

Materials for the Study of Fauna of Northern China, Manchuria and Mongolia

Reptilia and Amphibia.

Part I. Chelonia

by

P. Pavlow

28 avril 1932



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Part 1.

Chelonia of North China and North Manchuria.

other groups of Reptilia will follow this one, in separate memoirs.)

the collections of our Museum* 5 species of Chelonia are present, which
three families: Testudinidae, Chelonidae and Trionychidae.

TESTUDINIDAE.

of this family, in Northern China, only *Geoclemys reevesii* Gray, is found.
The *Geoclemys* Genus has the following, sharply marked and therefore
distinct peculiarities: The Carapace has three keels. The fore-paws
have talons, the hind ones, four. Fingers are joined by a swimming mem-
brane. The tail is either short, or of a moderate length.

I. GEOCLEMYS REEVESII GRAY.

(See plate 1)

Synonymy: Emys Reevesii Gray, *Emys vulgaris picta* Ichlegel, *Emys Ja-*
Dumeril, *Damonia unicolor* Gray, *Damonia reevesii*, var. *unicolor* Boulenger,
sinensis Okada, *Clemmys reevesii* Strauch.**

The head is very projected. The jaws edge have no cuttings, no hook-
projection. The front part of the head and the muzzle are covered with
a smooth shield. The temples are also protected with shields. The Car-
apace has three ribs. Its hind edge is uncut, but has a small triangle scallop.
The first one is of a feebly marked heart-shape. The width of the vertebrax
is from two to four times bigger, than that of the ribshields. The car-
apace (Plate I, Fig. 1, left) is covered with 38 shields: Vertebrax—5, rib-shields
one-shield—1, and edge-shields—24. That of the mane is very small. The
carapace (Pl. 1. Fig. 1, right) is slightly bent in, with an angle cutting on the
back shields. It has 12 shields. Moreover there are 2 or 3 shields on the
side of the hind-paws and two on the inner side of the fore-ones. The
fingers are joined with the swimming membrana down to their ends. The tail
is from one-third to one-half of the length of the Carapace. The
color is usually of brownish colour with indistinct five-angled spots on
the shield.

* The Hoang ho Pai ho Museum is only interested directly in the provinces the waters of which
flow to the Gulf of Pei tchely (Hoang ho, Paiho, Lwan ho and Leao ho basins).

** The synonymical data of this work are taken from "Hepetology of Japan and Adjacent Territory",
L. Stejneger. Washington 1907.

Sometimes, but rarely, it is of a cherry-brown hue and, still more rarely, it is quite dark-brown, almost black with more light-brownish spots; the edges of the Carapace-shields have yellow stripes, sometimes they are almost white, and rarely grey or nearly black. On the bottom, the Carapace is yellowish with brownish spots. The plastron is yellow or of the colour of bone with a large brown or light-brown spot on each shield. These spots are sometimes so large that the whole surface of the plastron seems brown or slight-brown. In rare instances the usual brown spots are supplied with black ones, and still rarely, there may be found representatives of the *Geoclemys Reevesii* Gray with a dark-brown and even black plastron. As a real rarity, there are specimens with a yellowish-rose plastron with brown spots. The edges of the plastron's shields are yellow on the seams, or of a bony colour. Rarely they are white or greyish-green. On the seams joining the top and bottom shells there are, usually, also brown or light-brown spots, and sometimes these edges are unicoloured black. On the top-side, the head is greenish-grey, olive, olive-green or greenish-brown.

After the period of moulting, it is almost black of a lustrous, as lacquered aspect which turns into chagrin at the back-part of the head. The neck is coloured in olive-green, greenish-grey, black, dark-grey, and slate-grey shades.

On both sides of the head, there are usually two yellow or greenish stripes, and on the middle and sides of the neck, usually, three yellow or green stripes with spots of same colours. Only in one instance I had in my hands a specimen of the *Geoclemys Reevesii* which was without these so characteristic for the given species light stripes and spots. On the bottom surfaces of the head and neck there is usually a yellowish, greenish or yellowish-brown, marble-like design. In the specimen classified under No. 535, the bottom surfaces of the head and neck are of a slate-gray colour without any design on them. The paws and tail are of: olive-greenish, greenish-brown, greyish-black, grey, grevish-brown, greyish-black, grey and slate-grey colours. On the paws and tail there are tiny yellowish, brownish, blackish or greyish plates with a lackered-like surface. The fingers have white stripes on their conjunctures with the talons, and the latter have either dark-brown, brown or yellow, or white transparent ends.

The eyes are of a yellowish hue with black pupils.

Of all the species inhabiting the Far-East, the Chinese Turtle is the commonest one. The Chinese natives distinguish certain varieties in accordance with their colours as: brown Turtle, brownish-black (var. unicolor), and golden-yellow. In old age, this Turtle is often covered with weeds and then it is usually classified as "the Green-haired." The "Green-haired" Turtle is considered by the Japanese as a symbol of reverend oldness.

A Turtle with a prominently convexed shield is considered by the Chinese as a good Genius, and its representations, cut from stone, are being placed at the entrances of shrines and on graves.

N. B. Within the regions of Northern Manchuria and Outer Mongolia, a convexed Turtle has not been detected up to now, though I, personally, have heard from numerous individuals that they chanced to see such specimens. If this will be confirmed by the scientific explorations, the case is to be considered

an instance of the adaptation of the "Geoclemys Reevesii Gray," surviving a more severe climate, than it was for their forefathers. This theory may be partially confirmed by the frequent habit of the Chinese gardeners and green-houses to keep this very species of Turtles in their hot-houses. While hatching, the newly-born Turtle makes a small hole in the egg in front of the head. The Turtle embryos are of an almost round shape, of 15 m.m. in diameter, and have already a clearly marked presence of the Carapace of reddish-brown hue with yellow seams. Such extracted embryos were, at the time of the examination, still fastened to their eggs. In the instance I describe at present, four eggs had been opened, but the state of the development of each separate embryo was nearly identical.

At the period when a Turtle changes its skin, the old one is firstly dropped off the head and paws and then off the tail. (*Plate 1, Fig. 3*). The "Geoclemys reevesii" are at this period extremely apathic, taking their food quite unwillingly, and spend almost the whole of this period dug in mire. This species of Turtles survives comparatively well in captivity; it is very docile and never makes any attempt to bite. Being overturned on its Carapace, it may easily turn itself to its normal position by aid of the paws and neck. It crawls on, chiefly, at night time, producing with its plastron a peculiar sound, such as of moving bones.

Only little may be said of the three-keeled Chinese Turtle's biology: it inhabits low, fresh waters. Being kept in captivity, it takes for food various kinds of bread, worms and raw meat, cut into small pieces. In an aquarium, containing this species, something like a shore or rocks must be erected on which the Turtles might crawl. It is also very desirable to plant there some weeds and moss.

It lays its eggs (*Plate 1, Fig. 2*) into dry sand. The eggs of the Chinese, three-keeled Turtle are spheroid, with a very thin shell. Their colour is yellowish, and the average diameter is 19 m.m.

The egg-laying period takes place in June.

The three-keeled Chinese Turtle inhabits China, from Tientsin to Canton and Hankow, Southern Japan and Korea.

Within the boundaries of Russia, only one dead specimen of these Turtles has been found, evidently thrown ashore by the waves. It was found on the shore of the Behring Isle and, to all probability, came from Japan, carried by the waves or thrown away from some boat.

LIST OF SPECIMENS OF *GEOCLEMYS REEVESII* GRAY, KEPT IN HOANG HO
PAI HO MUSEUM.

No. 1 a.	Tientsin	27. III. 1915.	Père Licent.
No. 1 b.	"	27. III. 1915.	Père Licent.
No. 2 a.	"	27. III. 1915.	Père Licent.
No. 2 b.	"	27. III. 1915.	Père Licent.
No. A.	"	30. III. 1930.	I. Kozloff.
No. B.	"	30. III. 1930.	I. Kozloff.
Nos. 525—530, 535, 536	"	28. III. 1931.	P. Pavlov.
No. 537.	"	28. III. 1931.	Père Licent.
No. 622.	"	27. III. 1915.	Père Licent.
Nos. 531—533, 538, 498	"	28. III. 1931.	P. Pavlov.
No. 2 c.	"	27. III. 1915.	Père Licent.

