 毫米,左右最大寬 75 毫米,前緣中部后凹,側緣中部內凹,其构造与一般鱉类甚似。右脚掌骨的第 I, II, III, IV 趾骨以及第 I, II, III 趾骨全部保存,并原生地相連一起。第 I 趾骨最短,长 21 毫米,但較粗壮。第 II—IV 趾骨分別长 28、32、36 毫米。趾骨以第 III 趾为最长,3 个趾节;第 I 趾最短,两个趾节;第 II 趾次之,3 个趾节。所有这三趾的末端趾节都形成爪骨,但第 II、III 趾的皆已部分殘缺,唯第 I 趾的完整,长 23 毫米,末端尖銳。

比較討論 *Aspideretes* 属的一个主要特征是具有一块前椎板,这块骨板通常是和第一椎板一起位于左右第一肋板之間。但是,在我們标本的上述位置上,仅見到第一椎板而未見前椎板。到底是原来沒有前椎板,抑或后来破損缺失,难于确切肯定。不过,有意思的是,在第一椎板的前面,还保存一小块与第一椎板相連的骨片,好象代表前椎板的殘迹(?)。它的下面的那块骨头,可能即为第一背椎(見插图 1)。其次,我們的标本具有 8 对椎板,似乎代表一种比較原始的鱉类(这在地質年代上也可得到輔証),因而很可能具有一块前椎板。另外,据 Hay 說(1908),凡是发现于白堊系的鱉类不无具有前椎板的。鉴于上述这些理由,所以笔者把目下討論的标本归入 *Aspideretes* 属。

如果上述的揣測是正确的话,那末这块前椎板势必位于第一肋板內側之前而不是之間,这情况与一般已知的 *Aspideretes* 属的种类都不相同,而与北美古新世的 *Paleotrionyx quinni* 有些近似(它的前椎板部分超出于第一肋板之前),但后者的頸板除与前椎板接触外,与第一肋板完全隔开,而我們标本的頸板則与第一肋板大部接触。

关于 *Aspideretes* 属的化石记录,就現有資料来看,以北美为最多。在那里,有关白堊紀的种类大約有 14—15 种,但其中絕大多数的种类都只有 7 块甚至 6 块椎板,因而都容易与目下的新种区别开来。*A. allani* 虽然也具有 8 块椎板,并且在頸板、前椎板和第一肋板之間有一对孔洞,但它的背甲寬大于长,第一肋板內端长度大于外端长度等性質,显然与我們标本不同。就一般构造来看,北美白堊紀的 *A. latus* 与我国的新种最为近似,它們不仅椎板数目相同,并且肋板的外端长度大于其內端长度以及第一肋板內側前緣的后凹构造等也很相似,可惜它沒有腹甲保存,而且背甲显然寬大于长,故仍不能完全对比。

我国有关 *Aspideretes* 鱉类的化石记录迄今已見 5 种¹⁾,属于中生代的两种,即为:

1) 叶祥奎: 1963, 中国龟鱉类化石, 中国古生物志, 总号第 150 册, 新內种, 第 18 号, 页 57—60。

Sinaspideretes wimani, *Aspideretes planicostatus*。前者发现于四川晚侏罗世,是迄今已知的最早鳖类,它不仅具有 9 对肋板,并还有部分盾片和缘板的残留,显然代表一种甚为原始的鳖类,与本文记述的标本有着很大的构造上的差别。后者发现于黑龙江晚白垩世,主要只有左侧最后一块肋板为代表,因而不能与新种标本进行对比。

与本种鳖类同产的还有肉食恐龙化石,该类化石已经胡寿永研究,认为其时代应为早白垩世¹⁾。我们通过鳖类标本研究,也可得出相同的看法。

? *Aspideretes alashanensis*, sp. nov.

(插图 2; 图版 III)

标本 - 前部破损的背甲,以及一块属于同一个体的部分破损的颈板。背甲包括左侧 8 块肋板和右侧后部 7 块肋板。第一、三椎板完全缺失,第二椎板和右侧第二肋板部分破损。野外号 12091。古脊椎所标本登记号 V. 2865。

产地及时代 內蒙古巴彦淖尔盟阿拉善旗毛尔图。早白垩世。

特征 背甲椭圆形,长宽几等或长略大于宽;前缘中部浅凹,后端平直。7 块椎板,第七块退化甚小。8 对肋板,肋板的外端长度皆大于其内端长度,其中以第六对为最甚。第七对肋板的后部和第八对肋板全部在中线处相接。背甲表面纹饰微弱。

标本描述 背甲低平,椭圆形。最大宽(第三肋板处)240 毫米,完整背甲估计长约 250 毫米。颈板小,前缘中部浅凹,前后长度较短,长 21 毫米,两侧长度加大,最大长(靠近内侧)约为 30 毫米。椎板 7 块,除最后一块外,皆长大于宽。第一椎板完全缺失。有无前椎板不知。第二椎板部分破损,前狭后宽,后部宽度为 15 毫米。第三椎板也完全缺失。第四椎板六角形,短侧边朝后,位于第四、五肋板之间,前端微凸,后端微凹,长 24 毫米,后侧角处最大宽 18 毫米。第五椎板椭圆形,限于第五肋板之间,前后端皆微凸。长 20.5 毫米,宽 14.5 毫米。第六椎板亦为六角形,但短侧边朝前,位于第五、六肋板之间,前缘后凹,后缘平直,中部长 18.5 毫米,前侧角处最大宽 16 毫米。第七椎板近圆形,位于第六、七肋板之间,长宽约各为 12 毫米。肋板 8 对,外端长度皆大于其内端长度,其中以第六对为最甚。第七对肋板的后部和第八对肋板的全部在中线处相接。肋板测量数字见下页表。

背甲表面都有纹饰,无背甲边缘的光滑地带。椎板以及肋板内侧部分的纹饰主要是圆形的凹坑。凹坑不深,边缘凸起也不显著。肋板外侧以及背甲后端部分的纹饰则变为网状构造。凹坑形状不规则,但较深,凹坑的边缘凸起也较显著。

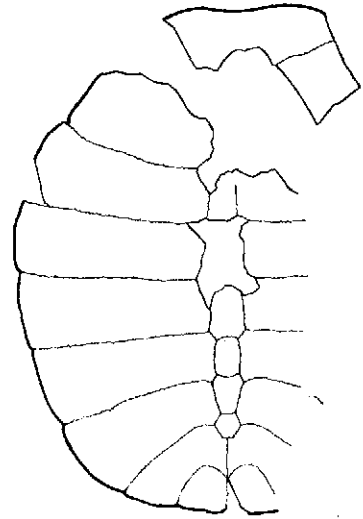


插图 2. ? *Aspideretes alashanensis*, sp. nov. V. 2865. ca. × 1/4.

正型标本背甲素描 (Sketch drawing of type).

¹⁾ 胡寿永: 1963, 內蒙古阿拉善旗肉食恐龙类化石。古脊椎动物学报, 8 (1): 53.

肋板測量 (单位: 毫米)
(Measurements of costal plates, in mm)

肋板 (C. P.)	最大宽度 (Max. W.)	近端长度 (Prox. L.)	远端长度 (Dist. L.)
1	82+	24+	33±
2	102	28±	37±
3	111	27±	36
4	114	25	41
5	105	25	42
6	91	22	50
7	56	20±	30
8	30	15±	25±

所有肋条都没完整保存。从各肋板的内面观察,各肋条所缺的长度都不很大,因而估计原来肋条的外突部分可能较短。

比較討論 本种标本因为背甲前部缺失,原来是否具有前椎板不知。但考虑到它是白垩纪的鳖类,具有前椎板的可能较大,因此暂时将它归入 *Aspideretes* 属。

虽然本种标本与上述的 *A. maortuensis* 是同一地区、同一时代的产物,但它们在构造上却有很大的差别,今将其主要差异列表表示如下:

<i>A. alashanensis</i>	<i>A. maortuensis</i>
背甲长宽几等或长略大于宽	背甲长大于宽
椎板 7 块	椎板 8 块
第六块肋板的外端最长	第三块肋板的外端最长
肋条不显著突出背甲边缘之外	肋条显著突出背甲边缘之外
纹饰以圆形凹坑为主	纹饰以网状构造为主

与新种标本最为近似的应该是北美晚白垩世的 *A. subquadratus*, 它们不仅背甲大小近似,并且背甲的前、后端构造,纹饰、椎板数目,以及各肋板的外端长度皆大于其内端长度等特征都甚一致。但我们的标本比北美的个体较大,个别椎板的构造也不相同(如第六、第七块椎板)。并且,更主要的是新种标本中以第六块肋板的外端长度为最大,而 *A. subquadratus* 则以第五块肋板的外端长度为最大,因此仍然可以区别开来。

有关内蒙古中生代龟鳖类,据文献记录,过去仅只发现过一些甲壳碎片,未有属种记录,本文记述的两种鳖类因而代表该地区中生代龟鳖类的首次属种记录。

在产自毛尔图的龟鳖类材料中,还有一些破碎标本(野外号 12087, 12054, 12003, 12060, 12093, 12098; 古脊椎所标本登记号依次为 V. 2866, V. 2866.1, V. 2866.2, V. 2866.3, V. 2866.4, V. 2866.5), 这些标本都因保存过于破碎,不能作出属种鉴定。今且简单记述如下:

V. 2866 包括一个背甲内模印痕和破损的腹甲标本。背甲外形呈卵圆形,长约 300 毫米,宽约 245 毫米。在背甲上看不到任何构造特征。腹甲前后叶颇狭,全长约 185 毫米,中部宽约 245 毫米。各骨板的构造已无法清楚辨认。从腹甲的一般外形来看,似乎与鳖类的腹甲有点近似,但腹甲中部坚实,不象一般鳖类具有中部的孔隙。因此,这标本如果

可归鳖类的話,至多只能与 *Plastomenids* 类的腹甲比較¹⁾,但又不甚相同。另方面,这腹甲又有点与泥龟科 (*Dermatemydidae*) 中某些退化了的腹甲相似,但仍难确切肯定。可能,它代表毛尔图龟鳖类材料中的另一新类型。

V. 2866. 1 包括 3 块骨板,显然都属于鳖科。其中一块下腹甲保存比較完整(图版 VIII, 3)。这块骨板左右寬約 115 毫米,鼠蹊凹处前后長約 40 毫米。从骨板的大小和內端的指状突起的构造来看,可能可归于上述的 *Aspideretes maortuensis*。另两块骨板都为肋板碎片,从其大小来看(一肋板長 62 毫米,內端寬 20 毫米,外端寬 25 毫米),显然与上述下腹甲不属于同一个体。

其他材料除 V. 2866.5 为一破碎的腿骨远端以及 V. 2866.4 的两块破碎骨板可能为龟类(?泥龟科)的甲壳碎片外,其余皆为鳖甲碎片,不再一一贅述。

2. 二連的标本

采自二連的材料虽然包括野外号 3023-28, 3048, 2001, 3013, 3069, 3040 (13), 3083-84, 3029-34, 1010 等(古脊椎所标本登記号依次为 V. 2867—V. 2867.8), 但标本甚少,并且都很破碎,不能进行詳細鉴定。內中除了 V. 2867 和 V. 2867.1 分別代表龟类的一块背甲碎片和两块相連的緣板外,其余皆为鳖类甲壳碎片。根据同产的其他脊椎动物化石判断,上述龟鳖类的地质时代应为晚白垩世。

(二) 新生代的龟鳖类

1. 烏拉烏苏的标本

科 *Testudinidae*

属 *Testudo* Linn.

