

The phalanges are typical rhinocerotid, rather short and flat, with feeble rugosities. It is noteworthy that the fourth digit is somewhat less developed than the second: the manus is thus not quite symmetrical.

The phalanges of *Bt. typicus* are unknown. In *Bt. handshamensis* the digits are relatively shorter and the ungual phalange less developed.

### Hand and

**Palvis.** Both halves extant (No. 9029), but incomplete, the right half being better preserved than the left one (part-fig. 11).



Fig. 10. Palvis.  
a—dorsal, b—ventral view.

Width of the wings of the ilium is over 100 mm; length of the ilium from the crista to the margin of the acetabulum — 200; width of the shaft of the ilium — 67; length of the pubis — about 120; length of the ischium — about 140; width of the pelvis — 30; width of the ischium — 32; diameter of the acetabulum — 50.

The pelvis is of light structure: the shaft of the ilium widens rapidly into a flat triangular plate — the ala; its borders have not been preserved; the linea arcuata separates the iliac tuberosity, which is flat, does not form a distinct tuber sacrale and bears no clear facets articularis. The tuberositas pectinea forms a rugose tubercle on the inner ridge of the shaft of the ilium; the traces of blood vessels (arteria circumflexa) can be clearly distinguished anteriorly of it. The ischium is a narrow bone, triangular in section, widening toward the symphysis; the spina ischiadica appears as a sharp ridge. The pubis is an almost flat bone, narrow triangular in section; the eminentia isoprotuberans appears as a small rugosity. The acetabulum is large and shallow, with a wide fossa acetabuli. The foramen obturatorium is large and triangular in section.

**Affinities.** The described pelvis does not exhibit anything particularly characteristic as it has been already mentioned, it is of light structure, approaching in this respect primitive forms (*Epiacanthiformes*). The pelvis in *St. rapina* (St. n. n. 1934, p. 31) is badly preserved; the small size of the acetabulum (28 × 56 mm) is noteworthy. This bone in *St. Junabronnensis* (T. o. u. l. a. 1932, p. 54, pl. IX, figs. 1—3) is somewhat more massive; the anterior part of the ala (ala III) is wider; the pubis and ischium are more massive; the tuber ischiadicum is very strongly developed in our form it is moderate, but here it appears as a wide plate with a large process on the right side (T. o. u. l. a. 1932, fig. 1).

In *St. apollinaris* we see quite another shape of the pelvis (D. p. i. r. i. t., 1932, pl. III, fig. 2), having a very developed tuber sacrale, which occupies a large part of the border of the ilium.

**Femora.** The paired bones are preserved, a right (No. 47/96) (text-fig. 12 b, c) and a left (No. 47/97) ones as well as a second right bone (No. 47/100) (text-fig. 12c); all of them more or less damaged:

	(No. 47/96)	(No. 47/97)
Total length . . . . .	438 mm	450 mm
Width of proximal end . . .	130 "	148 "
Diameter of the head . . . .	73 "	78 "
Width and thickness of distal end 120 × 120 = 130 × 92 "		

A straight fib. bone. The caput is set without a distinctly modelled collum; it is of irregular spherical shape. Its anteroposterior section represents an arch of a circle, and its section from right to left — a knee-like curve (with a flat proximal part, further on sharply descending toward the lateral side) with a deep narrow fossa capitis. Only the posterior part of the trochanter major (the tr. m. posterior) is preserved as a bump-like rugose hook curved backward and lying on a level with the head, being equal in size half the diameter of the latter. All the bones have their anterior greater trochanter broken off; only the paired right bone (No. 47—66) has a (♂ deformed) rugosity, flattened on the medial side and rising a little above



Fig. 12. Fossil.

1—lateral view, 2—medial view, 3—distal view (from anterior). 4—proximal, 5—posterior aspect.

the head of the head. The trochanteric fossa is wide and flat. The trochanter minor appears as a rugosity extending along the axis of the base and lying at a short distance from the head. The third trochanter is moderately developed and lies a little above the middle of the base. At the distal end the lateral and the medial condyles are of almost equal diameter, but the former is narrower than the latter; the lateral condyle has a wide flat articular surface, slightly inclined to the middle; the medial condyle has the shape of a rounded ridge. The intercondylar fossa is wide. The trochlea patellaris is very asymmetrical, its lateral condyle being much lower than the medial one.

**Affinities.** In living rhinoceros this bone is much more massive, preserving however the same general character; the structure of the distal end (the shape of the articular surfaces and asymmetrical trochlea patellaris) shows particular similarity. It distinguishes by the increased third trochanter and by the much more developed trochanter major, forming a lateral process directed downward-outward.

In *Rh. tigris* this bone is still thinner and more slender, but of quite the same type (R o s s e n. 1924, p. 34, pl. IV, figs. 4, 4a); the character of the head is the same (its shape is not described), as well as that of the greater trochanter major, the anterior part of which is either better preserved (possibly it is deformed in the described bone No. 47/56) or relatively better developed, — nevertheless it does not rise above the head, as we have in our bone; the trochanter minor is similar; the third trochanter is still less developed than in the described bone; its position is the same. The total length of the bone is 205 mm. R o s s e n. shows that such a shape of the lower radius it with the tibia.