Nos. A. & B. were measured alive.

**Measurements of the Specimens of
Geoclemys Reevesii Gray
of
The Hoang ho Pai ho Museum**

Measurements of the

	1a.	1b.	2a.	2b.	2c.	A.	B.	525	526	527	528
Length of the Carapace	80	80	72	62	72	90	70	61	65	47	56
Width of it	50	50	55	50	50	60	62	45	47	25	21
Length of the plastron	60	62	69	60	63	70	52	50	56	31	30
Width of it	20-45-15	20-45-15	20-40-15	20-40-15	20-40-15	25-60-20	50-15-10	17-33-15	25	21	13
Length of the head	22	22	22	20	22	30	22	20	21	13	10
Width of it	5-15	5-15	5-15	3-14	5-15	24	5-15	11	13	10	10
Length of the neck	17	17	17	15	17	23	17	20	30	10	10
Width of it	10	10	10	8	10	10	10	7	10	10	10
Length of the fore legs	36	36	36	30	30	37	36	30	35	10	10
Fore width	6-9	6-9	6-9	5-8	6-9	7-10	6-9	10	10	10	10
Length of the hind legs	37	37	37	35	37	38	37	37	40	12	12
Fore width	13-5	13-5	13-5	10-4	13-4	14-5	13-5	10	12	12	12
Length of the tail	30	28	26	29	31	14	26	30	36	40	40
Width of it	1-6	1-7	1-7	1-6	1-6	5-8	1-7	1-10	3-12	3-1	3-1
Length and width of the eyes	7	7	7	7	7	8	7	4	5	5	5
Sex and age	♀ ad.	♂ ad.	♂ ad.	♀ ad.	♀ ad.	♀ ad.	♂ ad.	♂ ad.	♀ ad.	♀ ad.	♀ ad.

Specimens of *Geoclemys Reevesii* Gray

	528	529	530	531	498	532	533	535	536	538	537	622
	50	77	70	74	65	70	50	92	70	80	73	70
	40	55	50	53	48	50	40	61	50	57	52	53
	45	71	60	63	55	55	43	78	60	70	65	60
-15	15-25-13	17-35-13	20-33-15	20-32-17	16-30-14	16-33-14	14-22-12	22-44-22	22-35-14	22-37-17	20-35-20	25-45-18
	15	22	20	23	20	20	15	27	25	27	24	22
	10	15	15	14	13	14	11	17	15	16	15	15
	20	35	30	30	25	28	20	40	30	36	30	22
	8	10	10	10	10	10	8	12	12	12	12	10
	25	35	35	35	35	35	25	40	35	37	40	30
	8	10	10	10	10	10	9	12	10	11	12	15
	30	40	40	42	42	45	30	50	40	45	50	35
	10	10	10	10	10	10	9	15	13	14	15	15
	30	25	40	35	33	45	30	42	25	40	40	25
-15	1-12	3-12	1-12	1-10	1-10	1-10	1-6	1-14	1-10	1-10	1-10	1-5
	4	7	5	5	5	5	3	7	5	5	5	5
ad.	♂ ad.	♀ ad.	♂ ad.	♀ ad.	♀ ad.	♂ ad.	♂ juv.	♀ ad.	♂ ad.	♀ ad.	♀ ad.	♀ ad.

CHELONIDAE.

Of the Chelonidae family, there is in the collection of the Hoang ho Pai ho Museum only *Eretmochelys Squamosa* Girard. (*Plate 1, Fig. 4*).*

The representatives of this Genus are easily distinguished from other Genuses of Sea-Turtles by their horn shields on the Carapace, which give the impression of serpent skin, with independent back edges.

(*Synonymy: Eretmochelys Squamosa* Girard; *Testudo imbricata* Penant; *Chelonya imbricata* Temminck and Schlegel; *Eretmochelys squamata* Agassiz; *Caretta squamosa* Girard, *Caretta rostrata* Girard, *Chelone imbricata* Strauch, *Eretmochelys squamosa* Stejneger).

The Carapace is leaf-shaped, with three ribs along its length in young specimens, which become more and more smoothed with years, except the vertebrax rib. The shields on the Carapace are free and disposed tile-like. In young individuals those shields are marked with ribs originating at the back-angle of the Carapace and going on radial lines. In the grown-up Turtles the vertebrax shields are smooth, in the shape of romboids and with a rib along the length of the Carapace. There are 35 side-shields forming the bottom edge all around the Carapace. As to the plates on the ribs and vertebrax, the specimens I dealt with had (4+5+5) but the usual number is (4+5+4). The middle plates of the plastron have always the strongly developed length ribs and their situation may be expressed by the following formula: (1 + 2 + 4 + 4 + 4 + 2 + 4 + 2 + 2). The enclosed photography (*Plate 1, Fig. 4*) gives a clear idea of the exact form of the Carapace and plastron. Besides the shields enumerated above, there are on the plastron, close to the fore lasts, five small plates on each side. The top of the head is covered with regularly-shaped plates, joined together on their edges. These shields or plates may be put under the formula (2 + 2 + 3 + 3 + 4), or (2 + 2 + 3 + 3 + 2). Around the eye-socks there are small plates and on each side of the head five large and five small plates.

The beak of the upper jaw is slightly turned downwards. It is straight-lined and has no cuttings. There are also some shields on the lasts. On its top surface the Carapace is yellow with brown spots of different shapes and shades and is so lustrous that it gives an impression of being polished. Closer to its edges, the Carapace is also of lustrous yellow colour, but further on it turns into glazed brownish-grey. The plastron is of glazed yellowish orange hue. The head shields are light-yellow with dark-yellow, brown, or almost black spots. The plates on the lasts are brown on the top with yellow edges, and yellow or yellowish-orange on their under-parts. The tail, as well as the part of the body unprotected with the plastron, and the lasts, have no plates on them and are greyish-yellow. The neck is covered with smooth skin of a greyish colour on its upper surface, and with scattered, small plates, and on the lower surface its colouring and that of the head is yellowish.

* The only specimen, originated from Hong kong, was bought in a shop in Tien tsin and presented by Mr. P. Pavlov to the Hoang ho Pai ho Museum.

The beak is yellowish-orange with almost black stripes and spots.

The length of the Carapace, in grown-up Turtles, reaches 850 m.m. The specimen we have in our Museum is much smaller by its size, and the length of its Carapace is 450 m.m. This Turtle is to be found in the Pacific and Indian Ocean. In the former it may be found far to the North, on the latitude of the north-eastern shores of the Yeso Isle. Almost nothing at all is known of its history.

ERETMOCHELYS SQUAMOSA GIRARD.

No. 534. Hongkong 1931.

.....	534
the carapace	450
it	380
the plastron	320
t	40-300-50
the head	140
it	30-80
the neck	110
.....	65-100
the fore legs	310
.....	40-60
the hind legs	135
.....	50-60
the tail	75
.....	20-65
width of the eyes	30
claws on fore legs	2
claws on hind legs	2
.....	♂ ad.

TRI

Of the "Trionychidae" family may be found only the representative "Amyda" genus is the most numerous and more than one-half of the no Genus. Its representatives inhabit Southern Asia, Africa and North on the top and bottom, with a soft

The skin of the head, tail the ends of fore-paws some cross extremely little convexed, with a plastron is short with narrow hind paws cannot be completely hidden situated closer to the temple-holes

The Amyda has a small to representatives are cross-temperated bite very hardly with their horny flesh of their victims. The "Amyda" either sharp edges, or obtuse but jaws feed on fish and frogs, those tion. Despite of the fact that they classified and described as early as in what concerns the Far-Eastern written here below may be of some

The main outstanding differences are found in their Carapace and determined most easily, according to than Females. But Females are

TRIONYCHIDAE.