Testudo sharanensis, sp. nov.

(插图 3; 图版 IV, V, VI)

正型标本 一受压的、部分破損的背甲和一完整的腹甲以及一些甲壳碎片。背甲的第四椎板、右則第二、三肋板以及大部緣肋破缺。野外号 7053。古脊椎所标本登記号 V. 2868。

副型标本 一基本完整的腹甲和一些背甲碎片。野外号 7101。古脊椎所标本登記号 V. 2868.1。

产地及时代 內蒙古錫拉木伦烏拉烏苏。始新世晚期。

特征 个体大,背甲高凸。8 块椎板,8 对肋板,3 块上臀板。第二椎板八角形,第三椎板四边形,其余皆六角形。肋板內、外端长度成长、短交替变化,其中以第六肋板相差最大。第四椎盾的后緣盾沟通过第一上臀板。頸盾小,上尾盾分离为二。腹甲較小,骨桥寬,上腹甲突出。內腹甲六角形,肱胸沟从其后面通过。胸盾中部长度仅为腹盾的約 1/3。腹甲前端浅凹,后端深凹。

1) *Plastomenids* 的背甲已与一般鳖类相似,但其腹甲却不象一般鳖类一样具有中部孔隙,而与龟类 (*emysids*) 一样腹甲左右两部分在中部牢固相連。

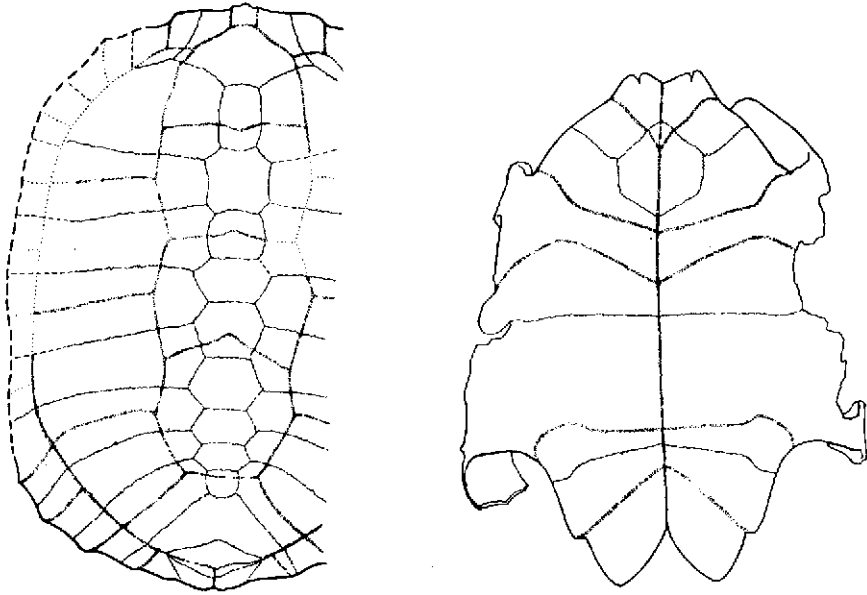


插图 3. *Testudo sharanensis*, sp. nov. V. 2868. ca. $\times 1/6$.

左, 正型标本背甲复原; 右, 正型标本腹甲素描 (Left, restoration of carapace; right, sketch drawing of plastron).

标本描述 背甲 个体大, 背甲高凸。完整背甲估计全长约 465 毫米, 宽约 325 毫米, 高约 115 毫米。颈盾小, 略近正方形, 长宽各约 20 毫米。椎盾 5 块, 皆宽大于长。第一块成皇冠状的五角形, 前端钝圆, 后端平直。第二、三、四块都为六角形。第二块前缘中部略后凹, 而第三、四块则略前凸。第五椎盾呈前狭后宽的梯形, 后缘宽度大于其前缘宽度的两倍; 前缘盾沟通过第一上臀板而不是第八椎板。肋盾 4 对, 皆横宽。缘盾宽大, 与背甲倾斜相接。肋缘沟与肋缘缝一致。上尾盾分离为二。

椎盾测量 (单位: 毫米)

(Measurements of vertebral scutes, in mm)

椎 盾 (V. S.)	中 部 长 度 (Mid. L.)	前 缘 宽 度 (Ant. W.)	后 缘 宽 度 (Post. W.)
1	93	81*	90
2	81	90	94 \pm
3	80 \pm	94 \pm	102 \pm
4	120	102 \pm	58
5	98	58	143

* 量自肋缘沟处 (measured on the costo-marginal sulcus)。

背甲骨板均厚, 约 17—18 毫米。颈板大, 长 75 毫米, 最大宽 93 毫米。椎板 8 块。除第一块卵圆形、长大于宽外, 其余皆宽大于长。第二椎板显然为大的八角形, 第三块则为小的四边形, 这特征与一般陆龟属的甚似。第四块没有保存, 但从左侧第四肋板的内端构造来看, 似乎为六角形, 短侧边朝前。第五块的构造与第四块有些近似并都很宽大。第六块也为六边形, 但与上述的第四、五块相反, 短侧边朝后。第七块开始收缩较小, 第八块更

小,形状都为短侧边朝后的六角形。与一般陆龟属的构造一样,第一、二、三椎质的后缘沟纹,分别通过第一、三、五椎板,但第四椎质则很特殊,它的后缘不是与一般龟类一样通过第八块椎板,而是通过第一上臀板,这构造与北美始新世的 *Hadrianus corsoni* (Leidy) 很象。上臀板 3 块,比一般陆龟属的多一块。第一块圆形,长宽各约 27 毫米。第二块圆规形,中部长 47 毫米,前端宽 25 毫米,后部宽 100 毫米,并以其后伸的两臂包围第三上臀板。第三上臀板菱形,中部长 43 毫米,横宽 70 毫米。

与陆龟属一般种类的特征一样,新种标本的肋板内、外端长度成显著的交替变化,其中以第六肋板的差度最大,几乎相差一半。由于第四椎板不成大的八角形,第五椎板不成小的四边形,所以第四肋板的内端不是与一般陆龟属的构造一样仅与第四椎板关连,而是与第四、五两椎板关连,从而第五肋板不是与第四、五、六三块椎板关连,而是与第五、六两块椎板关连。第六、七肋板的关连方式与一般陆龟属的一样,而第八肋板除小部与第八椎板关连外,大部则与第一上臀板关连。

椎板和肋板测量 (单位: 毫米)

(Measurements of neural and costal plates, in mm)

椎板 (N. P.)	最大长度 (Max. L.)	最大宽度 (Max. W.)	肋板 (C. P.)	最大宽度 (Max. W.)	近端长度 (Prox. L.)	远端长度 (Dist. L.)
1	57	36	1	136	58	60±
2	50	57	2	145	33	53
3	40	46	3	156	55	39
4	—	—	4	160	40	50
5	43	61	5	160	45	35
6	40	57	6	145	30	58
7	29	50	7	117	27	35
8	26	44	8	93	35	47

腹甲 正型标本腹甲保存非常完整,全长 390 毫米,宽 300 毫米,比背甲为短、为小。腹甲前缘浅凹,后缘深凹。骨桥宽 215 毫米,为腹甲全长的 1/2 以上。内腹甲大,六角形,位于腋胸沟 (humero-pectoral sulcus) 之前,前端被喉腋沟 (gulo-humeral sulcus) 所割。上腹甲增厚,稍突出于腹甲前缘之前。胸盾的中部长度甚短 (38 毫米),约仅为腹盾中部长度 (110 毫米) 的 1/3。股肛沟 (femoro-anal sulcus) 中部上升,两侧下降,成“人”字形。该沟两侧终止处,腹甲边缘内凹。腹甲的其他构造可参考插图 3 和图版 V。

腹甲各骨板测量如下 (Measurements of plastral bones):

内腹甲长 95 毫米,宽 68 毫米 (Length of entoplastron, 95 mm, width of the same, 68 mm)

上腹甲长 78 毫米 (Length of epiplastron, 78 mm)

舌腹甲长 118 毫米 (Length of hypoplastron, 118 mm)

下腹甲长 97 毫米 (Length of hypoplastron, 97 mm)

剑腹甲长 97 毫米 (Length of xiphiplastron, 97 mm)

以一块基本完整的腹甲为代表的副型标本比正型标本的个体为大。腹甲全长 490 毫米,宽约 400 毫米,长宽比例与正型标本的大致相若。其他如骨桥宽度 (265 毫米),各骨板的构造以及排列情况等皆与正型标本的一致,显然可归同种。唯一有差异的是副型标本的胸盾和腹盾的长度比例似乎比正型标本的为更小,这非常有可能因为副型标本受压

錯动所致,也可能为个体变异(图版 VI)。

比較討論 上面描述的龟类化石,从其背甲高凸、椎板寬大、以及腹甲上各骨板的一般构造观察,显然可归陆龟科,但在属的鉴定上,似乎有些困难,因为我們标本所表现的特征有些介于 *Stylemys* 属和 *Testudo* 属之間。比如說,从标本的第二椎板八角形,第三椎板四边形,第三椎板以后的为六角形等特征来看,确与 *Stylemys* 属很象,似可归为同属,但后者的上尾盾是单块的,上腹甲的突出程度还要小些,并且,更重要的,据现有文献记录,它的所有种类都是渐新世和中新世的产物,尚未有过始新世的代表。另一方面,与 *Testudo* 属比較起来,我們标本的第二椎板为大的八角形和第三椎板为小的四边形的交替,肋板內、外端长度的交替,倒数第二上臀板成分叉状,以及上腹甲增厚并向前突出等特征,显然也是符合的,但也有不同,那就是我們标本的第四椎板和第五椎板尚未分化成大的八角形和小的四边形的交替,而都是六边形。

实际上,就构造特征来說,上述两属的主要差别,是表现在椎板外形的分化程度和上腹甲的向前突出的程度上,即是: *Testudo* 属的椎板分化程度較大,上腹甲也較之更为显著突出。但是,有意思的是,在 *Testudo* 属中,有的种类的椎板外形也只部分分化甚至完全未分化,上腹甲也很不突出。因此,这些种类所示的特征,与上述的 *Stylemys* 属甚至 *Hadrianus* 属的就很难有明显的区别了¹⁾。正因为 *Testudo* 属的椎板外形的分化程度有大有小,故考虑与其将內蒙古始新世的标本归到 *Stylemys* 属中去,不如暫且将它归入 *Testudo* 属中較为合适,代表該属中比較原始的种类,取名为錫拉陆龟 (*Testudo sharanensis*),新种,种名表示化石的产地。

錫拉陆龟除了上述的椎板外形尚未完全分化、上腹甲不很向前突出等特征外,更特殊的是具有 3 块上臀板、第五椎盾的前緣盾沟不是与一般陆龟属的种类一样通过第八椎板,而是通过第一上臀板(插图 3 和图版 IV)。这都是些原始性的特征,在陆龟属的一般种类中是很少見的,而常見于陆龟科較原始的 *Hadrianus* 属中(*Stylemys* 属的某些种类有时也有 3 块上臀板)。但是 *Hadrianus* 属的椎板外形全为六角形,尚未分化,肋板內、外端的长度分化即有也还很微弱,显然比我們的标本还要原始一些。因此,我們或者可以把錫拉陆龟(新种)理解为从陆龟科中原始属类进化到 *Testudo* 属的一个早期阶段的代表。