By the shape this bone resembles very much the humerus of *Dicraetherium coelestis* (R o s s e n. 1924, p. 447, text-fig. 25); the latter however has a more developed head and the larger trochanter; the third trochanter, although being so small, is raised a little higher; the trochlea patellaris is less asymmetrical. This bone in *Dic. aphelone* (D e p e r t, 1912, pl. III, fig. 3) is much more massive; its trochanter major is more developed; the third trochanter is small but more raised; the trochlea patellaris is less asymmetrical.

This bone in *Rh. arctiorum* (G o u d r y, 1902, pl. XXXII, fig. 7) is incomparably more massive. The same characters are: an insignificant development of the head and of the trochanter major; the low placed third trochanter (still lower than in the bone described), which is however much more developed (and the whole bone is more massive); the asymmetrical trochlea patellaris. The length is 465 mm, the width of the proximal end — 120, that of the distal end — 145. In *Rh. humboldti* this bone is a little less massive than in *Rh. arctiorum* (T u r a, 1902, pl. X, fig. 1c) it reveals the characteristic features of the bone described: insignificant development of the head and of the trochanter major; the similar structure of the distal end; the third trochanter similar to that in *Rh. arctiorum*.

Greater length — 485 mm, width of proximal end — 184; diameter of head — 89, thickness of distal end — 172.

**Femora.** Two specimens are present: the right one (No. 47/132) is almost complete, only its apex being broken off, and the left one (No. 47/133) with the apex, but the outer half of the articular surface being broken off.

Right — 33 mm (No. 47/132); width — 91 (No. 47/132); thickness — 44 (No. 47/132).

The bone is irregularly rhomboidal in outline, considerably swollen. The upper (proximal) end slightly projecting, triangular, modelled on the inner side by a notch separating the strongly developed medial process. The lower end (apex) is small, but massive. The outer margin is straight.

The anterior side is very convex, callous; the callosity consists of a massive vertical crest and a series of rugosities on its both sides. The articular surface occupies almost the whole inner side which forms a strong vertical crest with a saddle-like surface, thickening towards both ends, especially towards the upper end; the narrow lateral part of the articular surface widens upwards; the wider medial part does not occupy the whole of the medial process, but only a part nearest to the crest and the upper border of the process, i. e. it also forms a process, but only a more narrow one.

**Altitarsia.** The bone in living rhinoceros is in general of a similar structure, but has a less developed medial process (the articular surface, therefore, occupies almost whole of its inner side) and a much more developed lower end (apex). The anterior rugosity is of a different outline. There is no description of this bone in *AB. caprinus*, and no separate figure of it (in the skeleton it is, possibly, reconstructed). In *AB. lamachus* this bone, figured upside down (Touss, 1902), is similarly swollen, but has an anterior surface of a different shape; the outline of the inner (articular) surface is also different.

**Tibia.** Three specimens, all incomplete: the right one (No. 47/96) (head, fig. 13a, b) with broken proximal end; its left pair (No. 47/98) with both ends incomplete; and a much damaged left one (No. 47/129) of a somewhat greater size and with the distal end of the fibula preserved.

Total length about 215 mm (No. 47/96); width (thickness) of distal end — 81 × 82 (No. 47/96); distal — 87 × 87 (No. 47/98); width (thickness) of proximal end — 113 × 103 (No. 47/129).

This bone is straight, only its proximal end being slightly inclined laterally, slightly twisted: the lateral sharp ridge extends from the anterior margin of the distal end to the posterior margin of the proximal end, and correspondingly the anterior rounded ridge extends from the median margin of the distal end to the lateral margin of the proximal end. The proximal end is preserved only on the isolated left bone (No. 47/129/133) (fig. 13a); the large tibial tuberosity (*v. supra*) terminates the anterior ridge. The me-



Fig. 13. Tibia.

a—front view, b—back view, c—proximal view, d—distal, e—distal view, f—distal view, g—distal view, h—distal view.

distal condyle appears as a surface larger than the lateral condyle, but the elevation lateralis is higher than the elevation medialis; the fossa centralis is narrow. The distal end is better preserved. The malleus later-

It is small; the intermediate crista lies almost perpendicular to the anterior border and terminates in a large posterior process, descending much lower than the middle medialis. The cochlea consists of a narrow and deep median part and a wide and flat lateral one. The distal facet for the fibula adjoins the latter at an oblique angle.

**Affinities.** In living rhinoceros this bone, preserving all these peculiarities in the structure of the shaft and both extremities, is incomparably more massive, the length being equal; the only thing to note is the relatively less developed posterior process of the distal end. In *Rh. tigris* this bone is of the same type as the one described, only its distal end widens a little more (R o s s e n, 1904, p. 33, pl. IV, fig. 6). Its total length is 350 mm (the length of the femur being 300; in our form these measurements are 453 and 378, i. e. the difference in length of these bones is not much greater than in the form described). The width of the proximal end is 65 mm, that of the distal end — 58, i. e. almost the same as in the bone described. This bone in *Rh. schellerianus* is much more massive; the distal articular surface is more symmetrical. In *Rh. hutchinsonii* (T a n n e r, 1902, pl. X, fig. 3) this bone in its shape is intermediate between that in *Rh. schellerianus* and the one described; the articular surfaces of the proximal end are of a different shape; the cochlea of the distal end is still more asymmetrical than that in the form described.

**Tarsus** (pl. II, fig. 3) rather high, with a large astragala, the axis of the latter being not parallel with, but slightly inclined to the axis of Mt III, i. e. the foot is placed a little obliquely inclined. The cuboid has a facet of contact with Mt III; *ana*<sub>1</sub> is almost twice lower than *ana*<sub>2</sub>, the articulation of the metapodials is consequently deeply stepped.