Of the "Trionychidae" family in Northern China and Manchuria, there be found only the representatives of the "Amyda" or "Trionyx" Genus. The "Amyda" genus is the most numerous of all genera of the three-taloned Turtles. More than one-half of the now living 24 species are classified under that genus. Its representatives inhabit not only the Far-Eastern regions, but also Northern Asia, Africa and Northern America. Their bodies are covered on the top and bottom, with a soft skin.

The skin of the head, tail and paws is almost quite smooth, and only on the ends of fore-paws some cross-folds may be observed. The Carapace is extremely little convexed, with a wide gristly edge and without edge bones. The plastron is short with narrow hind-blades and, consequently, the Turtle's hind legs cannot be completely hidden under the carapace. The eye-socks are situated closer to the temple-holes than to the outer openings of the nose.

The Amyda has a small triangle head, and a long, elastic neck. All the representatives are cross-tempered and, having the slightest opportunity to do it, they prey very hardly with their horny jaw-plates, managing even to tear off a piece of flesh from their victims. The "Amyda" has two kinds of jaw-plates: they have either sharp edges, or obtuse but heavier. The Turtles with the first kind of jaw-plates feed on fish and frogs, those with the second—with molluscs of any description. Despite of the fact that the representatives of the first kind have been discovered and described as early as 1809, almost nothing of their biology, specially what concerns the Far-Eastern specimens, is known up to now, and some notes written here below may be of some interest.

The main outstanding differences between various species of the "Amyda," are found in their Carapace and its colouring. As to the sex, it may be determined most easily, according to the size of tail, for Males have much longer tails than Females. But Females are considerably bigger than Males of the same age.

AMYDA MAACKI BRANDT.

(Plate 2) *Maacks Amyda*.

(*Trionyx Maacki Brandt*, *Trionyx sinensis Strauch*, *Trionyx sinensis Nikolsky*, *Amyda Maacki Stejneger*.)

In Northern Manchuria and in the Ussouri region, of the *Amyda* Genus only the Maack's *Amyda* is recorded. This peculiar malacodermal three-taloned Turtle was first discovered during the journey of Messrs. Schrenck and Maack along the Amour river in 1854-1855 and received from a member of the Academy, Mr. Brandt, the name of "*Trionyx Maacki*." Its Carapace is usually round and, according to measurements taken by professor Nikolsky, its width equals 0,82-0,87 of its length. But for the specimens I measured myself, such proportions proved to be somewhat different, i.e. 0,77-0,95. As to the height of the Carapace, it equals 0,25-0,26 of its length, though certain exceptions to this rule have been registered. In some measured Turtles the width of the first third of the Carapace was equal to and in some cases even greater than the width of the second third of the length. The width of the plastron is, usually, equal or somewhat greater than its length, and only in rare cases is from 0,90 to 0,93 of the length. The middle projection along the plastron is but slightly marked and there are usually no deepenings on its sides.

N.B. In one specimen from the Sungari river such projection was quite perceivable and was in the shape of a keel.

The front edge of the skin on the Carapace is strongly turned upwards, forming a fold. Its top surface is smooth, and the bottom one, quite close to the neck slightly tubercled. In the grown-up specimens the tubercles on the Carapace are little prominent, so little that its middle part looks like a smooth surface; but on a closer inspection one may detect that it is covered with uninterrupted flat rollers and that on the edges of the Carapace these are flat, wide, low tubercles forming the lines, parallel to the side-edges and indistinctly expressed. On the lower part of the Carapace, between the hind-paws, there are low, wide, obtuse tubercles situated in thick, regular or irregular rows. Their number varies from 22-38 (22,25,26,30,32,38). Usually there are 8 pairs of permanent rib plates, but sometimes there are 9. The plastron has 8 bones (*Plate 2, Fig. 1, right*), which remain separated during the whole life time. These bones are situated in pairs. The length of the Maack's *Amyda*'s trunk varies very markedly. In some specimens the trunk is short and wide, in others, long and narrow. Its width equals 0,50-0,60-0,85 of its length, while in some *Amydas* the length is twice greater than the width.

N. B. In spite of scarcity of the material I possessed on the Maack's *Amyda* (only 25 specimens, part of them living and part preserved in spirit, were measured) and also the lack of materials for comparison from the adjacent

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nevertheless, judging only by the variations of colour and sizes, one may find that, after further studies, one shall be obliged to classify some separate ones. Further on, in conformity with the accumulated material, one would be able to classify certain sub-divisions of such kind, and may be, even to introduce some new species. If, on further studies on the long-tailed Turtles it will be proved that the existing division of the long-tailed Turtles into species is made on the basis of uncertain and dubious grounds, we shall have, of course, to come back again to the old, classical works of De Meuse and Boulenger, who classified those Turtles under a single species, *Trionyx sinensis* (*Trionyx sinensis*).

As has been already mentioned, colourings of the Maack's *Amyda* vary, and on the basis of those variations the Species can be subdivided into several closely connected groups. The description of colourings, given here is for living specimens.

In the typical Maack's *Amyda*, the Carapace, neck, head and paws are of various shades of olive-greenish, from light to dark, with tiny yellow and black spots on the grown-up specimens and without them in the young ones. On the head of young *Amydas*, there are, sometimes, black spots, which the grown-up specimens usually have not.

In some specimens, which I have studied, the Carapace, head, neck and paws are of various shades of their upper surfaces: slate-grey, grey, brownish-grey, dark-grey or greenish-grey, with tiny white or black dots. Very often there are some black stripes on the sides of the head running around eye-sockets in radii. The pupil is always surrounded by a golden hue. The Carapace is, in most cases, yellow, but there are specimens with the plastron of white, rose, orange or red colourings. In the young Maack's *Amydas* there are, on the plastron, 9, symmetrically situated light-brown spots. Besides, such specimens have two light-brown spots on both sides of the tail and a dark spot on the back-side of hips. In the grown-up specimens these marks either disappear or become indistinct, and if still distinguishable, their colour is usually green. Most often the paws and tail are, on their inner surface, light-brown or beige, but there may be found white, rose, flesh-coloured, orange and red. On the under surface the head and neck are light-grey, covered with an intricate design. In some specimens I have examined, the under-part of the neck was white with an olive, marble-like design. On the top and bottom of the neck there are some distinct folds. It may be interesting to note that among Maack's *Amyda* specimens with reddish rose or orange colourings of their paws and with rose or orange inner surfaces of the paws, there were specimens of quite different ages and that they were caught in the course of a whole year, as well as the typically coloured ones. These varieties of the *Amyda*'s were noted long ago by the natives of Manchuria and they did not establish a classification of that Turtle in accordance, giving to every kind its proper name, as: mountain-turtle, lake-turtle, tiny-turtle, pre-turtle, stream-turtle, fire-turtle and serpent-devouring-turtle. In rare cases they detect among the normally developed Turtles some abnormal ones. One of them is preserved in the collections of the first primary school of the

Chinese Eastern Railway. Its Carapace is distinctly haunch-backed, normal haunch is placed just in the middle of the shield and falls abruptly towards the neck and tail.

According to the measurements I effected, the sizes of the Maack's varied from 25 to 500 m.m.

Though our three-taloned Turtle has been scientifically studied in the course of these 70 years, its biology remains more or less obscure. Perhaps this knowledge may be explained by the very sensitive and cautious behaviour of the species. Near Harbin, the Maack's *Amyda* may be oftener found in the river-beds and their affluents with slow, steady currents, miry or sandy and evenly-sloped banks.

These Turtles specially like water-basins which are covered with duck-weeds, where they spend the greater part of the day, dug wholly or by a hole in the mire, close to the bank, where the water has been more heated by sun. Often the utmost end of a Turtle's trunk is being projected above the surface of the water, and is almost unperceivable among the stems of weeds and floating leaves.

In warm, sunny days, the *Amyda*, as most of other Reptiles, like to warm itself on the sand, or on a stone, turning usually its head towards the sun. At the slightest noise it momentarily plunges itself into the water and disappears from the eyes of an observer. In cold weather, *Amyda* may be found under the stones, close to the water-line. In the main river stream it may be seen only rarely. Father Licent has observed turtles on the Sungari, near the railway bridge of Kirin. He could not catch and did not succeed in shooting one of them. But they had to dive in the current of this large river, for they were dwelling in the cracks of cliffs, and could be seen, along the day, warming under sun on little tables of stones. One specimen of Maack's Turtle was secured near Kirin but in another place, along the Sungari river. It was dried up.