基尔摩曾于 1931 年記述过一种也产自內蒙古錫拉木伦地区始新世晚期的陆龟,名为 *Testudo ulanensis*。标本主要是一块破损的腹甲后叶以及一块肋板和几块緣板,因此难于与我們的标本进行全面对比。但是它的肋緣沟甚在肋緣縫之下,腹甲后端广闊浅凹等特征,显然与新种标本不同。基尔摩的陆龟因为背甲沒有保存,未知是否也具有某些原始特征?另外,秉志(1929)还記述过河南浙川始新世晚期陆龟科的一个属,名为 *Sinohadrianus*,属型种为 *S. sichuanensis*。該种的椎板外形主要都是六角形的,且仅后 4 对肋板內、外端长度稍作交替变化,显然也代表陆龟科中一原始的属类。据现有文献记录,陆龟科(或亚科)最早出現于始新世。因此,我国上述的具有某些原始特征的始新世的代表,对于研究該科动物的早期进化历史,可能很有意义。

1) *Hadrianus* 为陆龟科始新世的属。它的椎板都是六角形的,肋板內、外端的长度分化沒有或較微弱,但上腹甲向前突出。

烏拉烏苏的龟鳖类材料除了上述的外,还有一些破碎甲片(野外号 7130, 7050, 7110, 7042, 7026.2, 古脊椎所标本登記号 V. 2869—V. 2869.9)¹⁾。有意思的是所有这些甲片都可归入龟类,而未見到有鳖类的代表。

V. 2869 是几块相連的緣板和数块破碎的背甲碎片。这些甲片的顏色和骨板的厚度都与上述的 *Testudo sharanensis* 的很近似,特别是緣板的大小和构造等,更为一致,或許可归为同种。V. 2869.5 和 V. 2869.6 的材料,除了背甲碎片外,还各有一块喉盾部分的骨板。这两块骨板虽然前者較大(两喉盾沟間的前緣寬約80毫米),后者較小(同样的寬度約为50毫米),但两者的构造却完全一致,并都与 *T. sharanensis* 的很象。

其余甲片除了大多可归陆龟科外,可能还有其他类别的代表,但都因过于破碎,不能詳作属种鉴定。

2. 烏兰錫林的标本

科 Trionychidae

属 *Amyda* Oken

Amyda neimenguensis, sp. nov.

(插图 4; 图版 VII)

标本 一个部分完整的背甲,頸板、右側前部肋板以及第一椎板等破缺。古脊椎所标本登記号 V. 2870。

产地及时代 內蒙古錫拉木伦烏兰錫林。始新世晚期。

特征 个体大,背甲近圓形,长寬各約 500 毫米。7 块椎板,第七块退化。8 对肋板,第八对和第七对后部在中綫处相連。肋板除最后一对外,其余皆外端长大于內端,其中第六对相差在一半以上。骨板表面有大小不等的凹坑紋飾,但肋板远端約 1/3 处完全平滑。

标本描述 个体大,背甲低平,近圓形,后端較前端为稍寬。長約 500 毫米,中部最大寬也約为 500 毫米。甲壳前端破缺,輪廓不明;后端总的說来平切,唯仅正中部分稍为浅凹。椎板 7 块。第一块完全破損,第二到第四块为短側边朝后的六角形,第五块似成长方形,第六块后端稍为退化,呈短側边朝前的六角形,第七块近圓形。肋板 8 对,除最后一对外,其余的皆外端长度大于內端,其中特以第六对差别为最大,內、外端长度相差在一半以上。第七对肋板的后部和第八对肋板全部在中綫处相連。整个背甲表面除兩側邊緣平滑外,其余地方都滿布紋飾。平滑地带的寬度(寬約 70—75 毫米)約占整个肋板左右寬度的 1/3。紋飾单一地由大小不等的凹坑組成。

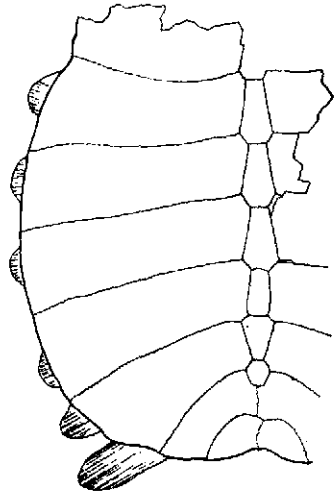


插图 4. *Amyda neimenguensis* sp. nov. V. 2870, ca. $\times 1/8$.

正型标本背甲素描 (Sketch drawing of type).

1) 有 5 个地点材料野外号原缺。

凹坑边缘显著突起,互相连成网格状。肋条狭而粗壮,有如棍棒状,明显突出于背甲边缘之外。

椎板和肋板测量 (单位: 毫米)
(Measurements of neural and costal plates, in mm)

椎板 (N. P.)	最大长度 (Max. L.)	前缘宽度 (Anter. W.)	后缘宽度 (Poster. W.)
1	—	—	—
2	60	—	38
3	59	19	33
4	57	18	34
5	46	19±	19
6	42	30	9
7	26	16	15

肋板 (C. P.)	最大宽度 (Max. W.)	近端长度 (Prox. L.)	远端长度 (Dist. L.)
1	190	63±	73±
2	230	56	100±
3	245	54	78
4	240	55	82
5	230	53	94
6	200	41	110
7	118	44	55
8	55	30	10

比較討論 *Amyda* 是一属我国常见的现生鳖类,分布很广,华南、华北都有,但其化石种类还不很多,迄今已知的共只 5 种,而属于始新世的,只一种,即 *Amyda johnsoni* Gilmore。该种化石发现于内蒙古伊尔丁满哈。据原作者记述,其完整背甲估计全长约 400 毫米,最大宽约 390 毫米,比我们这里记述的标本略小。但其一般构造,却与新种标本甚为近似,诸如椎板的数目、外形,肋板的一般构造以及纹饰特征等,特别是第六块肋板的外端长度甚大于其内端长度这一性质,几乎完全可以对比。但它们仍有以下几点主要差别: 1) 新种标本个体较大, 2) 新种标本的第六块椎板为短侧边朝前的六角形,而 *A. johnsoni* 的第六块椎板几近长方形, 3) 新种标本的凹坑纹饰较大,较深,甲壳两侧边缘的平滑地带似乎也较宽,背甲中部更无低回的纵沟。

本新种标本是我国迄今已知的最大鳖类,定名为内蒙古鳖 (*Amyda neimenguensis*), 新种。

产自乌兰锡林的另外还有一件龟类标本(野外号 8035,古脊椎所标本登记号 V. 2871)。这件标本虽然包括背、腹甲两部分,但背甲的大部构造已完全毁坏,腹甲也仅部分保存。背甲凸起,长、宽各约 170 毫米。第一椎板长方形,长 19 毫米,宽 11 毫米。第二椎板为大的八角形,长宽各约 20 毫米。第三椎板四边形,长 19 毫米,宽 17 毫米。第四椎板又为八角形,长 18 毫米,宽 23 毫米。第二椎盾隐约可辨,呈狭长的六角形。从第二、三肋板的构造来看,肋板的内、外端长度显然成长、短交替变化。腹甲后端深凹,胸盾中部的长度约为

腹盾长度的 1/3 (图版 VIII, 1,2)。所有这些构造都明显表示该标本可归陆龟属,但因保存不全,未能进一步作出种的鉴定。

另一件产自烏兰錫林的标本是由 3 块相連的右側的第六、七、八块肋板为代表的鳖类(野外号 8031, 古脊椎所标本登記号 V. 2872)。这 3 块肋板的构造都是远端长度大于其內端长度,除第六、七块外側边缘部分平滑外,骨板表面滿布凹坑紋飾(图版 VIII, 4)。紋飾构造与上述內蒙古鳖的很象,但肋板的近、远端长度比例两者却不尽同,加之个体相差甚大,显然不能归为同种。

烏兰錫林的其他材料更为破碎(野外号 8025, 8006, 8513, 古脊椎所标本登記号 V. 2872.1—V. 2872.4)¹⁾,不能詳作鉴定。V. 2872.1 包括一些龟甲碎片,骨板厚(8 毫米),其中一块破碎的喉盾与上述的 *Testudo sharanensis* 很近似,可能可归同种。V. 2872.2 的骨板较薄(5 毫米),或許代表另一类别的龟类。V. 2872.3 为一些破碎的鳖片和一破碎的肱骨。V. 2872.4 大多也为鳖类碎片,其紋飾可与上述的內蒙古鳖的比拟。

3. 伊尔丁滿哈、通古尔和烏尔丁鄂博的标本

所有采自伊尔丁滿哈、通古尔和烏尔丁鄂博的龟鳖类标本都很破碎,都不能鉴定属种。伊尔丁滿哈的材料較多,除大多为鳖类碎片外,还有龟类的碎片以及少許破損的肢骨(古脊椎所标本登記号 V. 2873)。通古尔的材料不多,除了有属于龟类的外,还有几片鳖类的肋板(古脊椎所标本登記号 V. 2874)。烏尔丁鄂博的材料最少,仅几片龟类的碎片为代表(古脊椎所标本登記号 V. 2875)。上述三地点出产化石的地质年代,根据同产的其他脊椎动物化石判断,分别为始新世晚期、中新世和漸新世。

四、总 結

本文一共記述了內蒙古中生代的鳖类 1 科 1 属 2 种,新生代龟鳖类 2 科 2 属 2 种。至此,內蒙古迄今发现的龟鳖类化石的属种共有 5 科、8 属、15 种。列表如下:

泥龟科 (Dermatemydidae)

Adocus orientalis Gilmore

龟 科 (Emydidae)

Palaeochelys? elongata Gilmore

Ocadia? perplexa Gilmore

Sharemys hemispherica Gilmore

陆龟科 (Testudinidae)

Testudo nanus Gilmore

Testudo ulanensis Gilmore

Testudo cf. shensiensis Wiman

Testudo sharanensis (sp. nov.)

两爪鳖科 (Carettochelydidae)

1) 其中之一无野外号。

Anosteira mongoliensis Gilmore

鳖 科 (Trionychidae)

Aspideretes sculptus (Gilmore)¹⁾

Aspideretes maortuensis, sp. nov.

Aspideretes alashanensis, sp. nov.

Amyda? *johnsoni* Gilmore

Amyda gregaria Gilmore

Amyda neimenguensis, sp. nov.