**Astragalus.** Two pairs preserved (Nos. 45/103, 104 and 47/120, 127) (text-fig. 14).

Contact width . . . . .	33 mm	33 mm
" height . . . . .	47 "	40 "
" thickness . . . . .	27 "	34 "

This bone is rather flat with an asymmetrical joint, which is oblique, has a shallow notch, is directed forward and to a lesser degree — upward, and sits low on its base without a neck; this gives it almost tetragonal outline.

On the distal side (d) there is a wide facet for the metatarsal, rhomboidal in outline and with a slightly saddle-shaped surface, the posterior end of the rhombus being curved downwards (modified by a depression near the posterior margin of the facet). On the outer side it adjoins a narrow facet for the cuboid forming with it a slightly curved blunt ridge; this facet somewhat widens anteriorly, is slightly convex, but with a depression at the posterior margin modifying the bending downwards of its posterior end.

On the posterior side of the facets for the calcaneum exhibit the following peculiarities: a large deeply concave facet  $c'$ , with a large elongate  $c''$ , forming a two-sided angle with the under part of the facet  $c'$ . The flat pentagonal facet  $c'''$  is also large, though somewhat smaller than the preceding one, with a small elongate at the upper inner angle. Directly from it begins the third facet  $c''''$ , narrow, lanceol-shaped, lying along the margin of the facet

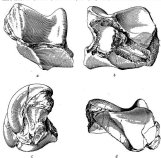


Fig. 14. Astragalus.

a—front view, b—side view, c—distal view (superior), d—distal view (inferior), e—cavity, f—crest, g—ridge, h—i posterior elongate.

for the cuboid, at a right angle to it. The lateral sides do not present any special peculiarities.

**Astragalus.** The bone in living rhinoceros is very similar, only somewhat larger. It differs in the height — the bone has a small neck, between the joint and the base, — in flat facet  $c'$  with a small lower elongate; in rhomboidal, more vertically placed facet  $c''$  and a under  $c'''$ . The remaining characters differ very little from those of the bone described. In *M. tapirus*,



(R o m e r, 1934, p. 33, figs 15 and 16), besides being of smaller dimensions this bone differs also from the one described, as it can be judged from the figure in a less deep and less asymmetrical joint; the neck is also almost absent — the general outline is still more trapezoidal. The facet for the cuboid is still narrower. The posterior side is not described.

This bone in *Dicoryphus orientalis* (R i n g e l l e r, 1934, p. 15, text-fig. 8) as regards its anterior side (judging by the figure) is very similar to the one described though a little larger; short neck, moderately curved joint.

In *Rh. humboldtensis* this bone is more massive, lower, with a more symmetrical joint and, notwithstanding its low form, a more developed neck.

**CALCANEUM.** There are three bones: a left one (No. 47)102 corresponding to the astragalus No. 47)104; a right one (No. 47)103) articulating with the astragalus No. 47)103, evidently belonging to one individual; and No. 47)171, articulating with No. 47)100 (see fig. 15).

	No. 47)171	No. 47)103
Greater length . . . . .	106 mm	112 mm
Width with the sustentaculum . . . . .	86 "	80 "
Height x width of shaft . . . . .	30 x 26 "	30 x 28 "

Short laterally compressed; its section has the outline of a rounded high triangle (with its base posteriorly); the tuber is a massive rugosity, having the shape of a three-sided pyramid, stretched forward back-like (B); there is also a strong rugosity on the under side passing over onto the lateral side of the shaft. The sustentaculum has the shape of a small obliquely set plate. The facets for the astragalus:  $a'$  — large and convex, having the form of an almost right, rounded, two-sided angle, with a large lower diameter (see description of astragalus) along its upper border B adjoins at a right angle a lanceolate-like facet ( $a'_2$ ), which is a continuation of the surface of the large joint of the astragalus;  $a''$  and  $a'''$  repeat the form of  $c''$  and  $c'''$ ;  $a'''$  adjoins at an obtuse angle the facet for the cuboid, which has the form of a wide trough, slightly saddle-like in shape, widening anteriorly, with a deep and narrow slit-like depression along its posterior border; this facet is obliquely set, being directed forward-outward and backward-inward.

**A T T A C H M E N T.** In living rhinoceros this bone is distinguished by being more massive, rounded in section, and having a shorter shaft, flat  $a'$  (see  $c'$ ) and wider facet for the cuboid. In *Rh. agilis* (R o m e r, 1934, p. 33, fig. 14) this bone distinguishes by a more elongated body and still more obliquely placed facet for the cuboid. This bone in *Rh. humboldtensis* (T o u l s o n, 1902, pl. IX) has a more massive shaft with a less obliquely placed facet for the cuboid.

*Catboldium*. There are four specimens No. 47173 corresponding to No. 47104 and 105; No. 47122 (47123 and 171); No. 47125 (47104 and 105); No. 47126 (last-fig. 16).



Fig. 16. *Catboldium*.

a—lateral view, b—side view, c—lateral view (anterior view), d—specimen, e—lateral view (anterior view).

	No. 47122	No. 47125	No. 47126
Total length . . . . .	53 mm	57 mm	58 mm
Width . . . . .	27 "	35 "	35 "
Height of the anterior side . . . . .	34 "	35 "	38 "

This form has a trapezoidal (almost square) anterior side slightly widening upwards, grows narrower and deeper backwards, with a large hook-like posterior process.