Though *Amyda* catches sometimes an incautious fish within the reach and also a bait on the hook of a rod in day-time, its real activity begins after sunset. Then they may be often seen swimming fastly, with their serpentine heads projected above the surface, or crawling along the river bed in search of molluscs. The *Amyda* approaches its prey very steadily from behind or lays in ambush among the weeds and when the prey becomes within its reach throws suddenly forward its long neck and catches it with its beak. The *Amyda*'s food is made of molluscs, worms, insects, fish and frogs. Sometimes that Turtle is to be found rather far off the water and in most curious places. So, for instance, an *Amyda* was caught in 1926 at Chingho in a house sink, where it probably gourmandized on rejects. There were several cases when an *Amyda* was caught in the streets of Harbin.

The exact period when it lays eggs has not been determined up to now. The eggs of the Maack's *Amyda* have been found in the whole period from the end of May until the first of September. The number of eggs laid by Maack's *Amyda* greatly varies and is from 5 to 40.

Most often there are about 20 eggs. Turtle's eggs are round-shaped, (Fig. 4) with hard, limy shell. The colour of the shell is beige and the diameter of an egg varies from 15 to 23 m.m. The yoke is very characteristic of a yellowish orange hue. The glair is slightly greenish. The Amyda lays its eggs 10-20 steps from the water-line, on sandy banks. Having dug a sufficiently deep hole with its paws and laid eggs in there, the Turtle buries them again in sand. The Amyda's eggs are usually found at a depth of 20-30 centimeters. On the 10th day after an egg was laid, one may clearly detect already hatched embryo. The newly-born Amydas (Plate 2, Fig. 5 down left) reach 20 to 40 m.m. in their whole lengths. On the upper surface they are of a yellowish colour; on the under surface they are whitish with light-brown spots on the plastron.

According to what is related by various persons who hunt the Maack's Amyda, that Turtle is very cross, especially when wounded. It hisses, and bends its long, serpentine neck, trying to bite its enemy. I, personally, have heard from a disturbed turtle only a peculiar long sound, as that of a loud cough and it may be expressed as resembling: "kh, kh, hhh..."

Some 3-5 pounds specimens, being measured, became so infuriated by the inability to bite those holding them, that they pinched themselves to the blood with their own horny jaw and scratched themselves with their powerful but, happily, useless talons. When attacking somebody, the Amyda momentarily throws forward its long neck, and when it bites, its bite is strong and quite bulldog-like, and it does not let off its victims for a considerable time. In the course of my numerous excursions I have heard many stories about the attacks of the Maack's Amyda swimmers. Taking into consideration the generally cross character of our Amyda, such instances may be regarded as most probable, though they were not published as yet by any of the attacked or by some eye-witness.

According to such stories it has been always very difficult to tear the Maack's Amyda off the part of flesh it seized and that was generally effected by means of a white-heated piece of iron, which one should apply either to the Turtle's nose or to the under-surface of the shell. It may be that such stories originated out of the common mode of the fortune-telling in Manchuria. It chiefly consists in burning various parts of a Turtle's flesh with a white-heated piece of iron; the tormentors are believed to be able to form some definition of the future, in accordance with the shape of the burnt spot. Another mode of fortune-telling consists in that a Turtle's bone, being thrown into the fire, the teller pronounces foretellings in accordance with the design of the burnt off bones. The third one consists in that one picks up, by hazard, one bone out of the heap which remains after the burning down of an animal, and foresees the future according to the shape of that bone.

Returning to the cross temper of the Maack's Amyda, I may mention that once, while carrying a five-pound Amyda within a double tarpaulin cloth bag, I was bitten by it immediately as I put my left arm in contact with the bag. That bite produced a sore, quite distinct up to now, though my encounter with that particular Amyda took place five years ago.

This ferocious animal attacks even its own, more feeble, brethren. It is often seen to see it at the South Manchurian Railway's terrarium, when an Amyda mutilated some of the young ones just placed into its dwelling.

Being overturned on the back, the Amyda may easily regain its normal position by means of its muscular and elastic neck.

The Amyda is greatly valued as a delicate and nutritious meal and is sold, mostly alive, at considerable prices, 5 and even more Mexican dollars, in accordance with the size. Sometimes the merchants make a hole in the soft edge of the Carapace and, putting through it a strong string, simply suspend the poor animal, head downwards, in their shops.

The three taloned Turtle is especially numerous near Harbin in the environs of Lao ho kow station (Chinese Eastern Railway) and in the so-called "Turtle stream" down the Sungari river at 80 kms. downwards from Harbin, where they are caught in large quantities. The Amyda is also an article of export-trade. So in 1924 only from Lao ho kow station, 855 poods (the Russian pood=40 Russian pounds of Kgr. 416 each.) of live Amydas were exported in the southern direction. Unfortunately the author could not get any further information on the exportations of Turtles from other Chinese Eastern Railway stations and from the ferries along the Sungari. It is really difficult to form any idea of the high number of those animals exterminated in one year's time. Anyway it must not be less than several thousands, not taking into consideration the extermination of eggs. Apart of the Man the miry Turtle has many other foes, the principal of which are pheasants, rodents and certain species of bears, even called, according to N. A. Baikoff, the "Turtle Bear."

In some cases, there were caught real giant Turtles. For instance, in 1914, in the vicinity of Harbin, a Maack's Amyda was caught which weighed $1\frac{1}{2}$ pood (24 Kgr. 960).

In the autumn of 1926 there was exhibited for sale at Fu chia tien (one of the suburbs of Harbin) a specimen whose Carapace was more than one meter long; that Amyda weighed not less than 3 poods (50 Kgs.). It is interesting to note that this particular Turtle left the Sungari freely and crawled up a street of Fu chia tien, where it was naturally caught with hooks. It was screwed through its Carapace and strongly fastened to one of the poles of a shop, but, on the energetic and persisting demand of the gathered mob, was set free, as, according to the Manchus' belief, the killing of such thousand years old Turtle would bring misfortunes to the vessels and even steamers, navigating on the Sungary, and sure death to the killer.

The Chinese and Manchus have many most interesting legends and superstitions connected with Amyda: a thousand years old Turtle may, if it likes it, speak human languages; those who have reached 10.000 years of age may be recognized by horns on their head. There is another belief: the Amyda may have as a progenitory some snake. A Turtle with a brass ring, fastened through its nose, brings rain. The very word "Turtle" has different applicatory meanings, in Chinese and Manchu languages. Sometimes it is an insulting word, such as "Koei" (a husband of a prostitute), sometimes it has no objectionable meaning at all. A Chinese proverb: "he breatheth as a turtle by his ears" means the definition of a great man.

Mongolians also consider the Amyda as a sacred animal and call it: "master river" or "master of the lake," in accordance with the Amyda's place of origin. They believe that the Amyda possesses some extraordinary miraculous referring to some ancient Tibetan character visible on the Amyda's plastron. In some regions of Mongolia, the Lamas use to perform, once a month, special divine-services at the estuary of a river or near a lake inhabited by Amydas.

The Mongolians believe that this Turtle may catch a swimming man so easily that it is quite impossible to tear it off; the only mean to help it is to lead it to the spot a white goat or a white camel; this animal starts to roar loudly, and the frightened Turtle releases its victim.

Old people in Manchuria relate that, when the Chinese Eastern Railway was under construction, the presence of big Amydas near Harbin was a common thing; and workmen were afraid to go on with their job in the construction of the waters of the Sungari bridge until the Turtles had not been frightened and killed by rifle-fire. In the region of Ussouri, the Maack's Amyda inhabits the Amur between the junctions of the Ussouri and Sungari rivers, as well as the Ussouri itself and in the Hanka lake. Their presence in Korea is also noted. In Northern Manchuria Amyda is found along the Sungari and its wing affluents: Ashiho, Maiho, Moutandziang and Nalinho and along the Nonni river, with its tributaries Chol, Ial and Torgol. Along the Nonni river, Amyda Maacki and perhaps some other akin species may be found in some old river-beds near Chalangtoun and Gorieloe railway stations. In Mongolia, the scudermal Turtles were detected, besides Przevalski, Potanin and Kozloff, also V.V. Ponosoff along the Torgol river, near the city of T'aonan, in the course of an archeological expedition to the ruins of Sipocheng.