在地史分布上,内蒙古迄今发现的龟鳖类化石可列表如下²⁾:

中新世 (Miocene)

Ocadia? *perplexa* Gilmore 达里木湖

Aspideretes sculptus (Gilmore) 达里木湖

Testudo cf. *shensiensis* Wiman 喀拉烏苏

渐新世 (Oligocene)

Amyda gregaria Gilmore 二連西南

Testudo nanus Gilmore 錫拉木伦地区³⁾

Sharemys hemispherica Gilmore 錫拉木伦地区

Palaeochelys? *elongata* Gilmore 諾康鄂博

Trionychidae indet. 詳細产地未詳

始新世 (Eocene)

Testudo sharanensis, sp. nov. 烏拉烏苏

Amyda neimenguensis, sp. nov. 烏兰錫林

Testudo ulanensis Gilmore 錫拉木伦地区

Anosteira mongoliensis Gilmore 錫拉木伦地区

Amyda? *johnsoni* Gilmore 伊尔丁滿哈

Adocus orientalis Gilmore 伊尔丁滿哈

Testudo sp. 錫拉木伦地区、烏拉烏苏等

Dermatemydidae indet. 錫拉木伦地区

Trionychidae indet. 伊尔丁滿哈

晚白堊世 (Late Cretaceous)

Trionychidae indet. 二連

早白堊世 (Early Cretaceous)

Aspideretes maortuensis, sp. nov. 毛尔图

?*Aspideretes alashanensis*, sp. nov. 毛尔图

Trionychidae indet. 毛尔图等

1) 原名 *Trionyx sculptus*, 根据原文记载, 该标本有前椎板印痕, 因而将它归入 *Aspideretes*.

2) 依杨鍾健“中国地史上之爬行动物”并加以补充。

3) 前译为錫拉穆林。下同。

内蒙古中生代的龟鳖类化石虽然过去已有发现,但都仅是些甲壳碎片,都未作出属种鉴定。这次阿拉善旗毛尔图发现的两种鳖类化石,代表内蒙古中生代龟鳖类的首次属种记录。

阿拉善旗毛尔图出产的脊椎动物化石甚为丰富,这次除了发现鳖类化石外,同产的还有蜥脚类、肉食龙类和鸟脚类等。根据这些化石,我们可以把其地质年代定为早白垩世。就目前资料所知,鳖科的最早记录为我国四川晚侏罗世的 *Sinaspideretes*, 其他大陆的记录皆不早于晚白垩世(我国在吉林、黑龙江和内蒙古等地也有晚白垩世的代表)。因此,本文记述的内蒙古早白垩世的鳖类,不仅是迄今罕见的早期代表,并且还填充了该类动物地史分布上的空隙,从而给研究鳖类的起源和发展提供了依据。

据文献记载,陆龟科已知的最早记录为始新世。我国始新世的陆龟科代表迄今已知的共有两属 3 种,即河南的 *Sinohadrianus sichuanensis* Ping, 内蒙古的 *Testudo ulanensis* Gilmore 和 *T. sharanensis*, sp. nov.。这 3 种中除 *T. ulanensis* 保存不全因而某些特征未见外,其他两种显然都具有有一些原始性质,代表陆龟科中的早期类型。

从这次以及过去发现的龟鳖类材料来看,内蒙古的龟鳖类化石似乎与北美的最为近似,它们不仅都具有大致相同的类别,并且有的具体属种在构造性质上也很一致。诸如内蒙古泥龟科的 *Adocus orientalis* 与北美的 *A. punctatus*¹⁾, 内蒙古两爪鳖科的 *Anosteira mongoliensis* 与北美的 *A. ornata*²⁾ 等。但至少有两点仍值得注意,即内蒙古迄今尚未发现具氏龟科(Baenidae)的代表,并且泥龟科的材料也还很少。所以,关于内蒙古和北美龟鳖类化石的确切关系,目前尚难定论。

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1) 两者在时代上相距较大,前者为始新世晚期,后者为晚白垩世。

2) 前者为始新世晚期,后者为始新世中期。

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NEW MATERIALS OF FOSSIL TURTLES OF INNER MONGOLIA

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The specimens here described were collected by a group of Chinese and Soviet palaeontologists from Inner Mongolian Autonomous Region in 1959 and 1960. They are materials of Mesozoic and Cenozoic turtles. The former ones were unearthed from Maortu of Alashan District and Iren Dabasu of Erlien District; and the latter ones were from Ula Usu, Ulan Shirch, Urtyn Obo of Shara Murun District, Irдин Manha of Erlien District and Tung Gur District.

DESCRIPTION

I. MESOZOIC TURTLES

1. MATERIALS OF MAORTU

Trionychidae

Aspideretes Hay

Aspideretes maortuensis, sp. nov.

(Fig. 1; Pls. I, II)

Type: An incomplete carapace and plastron with its nuchal, fourth neural and parts of costals broken; plastron compressed, hypoplastron of left and anterior end of epiplastra missed; parts of broken pectoral and pelvic girdles, two cervical vertebrae and right pes exposed on plastral surface. Field No. 12051. Cat. No. of IVPP V.2864.

Locality and Horizon: Maortu, Alashan, Inner Mongolian Autonomous Region. Lower Cretaceous.

Diagnosis: Shell depressed, longer than broad. Eight neurals and eight pairs of costals. Eighth neural much reduced, last pair of costals meeting on middle line. Distal length of anterior seven costals longer than those of proximal ones. A pair of fontanelles present between nuchal, first neural and first pair of costals. Distal end of nuchal overlapping rib-end of first costal. Surface of carapace ornamented with net-like sculptures except the smoothed margin. Proximal finger-like processes of hyo- and hypoplastra numerous.

Description: The carapace is somewhat depressed, and has a length about of 300 mm, a maximum wide at third costal plate of 240 mm. It possesses eight neurals and eight pairs of costals. With the exception of the last one, all the neurals are more or less hexagonal in form. The first five of them are narrower in front, while the succeeding two are broader anteriorly, and the eighth one, which reduced greatly in size, is rounded and situated together with seventh one in the proximal side of seventh costal

plate. All the costal plates, except the eighth one which is broken distally and united each other on the middle line, have their distal length longer than those of proximal sides. In view of the structure of inner anterior border of the first costal and the middle posterior border of the impression of nuchal plate, there is most probably a pair of fontanelles present in our specimen. The nuchal plate is not in connection with first costal in middle part but in lateral, and with its distal end overlapping the rib-end of first costal plates. The ribs are broad, and projected far beyond the margin of the carapace. All the surface of neurals and costals are ornamented with net-like sculptures except the margin of the disk where it forms a smooth band about 30 mm in width. No preneural is seen in specimen.

The measurements of neurals and costals may be referred to the tables in the Chinese text.

The plastron was already compressed, and the bones of it are therefore somewhat displaced. But the structure of them is still clear. A reference of them may be made in Fig. 1 and Pl. II.

On the exterior surface of plastron, parts of the endoskeleton of the specimen are exposed ventrally, they are parts of pectoral and pelvic girdles, two cervical vertebrae and right pes. The cervical vertebrae are typical opisthocoelous in shape and probably represent the third and fourth or second and third ones in series. The pes is represented only by I—IV metatarsals and I—III phalanges. The first metatarsal is the shortest but larger, the others are somewhat slender. Among the preserved phalanges, the third one is the longest, and the first is the shortest. The phalangeal formula of I—III phalanges is 2, 3, 3, and all the ends of them are terminated by pointed claws.

Comparison: One of the most important features of genus *Aspideretes* is the presence of a preneural which is unfortunately not preserved in our specimen. It is therefore somewhat difficult to determine whether the plate of the present form is originally absent or secondarily missed in preservation. But as we have noticed in Fig. 1 and Pl. I, before the first neural there is a little broken bone joined with it. It may be fragment of preneural(?). Furthermore, according to Hay (1908) that "no trionychid from the Cretaceous deposits is known to be without this (preneural) bone". By these reasons the discussed specimen is therefore referred to the genus *Aspideretes*.

If the supposition said above is true, the preneural of our specimen would be situated anteriorly to the first costal. It is a condition quite different from most known species of mentioned genus but somewhat likes that of *Paleotrionyx quinni*.

By the feature of eight neurals of the present species we can distinguish our specimen from many known Cretaceous species which mostly possess seven or even six neurals. The species *A. allani* and *A. latus* of North America though appeared similar to Chinese one in having same number of neural and in some other features, but they differ still in outline, those of American are broader, while that of ours is longer.

Four species of genus *Aspideretes* have been described in China, among which only one species, *A. planicostatus*, is from Cretaceous. The material of this species is so poor that it is impossible to make a comparison with our form.

?*Aspideretes alashanensis*, sp. nov.

(Fig. 2; Pl. III)

Type: A carapace including eight costals of left, posterior seven costals of right,

five neurals and a nuchal; first and third neurals missed, second neural and second costal of right broken. Field No. 12091. Cat. No. of IVPP V.2865.

Locality and Horizon: Maortu, Alashan, Inner Mongolian Autonomous Region. Lower Cretaceous.

Diagnosis: Carapace ovoid, nearly as long as broad or slightly longer. Anterior border concaved shallowly, posterior margin straight. Seven neurals, last one of them much reduced and rounded in form. Eight pairs of costals, distal length of them longer than those of proximal ones. Seventh and eighth pairs of costals concated each other partly and entirely on middle line. Surface of carapace ornamented weakly with sculptures.

Description: The carapace is ovoid in form and depressed. It has a maximum wide at middle of 240 mm, and an estimated length of complete carapace of 250 mm. The nuchal plate is small, and has a concave border anteriorly, but the posterior margin of the carapace is truncated. There are seven neurals, but the first and third ones are missed, and the second one is partly damaged. As shown in Pl. III, all the preserved neurals are typically trionychid in form. The costals are longer distally, and the distal length of sixth one is two times longer than that of proximal. Since there is no eighth neural and the size of seventh one is much reduced, the last costal and part of the seventh therefore meet on the midline. On the surface, all parts of the carapace are ornamented weakly with pits (proximally) and net-like sculptures (distally). No smooth marginal band is seen in present form as in the species just described above. For measurements of the costal plates, a reference may be made in the table in the Chinese text.

Comparison: Since there is no preneural in preservation, the specimen is therefore somewhat difficult to be determined between genera *Amyda* and *Aspideretes*. It is here provisionally referred to the latter basing only on the reason that a preneural plate is mostly present in Cretaceous trionychid.

Although the present species was found from the same locality and bears a same geological age with *A. maortuensis* just described above, the structure of them is apparently different. The important differences may be summarized as following:

<i>A. alashanensis</i>	<i>A. maortuensis</i>
Carapace nearly as long as broad or slightly longer.	Carapace longer than broad.
Seven neurals.	Eight neurals.
Distal length of sixth costal longest.	Distal length of third costal longest.
Rib-end not projected apparently beyond carapace.	Rib-end projected greatly beyond carapace.
Ornamented chiefly with pits.	Ornamented chiefly with net-like sculptures.

The present species is closer to *A. subquadratus* of upper Cretaceous of North America. They resemble each other not only in size and appearance, but also in number of neurals and ornamentation. However, by the structure of some neurals (such as the sixth and seventh) and the feature of the costals, we can still distinguish our species from the American.

So far as the record is known, there were only some fragments of fossil turtles found yet from Mesozoic bed in Inner Mongolian Autonomous Region. The present two species

of genus *Aspideretes* described above hence represent the first determinable forms of Mesozoic fossil turtles in this area.

The fossil locality of Maortu, Alashan, is a new locality of vertebrates. According to the determination of fossil turtles and judging from the other reptilian remains, the geological age of fossil-bearing formation is regarded as early Cretaceous or slightly later.

Besides the materials described above, there are a lot of fragments of fossil turtles collected also from Maortu. They are V.2866—2866.5. All these specimens are too broken for making a generic and specific determination.