The proximal side (c) bears a double saddle-like articular surface, narrowing backwards in correspondence with the slope of the base; this surface consists of two distal equal parts: a lateral narrower one passing onto the lateral side as an additional semi-lunar part for the calcaneus; and a medial, somewhat wider one for the astragalus. The distal side (d) bears an almost flat, slightly saddle-shaped articular surface for Mt IV of pebble-like outline. It adjoins on the medial side at a very obtuse angle a small triangular articular surface for Mt III, the latter being adjoined, also at an obtuse angle, with a triangular articular surface for the third tarsometatars; the all three

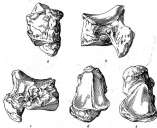


Fig. 10. Calcaneum.

1.—front view, 2.—lateral view, 3.—medial view, 4.—proximal view, 5.—distal view (c)—calcaneus, d—astragalus, e—tarsometatars, f—tarsometatars, g—posterior tibiae.

surfaces thus form a regular curve on the anterior side (e). The last articular surface belongs already to the medial side (3) of the base, occupying its lower anterior corner; along its upper border there extends the articular surface for the navicular, which is hook-like in its anterior part, and in its posterior part descends as a wide tongue to half the height of the base, where it adjoins the small posterior upper articular surface for the 3rd tarsometatars; the latter forms with the articular surface for the navicular a right angle, both they lying on a small two-sided prominence in the posterior part of the medial side of the base. The posterior side is narrow,

concave, and bears in its lower part a large convex rugosity, passing over onto the lateral side as a massive hook, hanging downward.

**Affinities.** In living discosores this bone is shorter and wider; the proximal articular surface is nearly square, the distal one — rounded square; the posterior process is much smaller. The proximal side is less elevated in its posterior part. The articular surfaces for the navicular and 2nd cuneiform also differ from those of our bone. In *Ah. typicus* (Korn & S., 1916, p. 34, figs 15 and 17) this bone is evidently of the same type (the description is very brief, and no measurements are given); judging from the figures it is shorter, narrower and higher. The proximal articular surfaces are nearly flat, what cannot be said of those in our bone; the distal one is shallowly concave, what is already more like our case. This bone in *Ah. And-*



Fig. 17. Naviculars.

A — proximal view, B — distal view, C — lateral view. Measurements: length 2.7 mm, width 2.5 mm, thickness 1.4 mm. Magnification  $\times 10$ .

silvestris is lower, wider and longer — more massive than the described one (Teale, 1903, pl. XI and XII).

**Naviculars.** There are five specimens of it (for relations see the subfamily); No. 47/121, 47/174, 47/206 (last-fig. 17).

	No. 47/121	No. 47/174
Length . . . . .	34 mm	37 mm
Width . . . . .	30 "	30 "
Thickness in the middle . . . . .	18 "	17 "

This bone is rounded rectangular in outline, low, with flat distal and concave proximal sides. The proximal articular surface for the astragalus is considerably concave (the axis of the concavity being directed from right to left) slightly saddle-shaped, and occupies the whole proximal side(s) of the bone. On the distal side (B), the largest articular surface for the 2nd cuneiform is of an irregular pear-like outline and slightly saddle-like in shape; it adjoins the long side of the small rounded triangular and lobely convex articular surface for the 2nd cuneiform, and with its short side —

the semi-circular articular surface for the 1st coniform; the latter lies parallel to the narrow posterior end of the articular surface for the 3rd coniform, being separated from it by a small depression. On the lateral side ( $\gamma$ ), there lies one large articular surface for the cuboid, narrow, lanceol-like in anterior part, widening to the full height of the base and slightly convex in its posterior part.

**Affinities.** In living chamaeleons this bone is much wider and of irregular outline: the anterior lateral angle is extended laterally and the posterior angle — posteriorly; in the rest it is similar to the bone described; the articular surfaces of the distal side are particularly similar; the upper and lower articular surfaces for the cuboid of the lateral side are separated.



Fig. 18. *Chamaeleon* 2.

a—posterior view, b—distal view, c—lateral view, d—medial view, e—distal view (specimen 47181), f—distal view (specimen 47182).

In *Ah*, typical this bone is unknown. The bone in *Ah*, *Apantelasma* is apparently very similar to the described one, perhaps relatively higher, more massive. The articular surfaces are not represented (T o s l a, 1932, pl. XI, figs 1b, 4; pl. XII, fig. 1a); judging by the articular surface on the cuboid for the navicular (T o s l a, 1932, pl. XI, fig. 2), the articular surfaces for the cuboid have the same structure as those on the bone described; on the figure of the lateral side of the navicular (T o s l a, 1932, text-fig. 4), the lower posterior articular surface for the cuboid appears to be separated from the anterior one.

**Chamaeleon 2.** Preserved in 3 specimens: No. 47181, 47182 and 47183 (text-fig. 18).

No. 47182: greatest length — 47 mm; width of anterior side along the upper border — 26; width along the lower border — 26; height — 22.

The base is flat, irregularly triangular or pear-shaped in outline (with a notch on the lateral side).