As to Przevalski, he detected the Maack's Amyda, or some species very closely related with it, not only along the Tahylga river but also along the Hoanghe and Choun-choun-keou and at some other places in Mongolia. We ought to note that one of the specimens preserved in the Hoang Ho Pai Ho Museum was found in Chao yang district, in the S. E. corner of Mongolia.

Whether or not the turtle inhabiting Korea, Hanka lake and Outer Mongolia is Amyda Maacki, that will be ascertained only through further investigations.

SPECIMENS OF AMYDA MAACKI BRANDT, KEPT IN HOANG HO PAI HO MUSEUM.

No. 18.	Harbin	15.	IX.	1929	P. Pavlov.
No. 523.	Nalinho	25.	VIII.	1922	N. Baikoff.
No. 524.	Harbin	25.	IX.	1930	T. Gordeeff.
No. 625.	Songshuchoeize (Ch'aoyang Hien)	5.	X.	1919	Père De Preter.
No. I-III and V.	Iablonia	10.	VIII.	1922	N. Baikoff.
No. IV.	Harbin	20.	IX.	1928	P. Pavlov.
No. VI.	Eho	15.	VIII.	1925	Russinoff.
No. VII.	Tsitsihar	9.	IX.	1925	Lukashkin.
No. VIII.	Harbin	12.	VIII.	1923	P. Pavlov.
No. IX.	Harbin	12.	VIII.	1923	P. Pavlov.

Measurements of the Specimens of *Amyda Maacki* Brandt

Hoang Ho Pai Ho Museum

Label's No.	18	523	524	625	I	II	III	IV	V	VI	VII	VIII	IX
Length of the carapace	100	40	30	37	40	50	25	120	190	220	224	200	140
Width of it	95	38	30	31	38	45	22	110	140	190	184	165	120
Length of the plastron	90	33	24	31	33	40	20	100	140	160	170	115	100
Width of it	30-00-40	15-46-13	11-25-8	11-30-8	40	45	20	90	140	180	170	115	100
Length of the head	40	20	15	18	20	20	12	30	60	70	65	65	30
Width of it	22	12	10	10	12	15	10	20	40	60	45	55	20
Length of the neck	50	30	15	23	25	30	20	80	120	160	150	100	70
Width of it	20	12	12	10	12	12	7	30	50	60	60	40	20
Length of the fore legs	40	20	17	20	20	25	15	100	140	120	120	100	60
Their width	20	10	8	6	10	5	10	40	60	45	45	32	18
Length of the hind legs	55	25	20	28	25	30	20	120	160	150	160	160	90
Their width	25	12	10	10	12	12	17	50	60	60	60	70	20
Length of the tail	20	8	8	4	8	6	6	30	50	60	60	70	20
Width of it	5-15	1-6	1-5	2-4	1-6	2-7	1-4	6-40	5-40	4-68	4-60	40	30
Length and width of the eyes	10	5	4	5	5	5	3	6	10	8	8	7	6
Length of the trunk	5	3	2	3	1	2	0.5	6	15	10	10	10	5
Width of it	3	2	2	2	1	3	1	4	5	10	10	10	4
Number of the rows on carapace	50	30	15	23	26	38	28	27	—	—	—	—	—
Sex and age	♀ ad.	♂ juv.	♂ juv.	♂ juv.	♂ juv.	♀ juv.	♀ juv.	♀ ad.	♀ ad.	♀ ad.	♂ ad.	♀ ad.	♀ ad.

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AMYDA SINENSIS WIEGMANN.

Syn.: *Trionyx Aspidonectes sinensis* Wiegmann, *Trionyx tuberculatus* Tyrse *perocellata* Gray, *Landemonia irrorata* Gray, *Psilognatus laevis* *lemnognathus mordax* Heude, *Gomphopelta officinae* Heude, *Coelognathus status* Heude, *Tortisternum novem-costatum* Heude, *Ceramopelta latiro-* *ide*, *Coptopelta septemcostata* Heude, *Censternum bicinctum* Heude.)

The first description of the *Amyda sinensis* appeared in 1854.

The following description has been made after a living specimen.

The Southern Chinese *Amyda* has a very characteristic arched, oblong *carapace* (Plate 4, Fig. 3). Its width is usually considerably smaller than that of *Maack's Amyda* and equals, in most cases, 0,80 of its length. The keel is *shallow* but feebly, as well as its side furrows. In the specimen I measured the tubercles form uninterrupted rollers (exactly 20 rows.). The plastron and its skin forms no folds. The Southern Chinese *Amyda* is of dark colour on its top, with dark and yellow spots on its Carapace, which give the whole body of the Turtle a spotted aspect.

The inner border of the Carapace is yellowish-green with black spots. The edge of the Carapace is surrounded with yellow seam. The upper parts of head, neck and paws are greenish-grey, with yellow stripes on the sides of the head. There are also narrow, black, small stripes running between the eyes, and black stripes on the temples. The eye is of golden hue with black pupils. The plastron is orange with 10 dark spots. On the inner side, the paws and tail are orange. At the base of the tail two dark spots. The insteps of paws are orange. The swimming membrana between the fingers is yellow. The inner surplastrum and neck have a marble-like design made of yellow spots.

Père Heude classified this turtle under two sub-divisions: that of Middle China and that of Southern China. The first one is living in the vicinity of Peking and along the Yang-tze river. The second one is to be found to the south and in the island of Formosa. It is quite probable that the *Amyda* of Southern China is more closely related with the Japanese species than with the Chinese one, but that question may be solved only when a greater quantity of material for comparison has been accumulated. Up to now we have only one specimen in the collections of the Hoang ho Pai ho Museum, which I describe, conditionally, under the Middle China's form of the Southern *Amyda*. This specimen was caught by Mr. I. V. Kozloff near the city of Tientsin.

AMYDA SINENSIS WIEGMANN.

No. 485, Tientsin 15, VI, 1930. I. Kozloff.

Label's No.	485
Length of the carapace	40
Width of it	39
Length of the plastron	30
Width of it	14-32-7

Length of the head	16
Width of it	14
Length of the neck	16
Width of it	8
Length of the fore legs	20
Their width	4-8
Length of the hind legs	32
Their width	4-8
Length of the tail	4
Width of it	1-4
Length and width of the eyes	4
Length of the trunk	3
Width of it	2
Number of the rows on carapace	20
Sex and age	♀ juv.

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AMYDA SCHLEGELII BRANDT.

(Synonymy: *Trionyx perocellatus* Gray, *Trionyx Schlegelii* Brandt, *Amyda sinensis* Boulenger, *Amyda Schlegelii* Stejneger.)

Amyda Schlegelii Brandt is known as the Turtle of Northern China. For the first time this miry Turtle was described in 1855 by professor Gray.

That *Amyda* is characterised (Plate 4, Fig 1) by its oblong Carapace, being very little, at its front part, so little that its width at the end of the frontal third is slightly less, or almost equal to the width at the end of the third. Along the middle of the Carapace there is a prominently expressed keel. On its both sides run, clearly marked, furrows. The height of the Carapace usually equals 0,34 of its length. Its frontal edge is upturned and presents a smooth outer and a tubercled inner superfaces. Along the whole surface of the Carapace, numerous tubercles are situated in rows. The outer rows are, more or less, uninterrupted and parallel to the edges of the Carapace, while the inner ones are very irregular and often widely interrupted. The plastron is also irregular. The Schlegel's *Amyda* may be easily distinguished from the Maack's *Amyda* by the presence of clearly defined keel with furrows on its sides and by the tubercles which are scattered and do not form uninterrupted rollers.