V.2866 is a specimen including an impression of carapace and a badly damaged plastron. The carapace is ovoid in form and has a length of 300 mm, a wide of 245 mm. The plastron is rather reduced and the bones of it are not cognizable. In view of the shape of the plastron, it is apparently not a trionychid and probably a hard-shelled turtle.

In the specimens V.2866.1, there is a hypoplastron of trionychid (Pl. VIII, 3). It is 115 mm. in width and 40 mm. in length at inguinal notch. The general structure of this plate is somewhat similar to that of *A. maortuensis*, but the exact identification of it is still difficult to be determined.

2. MATERIALS OF ERLIEN (IREN DABASU)

The specimens from Erlien are very rare and broken (V.2867—2867.8). They belong mostly to trionychid except two pieces which belong to hard-shelled turtle. All these specimens are too broken for making an exact determination. The geological age of the fossil-bearing formation is regarded as late Cretaceous judging from other fossil reptiles yielded in association.

II. CENOZOIC TURTLES

1. MATERIALS OF ULA USU

Testudinidae

***Testudo* Linn.**

***Testudo sharanensis*, sp. nov.**

(Fig. 3; Pls. IV, V, VI)

Holotype: An incomplete carapace, a complete plastron and some fragments; fourth neural, second and third costals of right and most peripherals of carapace missed. Field No. 7053, Cat. No. of IVPP V.2868.

Paratype: A complete plastron and some fragments of carapace. Field No. 7101, Cat. No. of IVPP V.2868.1.

Locality and Horizon: Ula Usu, Inner Mongolian Autonomous Region. Upper Eocene.

Diagnosis: Size large, carapace elongated and highly arched. Eight neurals, eight pairs of costals and three suprapygals. Second neural octagonal, third tetragonal, others hexagonal. Costals alternately longer and shorter. Fourth intervertebral sulcus runs through first suprapygal. Nuchal scute small, supracaudal scute divided. Plastron relatively small, bridge wide, epiplastron projected forwards. Entoplastron hexagonal,

humero-pectoral sulcus runs behind it. Median length of pectoral one-third the same of abdominal. Anterior border of plastron concaved shallowly and posterior margin of it concaved deeply.

Description: The size of carapace is large and with an elliptical outline. The carapace is about 465 mm. in length, 325 mm. in width and highly arched. All the vertebral scutes are wider than long, and the fourth intervertebral sulcus runs through the first suprapygal instead of eighth neural. There are eight neurals, two supracaudals and three suprapygals. The neurals are broader except the first one which is longer and ovoid in shape.

As same as in usual species of *Testudo*, the second neural of our specimen is larger and octagonal, and the third one is smaller and more or less tetragonal in form, but the following ones are hexagonal. The costal plates are alternately longer and shorter proximally and shorter and longer distally. As for the connection of the costals with neurals and suprapygals, a reference may be made in Fig. 3 and Pl. IV.

The plastron of holotype is entirely complete. It has a length of 390 mm., and a width of 300 mm. which is smaller and shorter than those of carapace. The bony bridge is wide, occupying a fore-and-aft extent in 215 mm. it is more than half the length of plastron. The anterior border of plastron is concaved shallowly, and the posterior one of it is concaved deeply. The entoplastron is somewhat hexagonal in form, and situated anterior to the humero-pectoral sulcus. As the same condition as in common species of this genus, the epiplastron of the present form is very thick, and projected slightly beyond the anterior margin of the plastron. The median length of pectoral scute is about one-third the same of abdominal. The femoro-anal sulcus runs forward in middle while backwards laterally. For the measurements of the bones of plastron, and the neurals and costals of carapace, the reader is referred to the accompanying tables in the Chinese text.

In the paratype, the arrangement and the structure of all bones are closely similar to those of holotype (Pl. VI). But the median length of pectoral scute of paratype is much shorter than that of holotype. It is probably due to the result of compression or even individual variation.

Comparison: The highly arched carapace, the broad, octagonal second neural and the smaller, tetragonal third one, the distinct alternation of costals in length in proximal and distal ends and the projecting epiplastron of plastron of present specimen are typical characters of genus *Testudo*. But the hexagonal shape of posterior five neurals, the three suprapygals, the position of fourth intervertebral sulcus and the divided supracaudal scute of our species are different features in common forms of mentioned genus, while somewhat resemble in this or that way to those of primitive genera of Testudinidae such as *Stylemys* and *Hadrianus*. However, in *Hadrianus*, all the neurals are hexagonal, and in *Stylemys*, so far as we known, all the members are Oligo-Miocene forms, no Eocene example has been yet known in our knowledges. The specimen of Eocene from Inner Mongolia, therefore, seems better to be considered as *Testudo* rather than others. The characters of the hexagonal shaped of 4th and 5th neurals and the three suprapygals of it may be explained as primitive ones.

A specimen also from upper Eocene of Shara Murun Region has been described by Gilmore as *Testudo ulanensis* in 1931. It is a specimen including only about two-thirds posterior plastron and some fragments of carapace. Although it is impossible to make

an entire comparison between *T. ulanensis* and ours, the features of the costo-marginal sulcus which runs much below the costo-peripheral suture, and the widely concave posterior border of plastron of Gilmore's are quite different from new species. As the carapace of *T. ulanensis* is not in preservation, we do not know whether it bears some primitive features or not.

Additional to these two species mentioned above, there is another member else of upper Eocene of Testudinidae described in China. It is *Sinohadrianus sichuanensis* from Sichuan, Honan. According to the original description of Ping (1929), the neurals of this species are hexagonal in form except the first and fourth which are oval and octagonal, and the first four pairs of costals are not alternated in length at inner and outer ends, only the last four pairs slightly with such a tendency. It is apparently a primitive member of Testudinidae too. All these discoveries of early forms of this kind of turtle are essentially significant in studying of early development of Testudinidae.

There are many fragments else of fossil turtles collected also from Ula Usu (V.2869—V.2869.9). They are fragments of hard-shelled turtles.

The specimen V.2869 includes several broken peripherals and costals. The colour and the thickness of these bones, and the structure of peripherals are very similar to those of *T. sharanensis*. The specimens V.2869.5 and V.2869.6 consist of some broken pieces of carapace and two epiplastra. Although the epiplastron of former is larger and that of latter is smaller, the structure of them is essentially similar to that of *T. sharanensis*. All these specimens are therefore considered here as the another individuals of mentioned species.

The other fragments are too broken for determination. They may be some fragments of Testudinidae or even of Dermatemydidae.

2. MATERIALS OF ULAN SHIREH

Trionychidae

Amyda Oken

Amyda neimenguensis, sp. nov.

(Fig. 4; Pl. VII)

Type: An imperfect carapace with its nuchal, first neural and several anterior costals of right broken. Cat. No. of IVPP V.2870.

Locality and Horizon: Ulan Shireh, Inner Mongolian Autonomous Region. Upper Eocene.

Diagnosis: Carapace large and subcircular in form. Seven neurals, last one much reduced. Eight pairs of costals, eighth and part of seventh concated each other on middle line. Length of anterior seven costals longer distally, and that of sixth two times longer than that of proximal one. Surface of carapace ornamented with unequal pits, marginal smooth band about one-third width of costal plate.

Description: The size is large, the carapace is depressed and subcircular in form. The complete carapace is about 500 mm in length and same in width. Since the carapace is broken in front, the structure of anterior border is therefore unknown. The posterior border of carapace seems slightly wider than anterior, and is truncated in a whole but

concaved shallowly just in middle. There are seven neurals. The first one is damaged entirely; the second to fourth are hexagonal and with their narrower ends in front. The fifth seems rectangular in form; the sixth, which reduced posteriorly in size, is also hexagonal but with its broader end in front. The last one is greatly reduced and subcircular in shape. With the exception of eighth, all the costals are longer distally, and that of sixth is two times more longer than its proximal one. Since there is no eighth neural and the seventh is reduced, the eighth and part of the seventh costals are therefore concatenated on the middle line. The surface of the carapace is ornamented with different pits, and the marginal smooth band is about one-third the width of the costals. The ribs are rough in size and projected greatly far beyond the margin of the carapace. For other detailed structure of carapace and the measurements of neurals and costals, one may be referred to the Pl. VII and the accompanying tables in the Chinese text.

Comparison: Five fossil species of genus *Amyda* have been described in China, of which only one species is so far known from Eocene, it is *Amyda johnsoni* of Irдин Manha, Inner Mongolia. According to Gilmore (1931), the estimated complete carapace of this species has a length of about 400 mm., and a greatest width of 390 mm. The species is the closest one of our form. They resemble each other in number of neurals and in structure of costals. But they differ in following points: 1) the size of our specimen is larger, 2) the shape of sixth neural of new form is hexagonal, while that of Gilmore's is somewhat rectangular, 3) the ornamental pit of present species seems larger and deeper, and the marginal smooth band is wider, and 4) in our specimen, there is no shallow depression running through the median part of the carapace same as that in *A. johnsoni*.

The present form is the largest specimen of trionychids so far known in China. The new specific name, *Amyda neimenguensis*, is derived from latinized Chinese meaning "Inner Mongolia".

In the collection of Ulan Shireh, there are a lot of fragmentary specimens of fossil turtles else (V.2871, V.2872—V.2872.4). Most of them are too broken and needless to describe. Two of them are somewhat interesting and are briefly described below.

The specimen V.2871 includes a broken carapace and a connected plastron which is broken too. The carapace appears somewhat arched, and has a length of about 170 mm. and a width as the same. The second and fourth neurals are larger and octagonal in form, the third one is smaller and tetragonal. In view of the third and fourth costals which are better in preservation, they are typically alternated in length proximally and distally. The plastron is deeply concaved posteriorly, and the median length of pectoral is about one-third the same of abdominal (Pl. VIII, 1, 2). According to these characters, the specimen belongs, no doubt, to the genus *Testudo*.

The specimen V.2872 includes only three posterior costals (Pl. VIII, 4). The ornamentation of it though somewhat resembles to that of *Amyda neimenguensis*, a new species just described above, but the structure of bones, especially the size of both are quite different. It may be another species of *Amyda* in this collection.

3. MATERIALS OF IRDIN MANHA, TUNG GUR AND URTYN OBO

All the materials collected from Irдин Manha, Tung Gur and Urtyn Obo are broken. The specimens from Irдин Manha are mostly fragments of trionychids and some damaged

limbs (V.2873). The materials of Tung Gur are rare, and chiefly represented by fragments of hard-shelled turtles (V.2874). In the collection of Urtyn Obo, there are only several broken plates (V.2875). All these specimens of mentioned three localities are too bad to make an exact determination. Judging from the other fossils found together with these turtles, the fossil bearing formations of these three localities are respectively of late Eocene, Miocene and Oligocene in geological age.

CONCLUSION

In the present paper, two species of one genus of Mesozoic turtles, and two species of two genera of two families of Cenozoic turtles are described. So far, all the members of fossil turtles known in Inner Mongolia are fifteen species, eight genera and five families. They may be summarized as table in the Chinese text (see pages 59—60).

In view of the geological history, since the earliest record of fossil turtles of Inner Mongolia appeared in early Cretaceous, most succeeding geological epoches of this area are represented by its members. The stratigraphical distribution of it may be now summarized as the table in the Chinese text (see page 60).