The whole of the proximal side (G) is occupied by the articular surface for the navicular of the above mentioned outline and of irregular saddle-like shape; a similar articular surface for Mt III occupies the distal side (H), only it is flatter and has a larger lateral notch. On the lateral side (I) there are two semi-circular surfaces for the cuboid: the anterior one — at the lower border, and the posterior one — at the upper border; between them lies the above mentioned notch of the lateral side; both these surfaces are directed outward and slightly upward. On the medial side (J), in the middle of the upper border, lies the long semi-linear articular surface for the 2nd cuneiform; and at the lower border, at its anterior and posterior ends, lie two semi-circular articular surfaces for Mt III; the one of them being larger and concave. The lateral and medial sides meet posteriorly at an acute angle; the anterior side is evenly high, rugose, with the lateral angle drawn down.



Fig. 18. Cuneiforms 2.

1 — proximal view, 2 — distal view, 3 — lateral view, 4 — anterior view, 5 — posterior view. 1 — 2 — symmetrical, 3 — 4 — symmetrical, 5 — 5 — symmetrical, 6 — 6 — symmetrical, 7 — 7 — symmetrical.

**Affinities.** In living rhinoceros this bone, larger in size, is relatively higher and shorter antero-posteriorly — because of a more triangular outline; the arrangement of the articular surfaces is in general the same. This bone in *Rh. kaschibovianus* is intermediate between the described one and the bone in the living species, both in respect of height and length (T o v i n, 1901, p. XI and XII).

**Cuneiforms 2.** There are three specimens: No 47/571, 176 and 179 (see Fig. 18).

No 47/571: total length 26 mm; greatest width — 7; height — 13.

The bone is narrow, triangular in outline, flat. The whole proximal side is occupied by the articular surface for the navicular, is fully concave, almost flat; the distal side is occupied by the articular surface for Mt II, which is saddle-shaped, slightly descending to the medial side. On the lateral side (the longest side of the triangle), along the whole length of the upper margin lies the large, occupying almost half the height of the base, semi-linear articular surface for the 2nd cuneiform, slightly widening posteriorly. The medial side, which is also the anterior side of the base, is convex

and rugose. On the posterior side (the shortest side of the triangle), along its entire upper margin lies the large semi-circular articular surface for the 1st condyle, occupying more than half the height of the base.

**Affinities.** This bone in living rhinoceros is relatively higher and wider in the proximal side, which is shorter than the distal one; in the rest it is very similar, but for the articular surface of the medial side, which is bounded by the posterior half of the upper margin and is still larger — occupying almost the whole height of the bone. It is noteworthy, that in the living rhinoceros this bone is relatively small, its length being almost equal to that of the bone described, while the length of the 2nd condyle is much greater; this refers, however, to the proximal side only, for the distal side is longer than that in our bone. This bone is *Rh. fund*



Fig. 28. *Condyliforme 1.*

1—Medial view, 2—distal view, 3—proximal view, 4—oblique view. *Condyliforme 2*—1—medial, 2—distal, 3—proximal, 4—oblique, 5—1—proximal, 6—2—oblique and proximal.

abdominal, as far as it is possible to judge from the figure, occupies an intermediate place (Tate 14, 1902, pl. XI and XII).

**Condyliforme 1.** Preserved in 3 specimens: No. 61(19), 62 and 116 (text-fig. 28).

Smallest length — 41 mm; greatest width — 25; thickness — 15.

It is a flat and wide bone of an irregular oval outline, with a notch in the lower medial corner meeting the lower hook, with a flat rugose posterior surface and convex tubercular anterior one, bearing a large tuber in the center and a large marginal swelling at the lower medial corner, forming the above mentioned hook. Along the notch along the medial border, on the anterior surface, there is a large, post-like in outline, articular surface for *Rh. II*, on the proximal end there is a semi-circ. articular surface for the maxilla which, along its straight margin, adjacent at right angle the oblique semi-linear articular surface for the 2nd condyle.

**Affinities.** In living rhinoceros this bone is incomparably more massive. The notch in the medial lower angle is much deeper, and meets the maxilla posterior lateral hook; the bone is somewhat twisted, lying more in

the antero-posterior plane of the pes; there is a distinct articular surface for Mt III, rounded in outline. This bone in *Rh. handshermanni* is, apparently, intermediate between the above two.

#### Metatarsals

**Metatarsals IV.** Preserved in 4 specimens: No. 47/137, 138, 139 and 50/3.

No. 47/137 (greatest length — 164 mm; width of proximal end — 37; its thickness — 4; width of distal end — 31; its thickness — 29; section of shaft — 23 × 23).

A massive, considerably curved bone; shaft rounded triangular in section, slightly swelling toward both ends.

The proximal end bears an irregular tetragonal, slightly saddle-shaped curved articular surface for the cuboid. The lateral side of the proximal end is smooth, the posterior one being strongly rugose; the medial side bears two large rounded articular surfaces for Mt III; the posterior one lies on a rugosity, a little below the proximal margin; the anterior one — at the very proximal margin, adjoining the margin of the articular surface for the cuboid along a feebly arc-shaped line.

The shaft of the bone is curved in the sagittal plane, with its convexity directed forward; its anterior side represents a rounded ridge, the posterior one is in its upper part convex and rugose, in its middle — flat and concave downwards.

The distal end bears an asymmetrical trochlea (the anterior face having the shape of a triangle with the cathet. along the medial and lower sides), which is elevated somewhat more along its posterior side than along the anterior one.