The number of tubercles on the Carapace varies as follows: 30, 28, 26, 24, 22, 20, 18, 16, 14, or 0. I have measured 27 specimens of the Schlegel's *Amyda*, in one of them the width of the Carapace was almost equal to its length. I divide these specimens into three sub-species and take as a basic sub-species the coloured variety of the Schlegel's *Amyda*, most often met in Northern China. It has the following characteristic peculiarities: the upper parts of the head, neck and paws are greenish, greenish-grey, greyish, brownish-green, and yellowish-green. In rare cases those surfaces are spotted with tiny greenish-yellow spots. Dark dots and stripes are also on the head and neck. A dark, narrow, dorsal stripe runs between the eyes. Around them there are usually dark stripes extending on radii. On both sides of the head from the outer corners of the edges to the base of the trunk, as well as towards the temples, there are usually several dark stripes. On the sides of the neck one or two white, yellow or rosy bars may be registered, always surrounded with black. On the under side of the head is grey with yellowish spots, or brownish with a complicated, dotted or marbled design, or with a marbled-like dark-yellow, brownish-grey, black and yellowish-brown, or light yellow design. The neck is either yellowish, yellowish-white or greyish with scattered yellow spots. Often there are, on the top of the limbs, some big, brownish horn plates. The Carapace is of the same colour as the top parts of the head, neck and limbs, with very characteristic for this species, dark, starlike spots. Rarely there are also almost unperceptible yellowish spots. The edge of the Carapace is brown, light-brown, bone-colour, or yellowish-brown or yellow, with dark cross stripes. The under part of the Carapace is greenish-yellow, with separate dark spots. The plastron is bone-colour or yellowish, greenish-yellow, beige or yellowish-rose, usually with some brown spots, the number of which varies from 6-11 (6,8,9,10, 11). These spots may be observed only on young specimens; on the older ones they commence to

fade and to be disformed. The down side of the limbs and tail is bright yellow, beige, greenish-beige, bony colour, rose, flesh-rosey, yellowish-rosey, greenish-greenish-grey and grey. On each side of the tail there are often dark spots.

The Schlegel's Amyda has greyish or greenish-grey heels; the hind ones are covered with large, oblong corns which are yellowish, brown, yellow with brown edges, brown or yellow. Among the specimens I have had at hand only two were without such corns. The swimming membrana is usually yellowish or yellowish-grey.

The talons are yellow, light-brown, greenish-yellow, yellowish or of the colour of flesh. They are always dark at the base and light, sometimes semi-transparent, at the ends.

AMYDA SCHLEGELII BRANDT, HASERI FORMA NOVA

(Plate 4, Fig. 5)

Is markedly differing from the basic species by the following characteristic peculiarities: the head, neck and paws are on their top surfaces of dirty, yellow-grey colour. The Carapace has a sharply defined keel and some dark spots the shape of dots. Its colour is yellowish, with yellow edge.

The plastron is of bony colour with 10 perceptible dark spots. The inner sides of the paws and tail are yellowish. For the rest, the colourings of that amyda do not differ from those of the basic species.

AMYDA SCHLEGELII BRANDT LICENTI, FORMA NOVA

(Plate 4, Fig. 4)

Is characterised by the following peculiarities: the Carapace is of grey colour with some dark, starlike, almost unperceptible spots. The sides are brownish-yellow and most of them are situated in rows along the keel. Its edge is brownish-yellow. The keel is sharply defined, with no furrows on the sides. On the head and neck, there are rows of dark dotted spots. On the underside, the head, neck, paws and tail are bright yellow. On the underside of the head there is a whitish-grey, marble-like design. On the plastron there are dark spots. In all other details the colouring does not differ from that of Schlegel's *Amyda*. A specimen of such *Amyda* is in the collection of the Hoang ho Pai ho museum under No. 14.

The enclosed table of measurements gives a clear idea of those of Schlegel's *Amyda*. Up to now I accumulated very little observations on the biology of Schlegel's *Amyda* but, as it seems, it presents no marked differences from the biology of Maack's *Amida*. Many times I chanced to observe it near Tientsin, on evenings, swimming along the Hai-Ho, with its long, serpentine neck stretched forward, as well as in the lakes situated around the Race Course. On hot days, it was sunning itself on a miry or sandy bank.

But, on hearing me approaching, it momentarily dived into the water and disappeared from the observer's eyes.

One day's old, baby-turtles, I dealt with, were of slaty-grey colour on the upper surface, with a prominently convexed Carapace spotted with dark, starlike spots. On the sides of the neck, there were one or two light stripes, and between the eyes a dark stipling, so characteristic for that species. Quite such a stipling which is observed on the old one ran from the eye to the base of the trunk and the temple. The plastron was yellowish and with no spots as yet, and in some specimens the umbilical cord was still well defined; in the others it had already fallen off.

There was no trace at all of the horny surfaces on the keels.

The eggs of that particular Schlegel's *Amyda*, (Plate 4 Fig. 2) whose parentage I describe, were found by Father Licent on the 6th September 1926 in the vicinity of Tientsin. Their shell was bluish-white on the outer side, or whitish and bluish-rosy; on the inner side it was creamy or beige.

The diameter of the eggs varied from 18 to 22 m.m. (19, 20, 21, 22). Three eggs were opened, and inside there were found clearly developed embryos.

fully detect already the presence of the Carapace and plastron; both of a grey colour, while the remaining parts of the embryos were still yellowish-

According to the Chinese, one may sometimes meet some giant specimens of Amyda in question. There is a belief among the Chinese people that there are instances when a giant Amyda with five or three paws may be seen on the coast. The legend is probably based on the presence of umbilical cord at the neck of the Amydas. A Turtle with three or five paws plays a prominent part in the creeds of the Far-Eastern peoples. Very often an image of a turtle is seen on various articles or statuettes of deities, but usually it is not the image of an Amyda but of other species of Turtles.

Amydas are regarded by the Chinese and Manchurians as evil spirits of the waters. There is a legend that Amyda is a descendant of an originally fallen spirit who begot them out of serpents. The Mongolians and Manchurians have even an image of a saint represented in the guise of a Turtle. He is known as Li-hai-sher-man, that is: king-great-spirit-of-the-waters, and is considered as the protector of richness and as one of Buddha's pupils. There is such an image in the collections of the Manchurian Research Society in Harbin. It is believed that this particular saint descended from a Turtle with three paws, the animal deity Li-hai, who symbolizes richness and happiness and who was adopted by the Buddhist creed from that of Taoism.

Amyda Schlegelii Brandt inhabits the province of Chi-li, in the North of China. It has been caught in the vicinities of Peking, Tientsin and Shanghai, in the Yang-tse-kiang, the Hoang-ho and Cheefoo. It has been detected as well at several places in Manchuria and Mongolia. In the collections of the Russian Academy of Sciences there is a specimen from the Huang ho river, got by N. M. Przevalski, as well as several specimens from the vicinities of Shanghai, Jehol, Chang-choun-chow and other parts of the Far-East. [See: "*The Fauna of Russia and the adjacent Countries according to the collections of the Imperial Russian Academy of Sciences.*" Volume I, Part 1, Plate 10 (by A. M. Nikolsky). 1915. Petrograd].

Father Heude, having worked over the *Amyda sinensis* in Shanghai divided it into extremely varying Species in 13 new species, and even classified them under 13 different Genuses.

Though I had not in my hands the original descriptions of the new species of *Amyda*, taking into consideration that a part of them are synonymous to those described long ago, it may be concluded that they are but varieties of the *Amydas* already known, the more so that variations in measurements and colourings are very pronounced, even when different specimens of the same species are considered.

Amyda Sinensis cyphus Monstosity, *Amyda steindachneri* Siebenrock, *Amyda tuberculata* Cantor and *Amyda irrorata*, are likely only varieties of the Southern Chinese *Amyda* (*Amyda Sinensis* Wiegmann) whose inconstancy, in what concerns its exterior aspects, was noted already in 1880 by Father Heude.