In 1931 and 1934, Gilmore published respectively the results of his studies of fossil turtles collected from Mongolian People's Republic and Inner Mongolian Autonomous Region of our country by Asiatic expeditions of the American Museum of Natural History. In these papers, eleven species of seven genera of five families of fossil turtles from Inner Mongolia were described¹⁾, but no Mesozoic species was reported except some fragments. The two species of trionychid described in the present paper hence become the first determinable record of Mesozoic form in this area.

As shown in the table on pages 59—60, the members of fossil turtles known in Inner Mongolia are mostly comparable with those of North America. They not only resemble each other in nature of groups, but also sometimes in some genera or even species. The fact seems indicating that the fossil turtles of Inner Mongolia are closely related to those of North America.

As early as the record in other countries, three species of family Testudinidae have been reported in China from Eocene. They are *Sinohadrianus sichuanensis* of Honan, *Testudo ulanensis* and *T. sharanensis*, sp. nov., of Inner Mongolia. With the exception of *T. ulanensis* which is not so complete, the structure of *S. sichuanensis* and *T. sharanensis* is essentially more primitive. They seem some representatives of earliest evolutionary stages of this group.

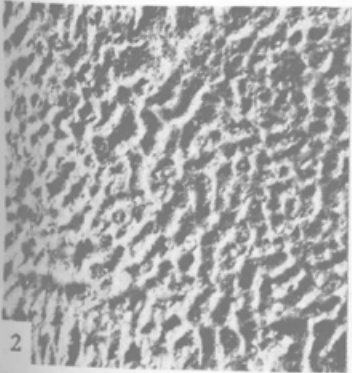
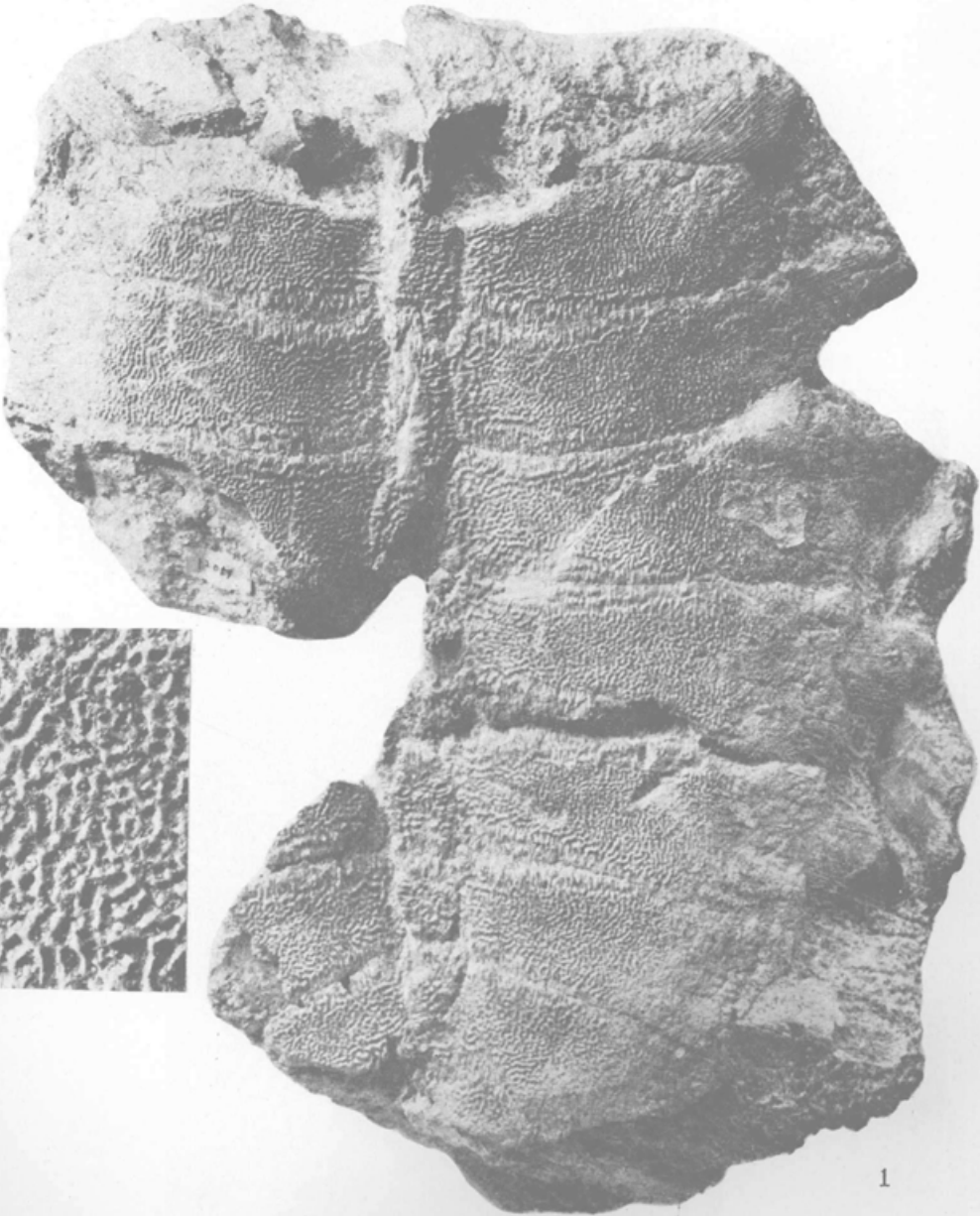
In the family Trionychidae, we not only found its members from Inner Mongolia and many other localities in upper Cretaceous as early as in other countries, but also, as we have seen in the present paper, found them in lower Cretaceous, and even in upper Jurassic (*Sinaspidcretes wimani*, Young and Chow, 1953). All these latter forms are apparently earliest representatives of this family so far known in the world. The original history of Trionychidae is thus traced back by us from upper Cretaceous to upper Jurassic. The fact is certainly very interesting in studying the development of this group.

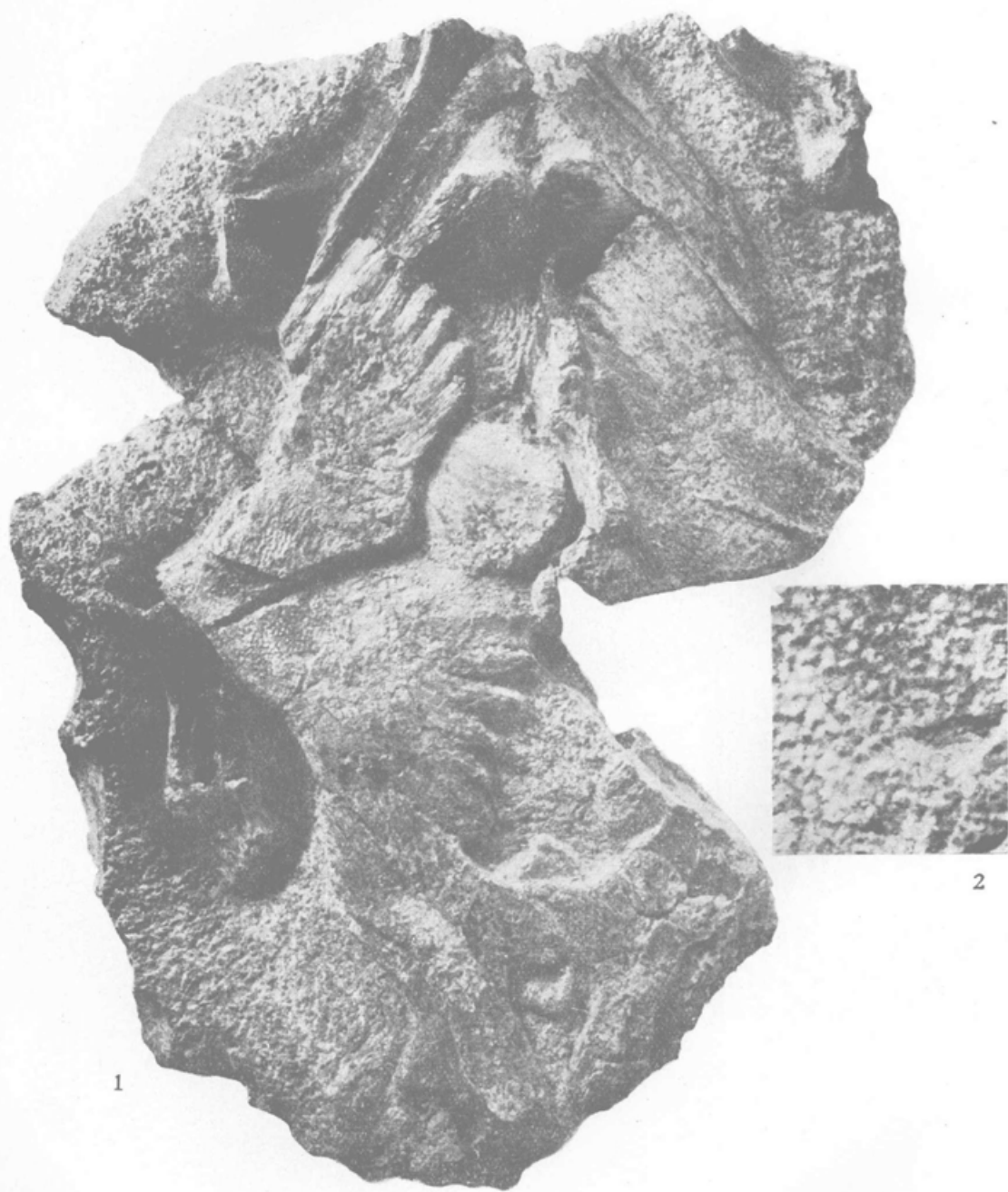
1) It is four families in the original paper. The fifth one, Carettochelyidae, is added by the present writer for genus *Anosteira* which was originally included by Gilmore, together with genus *Adocus*, to the family Dermatemydidae.

图 版 I.

Aspideretes maortuensis, sp. nov. V.2864.