**A. f. i. l. i. a.** In living rhinoceros this bone has a flat and wide shaft (the anterior ridge passing into a sharp crest, extended medially), which is relatively short, its alveolar length being equal to the length of the bone described. In *Rh. agrius* only the lower half of Mt IV is preserved. It is possible to affirm, that the lateral digits of the posterior limb in *Rh. tapiro* have the same differences in dimensions as those of the described one (Mt IV is a little more massive than Mt III), but the whole pes is of much lighter structure (the length being less) — the metapodial being relatively thinner and longer. The absence of a detailed description does not allow more precise comparisons. In *Rh. handshermanni* this bone distinguished by greater massiveness, its length being 180 mm, the section of its proximal end — 48 × 48, of the distal one — 35 × 41, and the shaft of the bone — 31 × 24.

**Metatarsals III.** There are two specimens: No. 47/138 and 47/139 both being only the proximal parts of the bone, and both incomplete.

Width of proximal end — 37 mm; its thickness — 3; width of shaft in its middle part — 41; thickness of the same — about 23.



A straight flat base, slightly widening towards the ends; the proximal end considerably thickening posteriorly, obtaining a triangular section (flat anterior side and lateral sides meeting at the posterior border). The proximal articular surface is of an irregular post-like outline, with a small notch on the medial side and a larger one on the lateral side; its surface is saddle-shaped — concave along the anterior side and at the posterior end (see description of articular surface of the 3rd coxaliform). On the flat, rugose medial side of the proximal end, there are: the anterior articular surface for M II, triangular in outline, extended from top downwards, and lying near the anterior end of the proximal margin and the very small semi-lunar posterior articular surface, adjoining the proximal margin in the middle of its length between the anterior articular surface and the posterior end.

The lateral side is concave. At its anterior end it bears a small, triangular, obliquely placed facet for the cuboid, cutting off the proximal lateral angle; the large anterior articular surface for M IV directly adjoins the above facet, and farther back — the articular surface for the 3rd coxaliform; it is rounded-triangular in outline, extended from top downwards and lying in the vertical plane. On a small projection at the posterior margin of the lateral side of the proximal end, and at a short distance from the proximal margin, there lies the posterior, rounded and obliquely placed (sideward and slightly upward), articular surface for M IV.

The shaft of the bone (in the preserved part) is trapezoidal in section; it has a flat anterior side with a small depression, extending from the middle of the proximal margin to the middle of the medial side. The posterior side is narrower, widening downwards, concave; the narrow lateral and medial sides are placed obliquely, meet posteriorly, and taper distally downwards.

The distal end is unknown.

**AFFINITIES.** In living rhinoceros this bone is relatively shorter and wider, is oval but not trapezoidal in section, and tapers considerably towards the end. The articular surfaces are similar in type; the differences consist in the absence of the articular surface for the cuboid (or it is hardly expressed?), and in the greater development of the posterior articular surface for M III, which is larger than the anterior one. This bone in *A. bipartitum* (H. & M. a. s., 1824, p. 24, fig. 16; pl. IV, fig. 7) is relatively much thinner: its shaft, having the length of 122 mm, is 11½/26 mm in section, i. e. its section is almost twice less than that of our bone, having but slightly lesser length. The details of the structure are unknown. The surface for the cuboid is distinctly expressed (viewed from its front: E. o. n. a. s., 1824, pl. IV, fig. 7). In *A. burchellianum* this bone is 137 mm long and 48½/26 in section, i. e. it is larger than the bone under description, but of about the same proportions. The structure of the articular surfaces of the medial and lateral sides (for M III and M IV) is the same as that in the bone des-

celled (Fouliu, 1955, pl. XII, figs 3 and 4), but the base is thicker; the articular surface for the cuboid is very large.

**Metatarsals II.** Preserved in three specimens (No. 47[12], 45[10], and 47[94]). In none of the three the distal end is preserved.

No. 47[10]: width of proximal end = 25; thickness of the same = 20; section of the shaft in the middle = 20x20.

A curved bone, laterally compressed in its proximal part, widening antero-posteriorly towards the middle of the shaft and further on, towards the distal end, rounded rectangular in section.

The proximal end bears a concave and slightly saddle-shaped articular surface for the 2nd cuneiform, of irregular semi-lunar outline, with a rounded anterior end and a sharpened posterior one. On the lateral side it adjoins two double articular surfaces: their proximal parts are for the 3rd cuneiform, their distal ones — for M III. Of these the anterior one, directed laterally and slightly downward, is of pear-like outline, its narrower part, being directed distally for M III; this part is but slightly separated from the wider proximal part, and in separate specimens is differently developed; this articular surface approaches the anterior margin of the lateral side of the proximal end of the bone. The posterior articular surface is nearer to its posterior margin. Between these two, there lies a wide rugose surface, slightly concave. The posterior articular surface is more distinctly divided into two parts, of which the proximal one (for cub. 3) is directed laterally and upward, and the distal one laterally and downward, forming with the former a markedly expressed border; the former of them is saddle-shaped and trapezoidal in outline, tapering forward; the latter is concave and has the shape of a more or less elevated crescent (developed very differently).

The medial side of the proximal end is convex and bears a strong rugosity. The posterior side near the lateral margin, and sometimes at some distance from it, bears an elongated and obliquely lying facet for the 1st cuneiform, of irregularly oval or rhomboidal outline.

The shaft of the bone is curved, its convexity directed laterally, with flat, slightly convex anterior and medial sides and slightly concave posterior and lateral ones.