Having at my disposal almost identical materials on the Far-Eastern *Amydas* and effecting the measurement on newly obtained and unfaded specimens, I came to the belief that the theory put forward by professor S. A. Chernoff in

his report of 1930, is rather bold. Professor Chernoff is of the opinion that Maacki, *Amyda Schlegelii* and *Amyda sinensis* are but various forms, considered by the age of a given specimen, of only one species. Having dealt with specimens of dead *Amyda* from China and from the Russian Far East, he holds that all young *Amydas* are Schlegel's *Amydas*; the middle-aged ones are *A. sinensis*, and old and big ones Maack's *Amydas*.

But besides the data given by measurements, all these species present a number of the most characteristic peculiarities, permitting to trace a clear difference between them, not mentioning the areas of their geographical distribution. In any way, even measurements, on which professor Chernoff bases his theory, are not absolute, for they vary, even within the limits of the same species, and that only proves that the Far-Eastern *Amydas* are still little known and that those species greatly vary. I have examined several scores of undistinguishable specimens of Maack's and Schlegel's *Amyda*. Among them I found big, middle-sized and small specimens but still it was quite impossible to determine the regularity of variations, on the basis of which professor Chernoff annihilates those different species.

SPECIMENS OF *AMYDA SCHLEGELII* BRANDT, KEPT IN HOANG HO PAI HO MUSEUM.

No. 3	Moukden	30. VI. 1928	Père E. Licent
No. 9	Tientsin	20. VII. 1928	J. B. Wang
No. 10	Tientsin	17. IX. 1926	Père E. Licent
No. 11a, b, c	Tientsin	6. IX. 1926	Père E. Licent
No. 13	Sien-hien	10. V. 1914	F. N. Hayer
No. 12	Kirin	8. VII. 1928	Père E. Licent
No. 14	Tientsin	1. X. 1919	Père E. Licent
No. 15	Tang-ho	24. IX. 1919	Père E. Licent
No. 513-521	Tientsin	5. IV. 1931	Père E. Licent
No. 539	Shan hai Kuan	20. V. 1931	I. Kozloff
No. 623	Tientsin	6. IX. 1926	Père Leroy
			Père E. Licent

**Measurements of the Specimens
of Amyda Schlegelii Brandt,
of
The Hoang ho Pai ho Museum**

Measurements of

No.	3	9	10	11a	11b	11c	13	13
Length of the carapace	65	63	40	19	21	20	35	13
Width of it	57	45	37	16	16	16	32	29
Length of the plastron	50	40	32	12	15	14	27	29
Width of it	40-55-22	30-43-20	23-37-17	9-10-15	13-16-8	10-16-8	24-30-5	24
Length of the head	22	20	17	8	3	8	14	15
Width of it	12	12	10	5	5	5	8	14
Length of the neck	22	20	15	7	7	7	15	7
Width of it	14	10	9	5	5	5	6	12
Length of the fore legs	25	22	20	8	8	8	17	7
Their width	8-15	5-10	7-9	5	5	5	7	13
Length of the hind legs	30	25	26	10	10	10	20	4-6
Their width	9-11	7-12	6-12	4-8	4-5	4-8	7	15
Length of the tail	8	7	8	3	3	3	7	5-10
Width of it	2-8	7-10	2-8	1-3	1-3	1-3	1-6	4
Length and width of the eyes	5	5	5	3	3	3	4	1-4
Length of the trunk	4	5	3	1-5	2	2	3	4
Width of it	3	3	2	2	3	2	3	4
Number of the rows on carapace	26	18	16	14	16	14	24	3
Sex and age	♂ juv.	♀ juv.	♂ juv.	♀ juv.	♂ juv.	♂ juv.	♀ juv.	♂ juv.

Specimens of *Amyda Schlegelii* Brandt

15	513	514	515	516	517	518	519	520	521	539	623	
173	185	130	150	133	118	130	90	70	70	167	21	
134	140	125	120	103	96	110	77	65	60	140	17	
142	150	125	120	105	95	100	71	62	60	130	15	
15	129-57-90	50-135-60	40-116-55	50-115-60	50-105-60	55 92-55	70-105-50	30-77-29	22-65-20	30-60-15	30-132-60	15
55	70	55	55	45	40	45	35	25	25	50	10	
28	30	36	36	36	22	25	18	75	15	30	7	
45	100	65	67	50	75	65	40	40	35	70	10	
30	30	30	80	25	20	25	15	14	14	25	6	
60	85	56	60	60	80	60	41	35	35	60	5	
30-40	45	30	30	30	22	25	20	15	15	15	3	
75	110	82	82	78	90	80	50	50	50	85	18	
22-35	50	40	40	40	30	27	25	25	25	26	5	
30	70	30	50	50	50	50	20	15	15	50	5	
4-23	5-40	5-30	5-30	5-30	10-30	10-30	1-10	3-10	3-10	3-30	3	
10	10	8	10	9	7	8	8	7	7	10	5	
5	10	7	6	5	5	5	5	3	3	7	3	
5	6	3	5	3	4	5	5	3	3	7	3	
22	—	22	16	26	24	28	26	30	24	—	28	
♂ ad.	♂ ad.	♂ ad.	♀ ad.	♂ ad.	♂ ad.	♂ ad.	♀ juv.	♂ juv.	♀ juv.	♀ ad.	♀ juv.	

ADDITIONAL NOTES.

By E. Licent. s. j.

In my voyages, I have noted some more records of *Amyda* which may prove to be of some interest. Unfortunately, I have taken only dry specimens, which do not afford great facilities for study; I shall add to the records the few elements of descriptions which may be yet available on such specimens:

Amidas are very numerous in Tzu ya ho, the river of Sien hien (Central Chili). Br.N. Haser has found in this river the form above described under his name.

The same may be said of the Fenn ho, near Kiang chow (South Shansi).

In a little river near the village of Yao t'ow (District of Taning, South West Shansi), my servant has shot two *Amydas*, the Carapace of which are of oval shape. (Specimen A: length-140 m.m.; width-125 m.m.; depth-54 m.m. Specimen B: 134, 113 and 52 m.m.). The width of the carapace is notably larger at the first third of its length than at the second; the keel is not marked; but in one of the specimens, there is a depression formed by two furrows separated by a very low ridge which arrives to the general level of the middle longitudinal part of the carapace. As to the tubercles, it is very hard to say anything on those specimens (as well as for the following ones).—Those specimens look rather as *A. Sinensis*.

Near the village of K'iao kow (West of central Shansi), in a very sandy river one of my muleteers has taken, by hands, two *Amydas* of different shape. The Carapaces are oval, but the width at the first third of the length is equal to the width at the second third. In specimen A, the length of the Carapace, which is roof-shaped, is 91 m.m., the width max.: 82m.m.; and the depth 22m.m.; for specimen B, the corresponding measurements are 103, 101 and 35. The keel is marked enough with furrow on each side. Those ones should be rather classified as *Amyda Schlegelii*, upmost the second one.

In the river of Hoi hien (Kansou South) *Amydas* are taken in quantity by countrymen equipped with forks. A dried specimen which I have bought there is strongly roof shaped, with keel well marked, but without furrows. The measurements of the Carapace are as follows: length: 128 m.m.; width max.: 128 m.m.; depth: 52 m.m. At the first third of the length, the width is notably larger than at the second third. This specimen should be rather labelled *A. Schlegelii*.

In North-Eastern Kansu, in the district of K'ing yang fu, *Amydas* are quite common almost in all the rivers which are rather sandy with canon entrenched in horizontal jurassic sandstone interbedded with seams of loose sand. These soft seams undergo strong erosion under the current of water and are deeply excavated to furrows where *Amydas* can take quite safe refuge.

In one day's time, the boys of the mission-school of San shih li p'ou took more than twenty *Amydas*. Unfortunately, I was not on the place this day, and

was no supply of alcohol to preserve at least two or three of them. The hunters sold at high price their bag on the market; for rich Chinese, there, is delicacy.

In the same country are two little lakes which were formed, I am sure of earthquake, tens or rather hundreds of years ago; the yellow earth which on the slopes of two narrow valleys crumbled and made barrages across those lakes. In those water-bodies, Amydas are prosperous and some of them are very large, but I did not succeed in securing any specimen.