1. 正型标本背甲背视 (Type, dorsal view of carapace), ca. $\times 1/2$;
2. 部分肋板放大, 示纹饰 (Part of costal enlarged, showing the sculpture), $\times 2$ 。



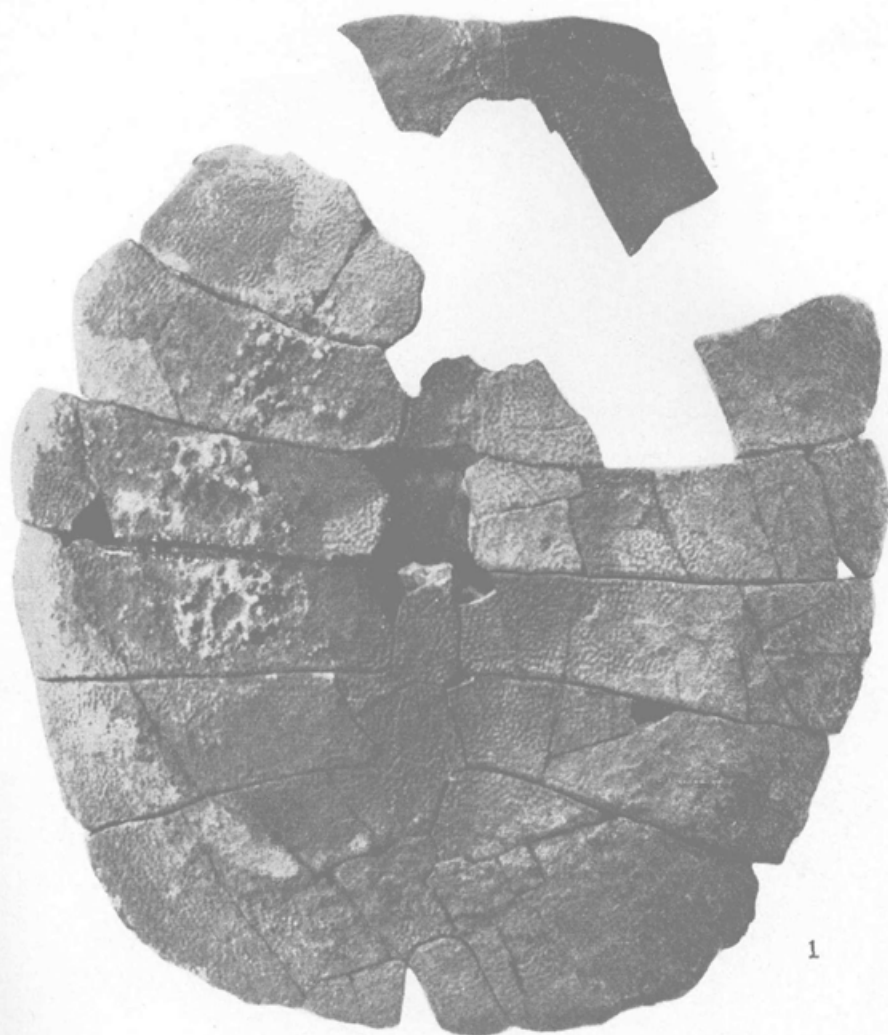


1

2

Aspideretes maortuensis, sp. nov. V. 2864.

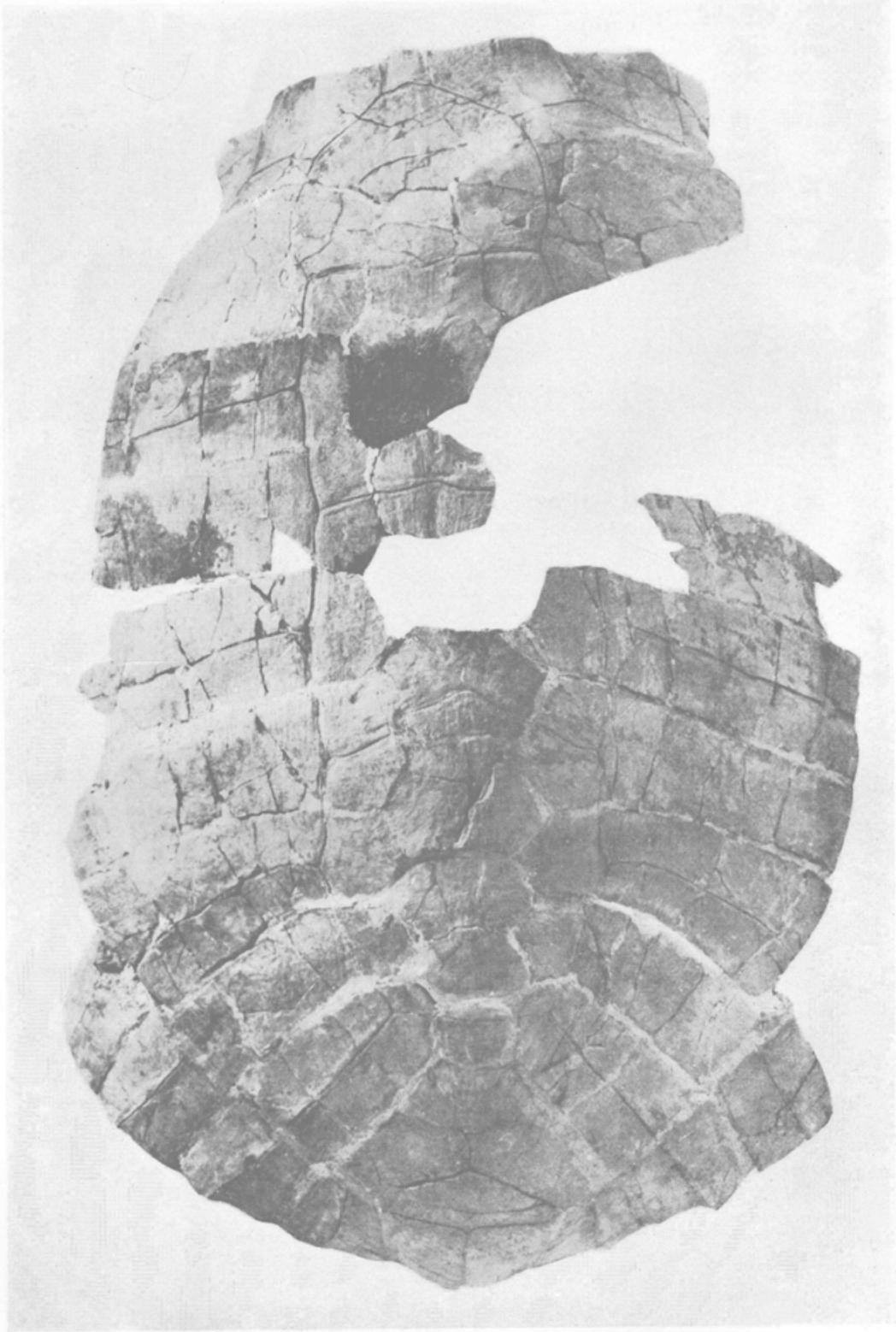
1. 正型标本腹甲及部分内骨骼腹视 (Type, ventral view of plastron and parts of endoskeleton), ca. $\times 1/2$;
2. 右, 下腹甲部分放大, 示纹饰 (Part of right hypoplastron enlarged, showing the sculpture), $\times 2$.



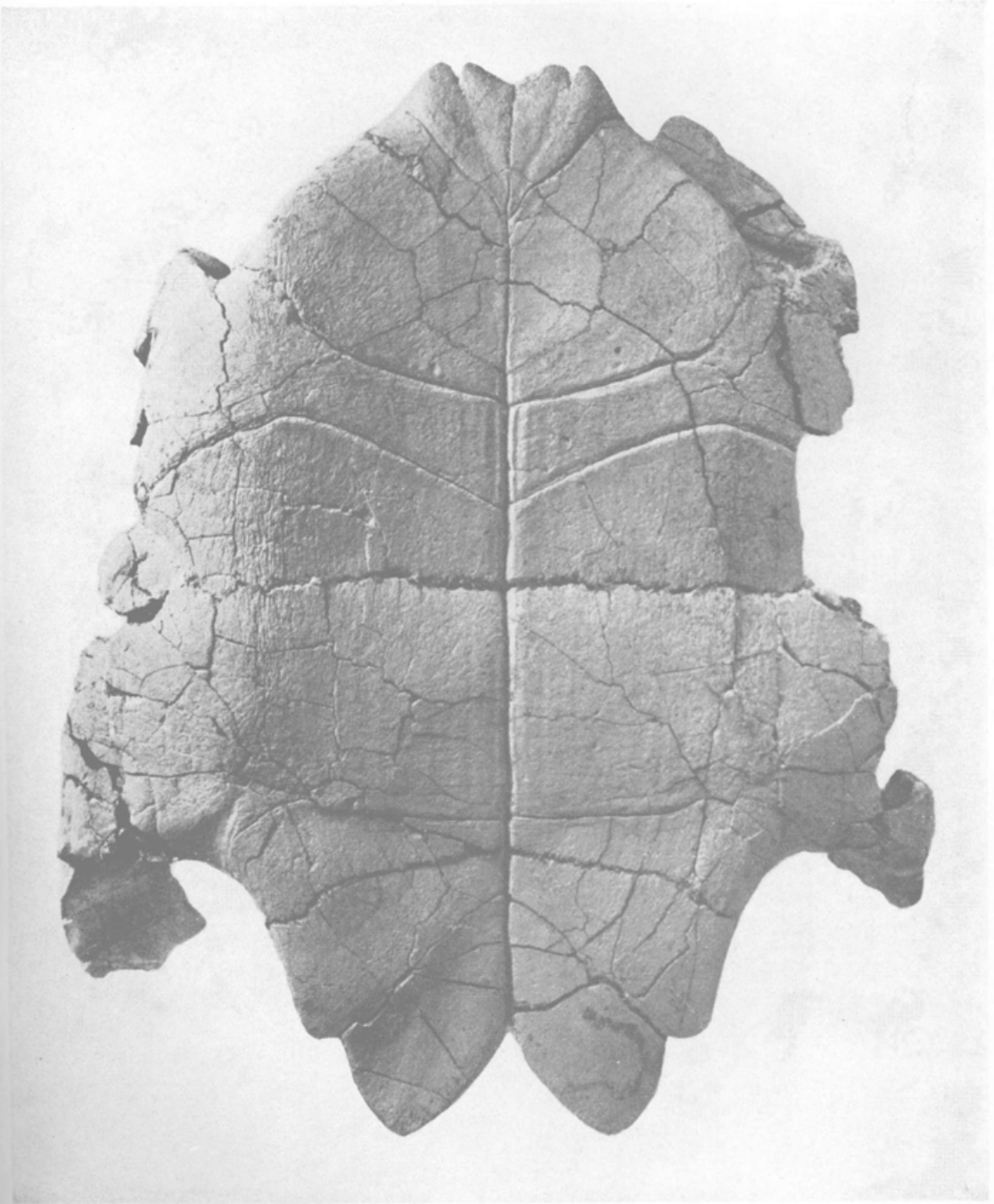
?*Aspideretes alashanensis*, sp. nov. V. 2865.