**Affinities.** In living rhinoceros this bone is relatively shorter (the absolute length, probably, being the same) and more massive; the shaft is triangular in section, the anterior and medial sides forming one convex wall. The articular surfaces are very similar; only the articular surface for the 2nd cuneiform being farther, and the articular surface for the 1st cuneiform lying nearer to the medial margin of the posterior side, but not to the lateral one, as in the bone described. This bone in *Ah. agrius* (R. & A. n., 1924, p. 35, fig. 10 and pl. IV, fig. 8) is less massive and more straight. The details of its structure are not given. In *Ah. sandakianus* this bone is more massive, laterally has the proximal end less extended backward;

Its proximal articular surface is semi-circular (more massive) and flatter; the articular surface for the 1-st canaliform is shorter and lies nearer to the middle of the posterior side of the base.

**Phalanges.** The numerous extant phalanges do not exhibit any differences in their structure and differ but very little in size, and so there is no basis for their distinction into phalanges of the fore and hind limbs. In *Ah. hirsuticornis* the phalanges of the fore and hind limbs differ markedly in size: the length of the first phalange of the outside digit of the fore limb being 4.1 mm, and that of the hind limb — 3.7 mm; that of the second digit — 4.7 and 3.8; of the fourth one — 4.2 and 3.5, etc. Judging from the figures (F o u l a, 1902, pl. VIII and IX) they differ also in shape.

### Conclusion

Of the various phyla of the rhinoceros, first distinguished by O s b o r n (1900, p. 229) and later supplemented by other authors (R o m a n, R i n g s t r ö m, and others), the described form may most probably be referred to the phylum *Dicranellinae* (after R i n g s t r ö m, = *Cenacanthinae* after O s b o r n); this appears to be supported by the evidence of the dentition and the structure of the anterior part of the skull (the only preserved). This phylum consists of at least two branches (R i n g s t r ö m, 1904, p. 34, adds two more with reduced basicon), differing from each other in a number of characters, including size (smaller race, larger race) and structure of dentition; R o m a n points to the strong development of the lateral teeth of the transverse crest in the small sized branch, and a lesser filling by them of the median valley in the large sized one. In O s b o r n, who gives only the last links of the second branch beginning with *Ah. schizocornis* from Eppelsheim, there are indications of a series of primitive characters (O s b o r n, 1900, p. 261) preserved in this branch, including the insignificant specialization of the promolars. The described form is characterized by just the same character, so that if its referring to this phylum of rhinoceroses is correct, it must be considered as belonging to the second branch of *Dicranellinae*.

Its relations with the representatives of *Dicranellinae* already described, appear to be the following:

The oldest representatives of *Dicranellinae* in Europe is *Ah. rapax* R o m., which has several varieties. *Ah. rapax* is characterized by still smooth nasal horns and deep nasal (lateral) notch of the type of the oldest acanthary, and its relations to most rhinoceroses are revealed only by dentition: the distinguishing characters of the latter are the canalized crochet and the presence of the cribs. The upper promolars are already fully isolated; the molars have a less folded outer wall, there being no specially modified paracrowns, causing the fold of the cribs; the premaxilla is well modified, the etc.

claw and antroclaw are as in the form described.<sup>1</sup> The symphysis of the mandible is narrow; there are two pairs of incisors; those of the second pair (mesial) are very large, the very small first pair lying between them, but it is not extant, only its alveoli and sockets on the inner margin of the teeth of the second pair remaining (Rasmussen, 1934, p. 21, text-fig. 6); thus the anterior end of the mandible differing greatly in structure from that of the described form. The lower molars of *Rh. ruginus* exhibit less angularity of the crowns, which form a more obtuse angle, and the anterior ends of the anterior crowns (paraelytral) are less developed, i. e. less extended in the lingual direction, while the posterior crown has its lingual end (paleoconid) curved forward.  $P_2$  has a less developed anterior crown with the anterior end extended forward, as in the described form.

*Rh. ruginus* lived in the end of the Oligocene and in the beginning of the Miocene. It is at the base of the branch of small-sized *Dicoryphinae*, and in the Middle Miocene gives rise to *Rh. senanensis*, which bears already a strong nasal horn. The *senanensis* stage seems to be represented by several forms differing first of all in size, and secondly in the degree of molarization of their premolars; the holotype described by Lartet and afterwards by Filleul (1881, pl. XIV, fig. 6) has incompletely molarized premolars, while in the form described by Rasmussen (1934, p. 123) they are already fully molarized. After Osborn's scheme, *Rh. senanensis* is at the base of the small-sized race of *Dicoryphinae*, *Rh. ruginus* having not yet been known. Rasmussen considers it as the Middle Miocene stage of the large-sized race. Such a conception is possible only if the structure of the premolars be ignored; otherwise only those representatives of *Rh. senanensis* could be referred to the second branch, which have preserved (see above) the primitive characters of their dentition. It appears more correct to refer the described rhinoceros to the Miocene forms of the second group. Even if this form is not the direct ancestor of *Rh. schizomocheri*, the structure of its dentition, as well as that of all the anterior part of its skull, may be considered as a lower stage in comparison with the Pliocene form.

It is also hardly possible to place certain varieties of *Rh. ruginus* at the base of the second branch, as they all show a high degree of molarization of the premolars. It must be taken into account that so far we have no representatives of this oldest stage of the second branch among the known forms.

The primitive state of the upper premolars of the form described corresponds to the primitive state of its lower incisors; in this respect the described form stands also below all the known representatives of *Dicoryphinae*.

<sup>1</sup> There is one more Lower Miocene form which may have some claim to be included into the same branch, namely the *affinis* form described (Osborn, 1893, p. 228, fig. 6), which also has fully molarized premolars.