As to the biology of Amyda in China, I note the following data:

In North Eastern Kansu, eggs were found in large quantities on June the 19th, 1920.

Near Kirin, in 1928, I have found eggs of Amyda (presumably *A. Maacki*) on June the 29th.

The two Amydas taken by my muleteer in Shansi, as recorded above, were taken very easily. First they dug quite quickly their way into the sand under clear water; but the man waited a while until they moved again. Then he took them, one after the other, from behind. The second one bit furiously, and the brave muleteer, laughing and crying, showed to me the animal hanging from his finger; he was not afraid at all, because he knew the way to open the jaws of a Tortoise; with his free hand he seized the stupid biter from behind and plunged it in water; finally the finger was released and the Amyda thrown ashore.

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Reptilia collected by professor Sapoznikoff's expedition in Central Asia in?
Rehme: Tierleben. Leipzig und Wien. 1892.

Herpetological collections of V. Titoff effected in the "Seven Rivers" region.*

* This list will be completed in following Memoires on Lizards and Snakes.

Pl. I



Fig. 2

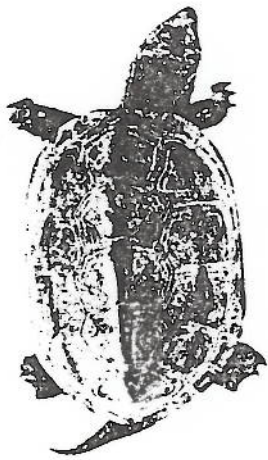


Fig. 1



Fig. 3

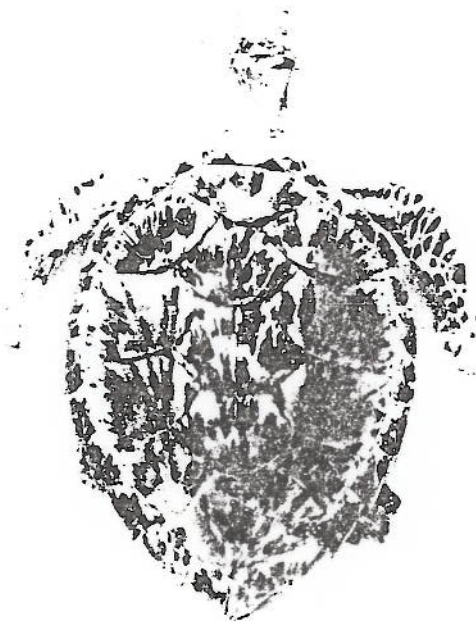


Fig. 4

Pl. II



Fig. 1

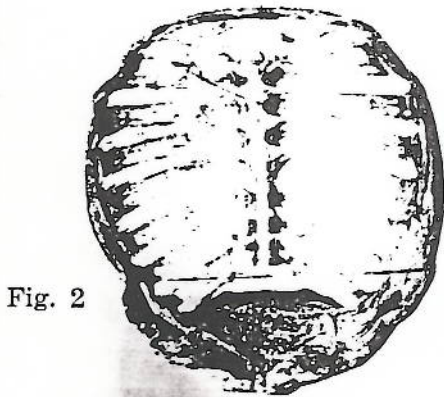
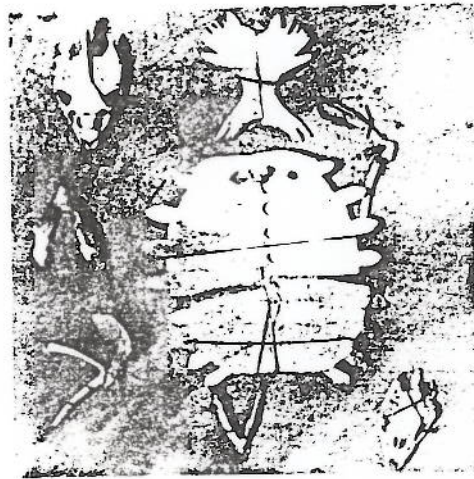


Fig. 2

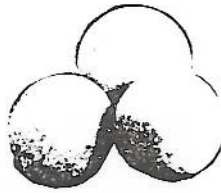


Fig. 4

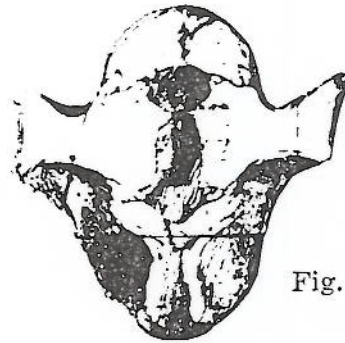


Fig. 3

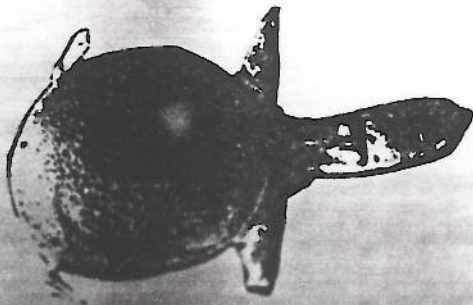


Fig. 5



Pl. III



Fig. 1

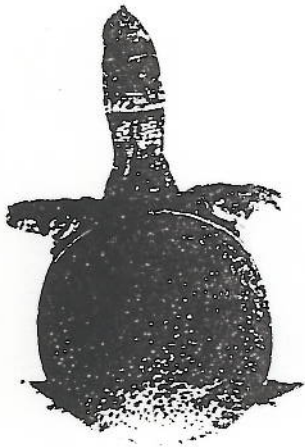


Fig. 2



Fig. 3



Fig. 3

Pl. IV



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

Errata.

Imprimé:

Lisez:

de la Pl. 20:	8 et 9 — Cinq petits grattoirs.	Cinq petits grattoirs
21:	12 à 17 — Lames en calcédoine jaspe	Lames en calcédoine et jaspe
26:	1 — Lamelles. En-haut à gauche	Lamelles.
26:	2 — Lamelles. En haut à droite.	Lamelles.
26:	3 — Lamelles. En bas, gauche.	Lamelles.
26:	4 — Lamelles. En bas, droite, en en haut.	Lamelles.
26:	5 — Lamelles. En bas, droite, en bas.	Lamelles.
36:	8 — Hache police.	Hache polie.
37:	8, 4 ^e colonne: 1/2 grandeur	1/3 grandeur.
37:	9 — Hachepolie, biconvexe, a chant symétrique	Hache polie, biconvexe, à tranchant symétrique
44:	2 — Halebarde	Hallebarde
51:	10, 2 ^e colonne: Rhyolite fin.	Rhyolite fine
67:	19 — 2 ^e ligne: "Jomor"	"Jomon"
70:	8 — 4 ^e ligne: grossière	grossière
70:	10 — 3 ^e ligne: l'intérieur couche	l'intérieur, couche
74:	13 — 2 ^e colonne: San kan ho	Sang kan ho
76:	2, 3 & 4: Même pâte	Même pâte;
90	1, 2 ^e ligne: noir-bleuté, orné	noir-bleuté, ornés
90:	10 — Même pâte avec zone strié.	Même pâte avec zone striée.
93:	3, 2 ^e ligne: à quadrillage	à quadrillage
96:	7, 3 ^e ligne: ébréché.	ébréché.
97:	7, 3 ^e ligne: lissage à	lissage a
99:	10 & 11: San kan ho	Sang kan ho
100:	12, 3 ^e ligne: blue	bleu
104:	1, 3 ^e colonne: 1/12 grandeur	7/12 grandeur
104:	5 — Trois cauris	Trois caures
104:	23 — Fragments d'anneau,	Fragments d'anneaux,
105:	19 à 21: Amigales	Amygales
105:	53 — Anneaux	Anneau
107:	1, 3 ^e ligne: Cheval, dent	Cheval, dents
107:	1 et 2, 2 ^e colome: Kao kia ying ze	Kao kia ying ze

(Oulan chatak)

Planche 122. Les deux figures ont été interverties, par renversement haut et bas de la planche.