1. 正型标本背甲背视 (Type, dorsal view of carapace), ca. $\times 1/2$;

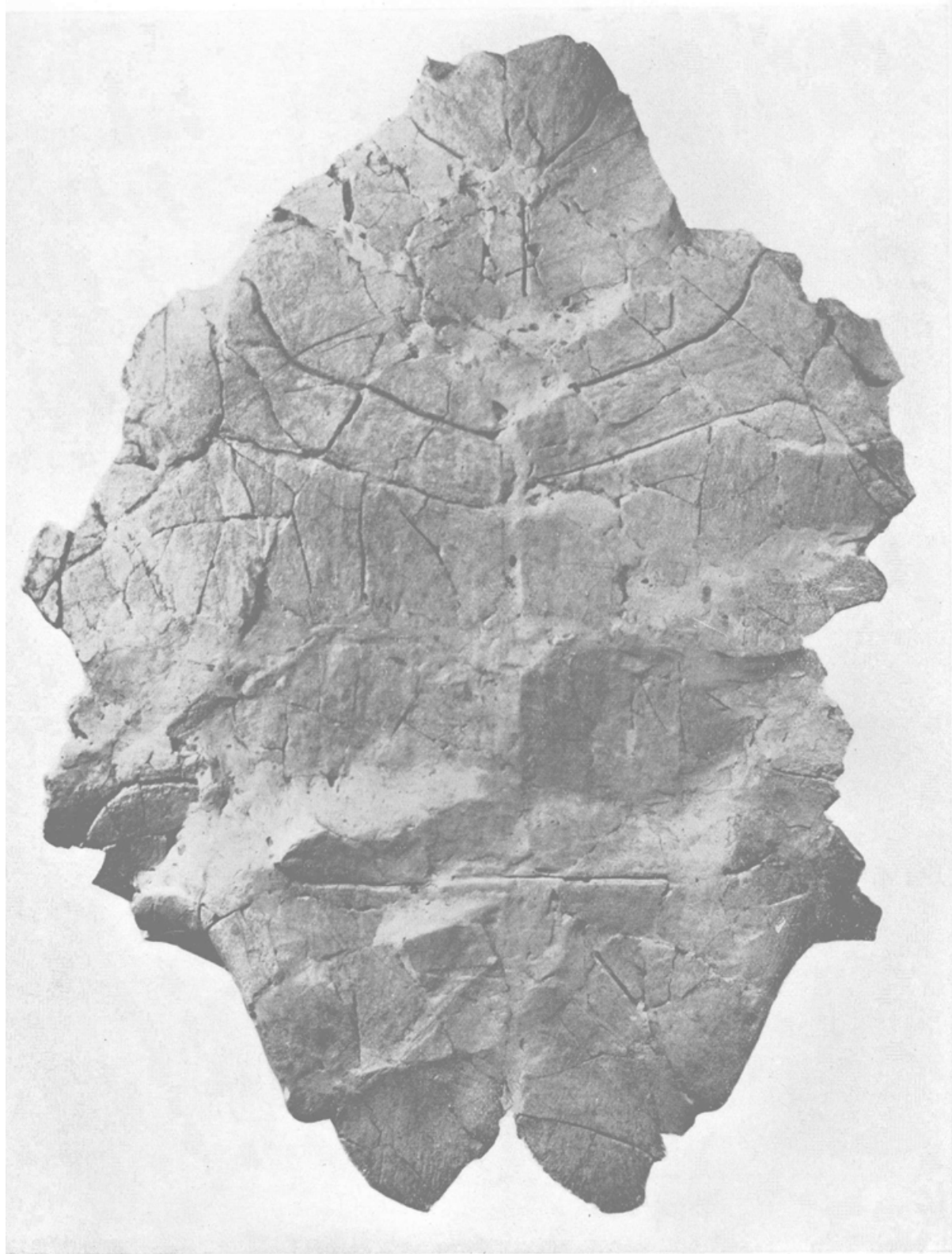
2. 部分肋板放大, 示纹饰 (Part of costals enlarged, showing the sculpture), $\times 2$.



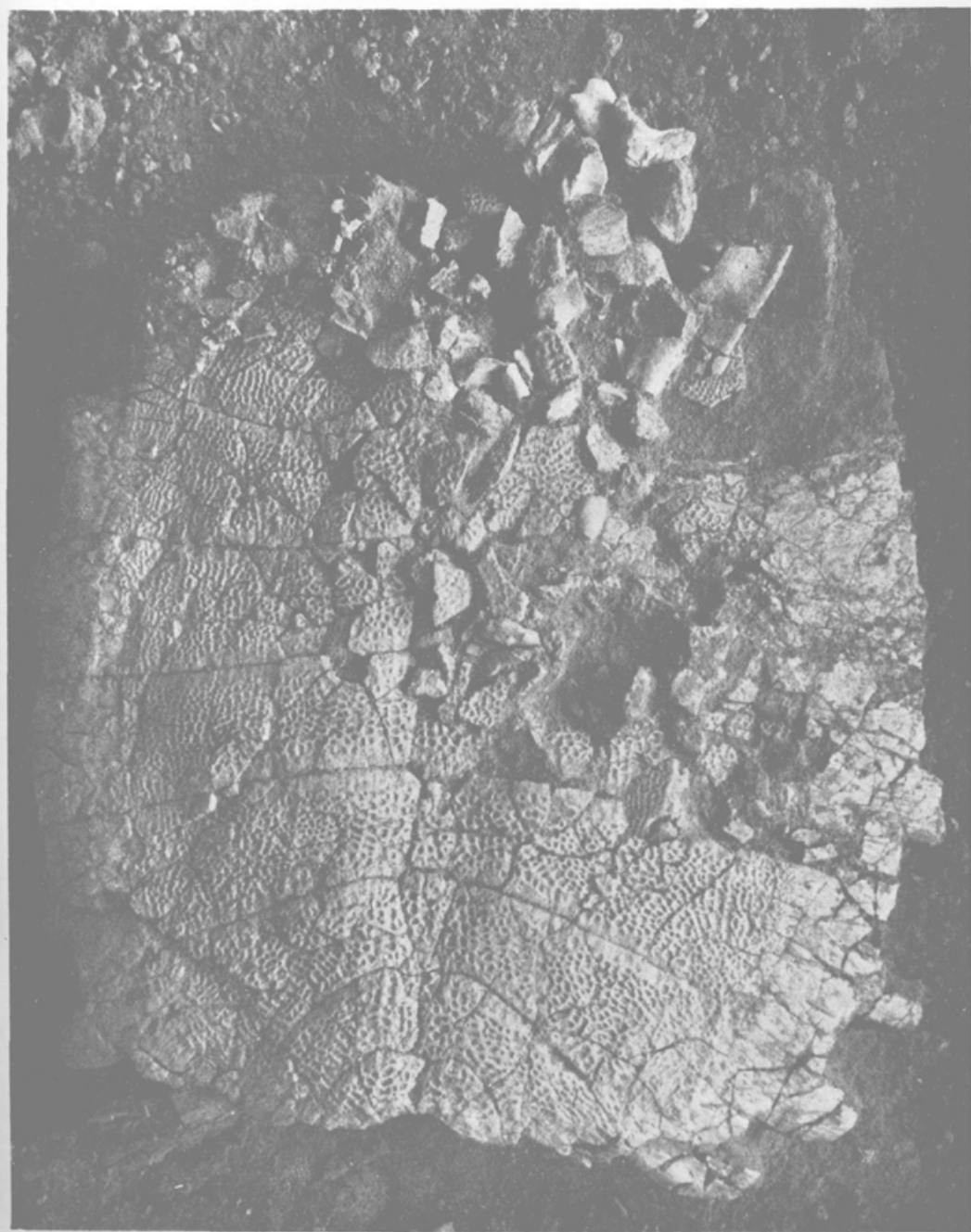
Testudo sharanensis, sp. nov. V. 2868, ca. $\times 2/5$.
正型标本背甲背视 (Holotype, dorsal view of carapace)。



Testudo sharanensis, sp. nov. V. 2868, ca., $\times 2/5$,
正型标本腹甲腹视 (Holotype, ventral view of plastron).

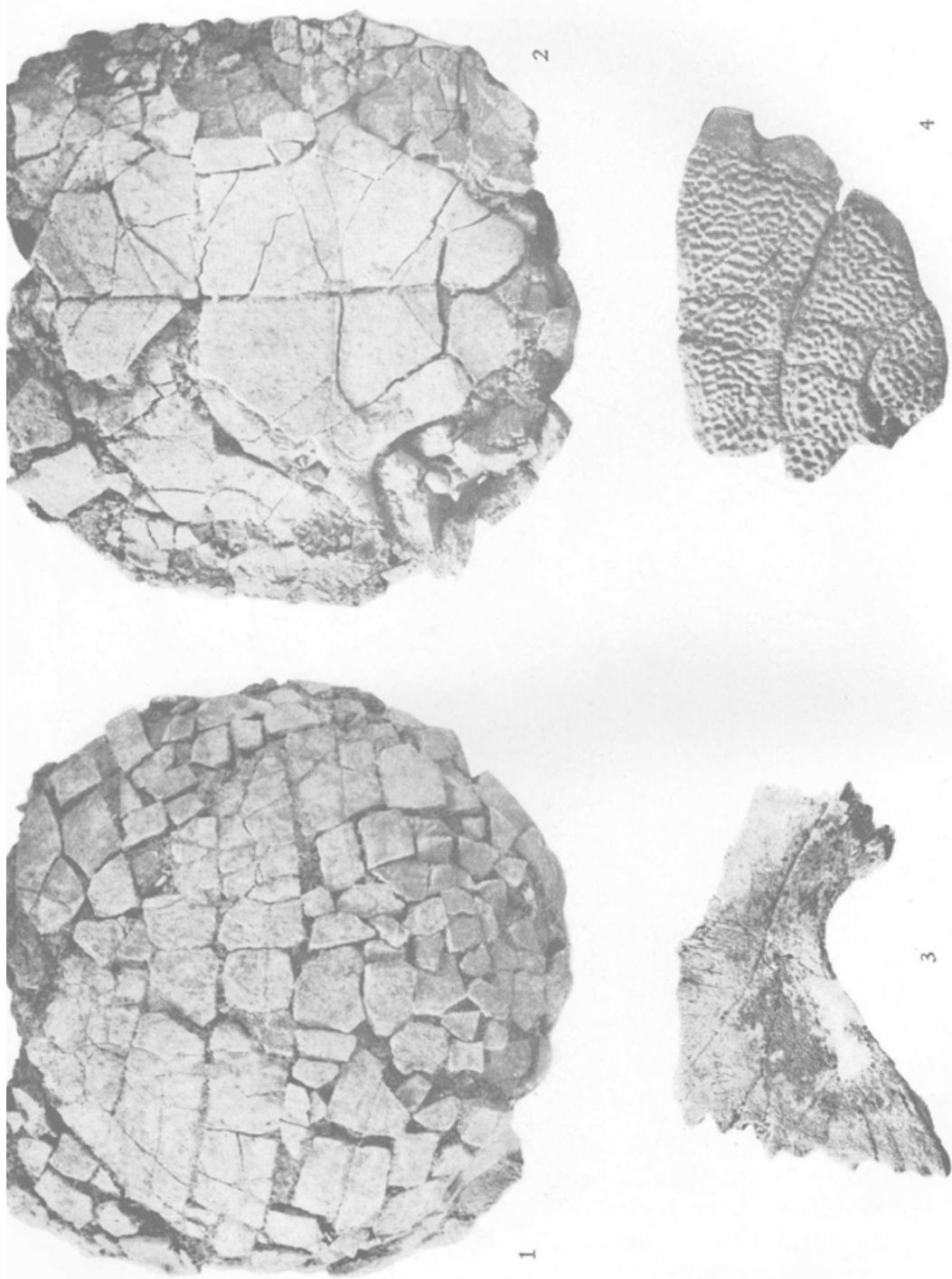


Testudo sharanensis, sp. nov. V. 2868.1, ca., $\times 2/5$.
副型标本腹甲腹视 (Paratype, ventral view of plastron).



Amyda neimenguensis sp. nov. V. 2870, ca. $\times 1/4$.

正型标本背甲背视 (Type, dorsal view of carapace)。



1 和 2. *Testudo* sp., V. 2871, ca. $\times 1/2$.
破甲背, 腹甲背(1)腹(2)视 (Dorsal and ventral views of broken carapace and plastron).
3. *Aspideretes* sp., V. 2866, 1, $\times 1/2$.
下腹甲腹视 (Ventral view of hypoplastron).
4. *Trionychidae* indet., V. 2872, $\times 1/2$.
下腹甲腹视 (Ventral view of hypoplastron).