The symphysis of *Rh. agilis* has been described above. *Rh. nasutirostris* also has two pairs of incisors; the outer ones (pulsos) are built after the same type, in our form, however, they are triangular, and not pear-like in section, as in *Rh. nasutirostris* (R o m a n, 1938, p. 123), approaching in this feature the teeth of *Rh. schillermeisleri*; there is no figure of the first pair. R o m a n does not mention them at all, while F i l l i s o l l gives a figure of their alveoli only (F i l l i s o l l, 1939, p. 201, pl. XIV, fig. 1) and states their dimensions ( $5 \times 3$  mm). The figured symphysis is not complete, and although it has the same width as in the form described, its general habitus is different.

The mandible of *Rh. schillermeisleri* is figured by K a u p (1933). Its symphysis is narrow, but as the whole mandible is compressed, it is possible that such a shape of the symphysis is a result of deformation. Its lower margin is straight, sharply rising towards the anterior end, and thus forming an angle under the anterior end of the molar (see above); this angle apparently bears a considerable rugosity (if this tubercular thickening of the bone is not a result of disease). The teeth are large (total length, including the root — 120 mm, width — 34 mm), rounded triangular in section (see R o m a n, 1934, p. 123, fig. 2), approaching that of the form described. There is also a first pair of incisors, which, however, has not been preserved; two rather large alveoli are shown between the teeth (the total distance between the lower margins of the teeth is 112 mm, consequently each alveolus is about 5 mm broad).

It may also be noted, that in comparison with *Rh. nasutirostris* the upper molars of *Rh. schillermeisleri* are more elongated (i. e. their habitus is more similar to that in the form described); the crista is also present, but it is sharp and not rounded as in the form described, and in  $M^1$  is even doubly.

Thus the examination of the teeth makes one to recognize certain differences between the two branches of *Dicrorhina*: *agilis* — *nasutirostris* on the one hand, and our form, *D. nasutirostris* — *schillermeisleri* on the other. And if the assumption that the form described must be referred to the phylum *Dicrorhina* is correct, it may be considered as the oldest representative of the *schillermeisleri* branch.

As for the skeleton, it fully confirms the above supposition. Of the two forms of the group whose skeletons are best known, namely of *Rh. agilis* and *Rh. agutirostris*, the former is older and the latter younger than the form described; the former is more slender, the latter has a more massive skeleton. From a morphological standpoint the described form, consequently, occupies an intermediate place as regards the massiveness of skeleton; the fundamental characteristic features, however, being present in all the three forms. A series of characters, nevertheless, undoubtedly prove that phylogenetically they do not lie along one straight line.

Detailed comparisons have been given above of such bones of the skeleton of the form described with the corresponding bones of the two other members

and form. The results of these comparisons may be briefly summed up as follows.

The few remains of the vertebral column have not exhibited anything of interest except the presence of certain archaic characters in the thoracic vertebrae. The scapula is very narrow and high, and has most affinity with the scapula in *Ah. apudshimense*. The humerus is a moderately massive bone, with a low placed deltoid tuberosity and a low crista with an asymmetrical distal trochlea; in *Rh. togianus* the distal trochlea is less asymmetrical and the bone is less massive; the deltoid tuberosity of the bone in *Ah. apudshimense* is raised higher, the crista is less developed, in the rest the distal end is similar. — The radius is more massive than in *Ah. togianus* and less massive than in *Ah. apudshimense*; the common character is the greater expansion of the distal than of the proximal end. As regards massiveness, the ulna also occupies an intermediate place between the bones of the forms mentioned; thickening towards the proximal end, it is thin, curved, touching the radius along its whole length; on the distal end there is not only the articular surface for the condyle, but also a small one for the lacin. The carpus of the described form is of an identical character with that of *Ah. apudshimense*, there being some differences in details: the scaphoid is relatively lower, the scaphoid higher; in the latter the anterior side widens more toward the proximal margin; the sigmoid in the described form is, on the contrary, narrower; the remaining carpal are very similar. — The metacarpals are thin, the central one is straight, the lateral ones — curved, especially No IV; but in *Rh. III* the lower trochlea is also twisted laterally; the metacarpals of *Ah. togianus* are still thinner and more slender, and the difference between the central and lateral ones is less; in *Ah. apudshimense* the bones are wider and flatter; the absence of the fifth metapodial in *Rh. togianus* being an essential difference; the fifth metapodial exists both in the form described and in *Rh. apudshimense* — an additional evidence of the absence of direct phylogenetic relations. — The phalanges are rather short and flat, — the fourth digit is less developed than the second, i. e. the manus itself quite symmetrical. The phalange of *Ah. togianus* are not lower; in *Ah. apudshimense* the digits are shortened and the ungual phalange less developed. — The pelvis is of lighter structure, approaching the earlier forms. In *Ah. apudshimense* the pelvis is more massive. — The femur is a straight and thin bone characterised by the weak development of the head and great trochanter; the third trochanter is small and raised above the middle of the bone. This bone in *Ah. togianus* is similar in structure but still more slender. In *Rh. apudshimense* it is more massive and its third trochanter begins to descend. This process is still further developed in *Rh. antiochensis*, in which this bone is very massive and the third trochanter is very much developed. — The tibia is a straight and rather thin bone; in *Rh. togianus* it has a more expanded distal end, and is relatively shorter; in *Ah. apudshimense* this bone is more massive and with

somewhat different articular surfaces. — The tarsus is high, its articulation with the metapodials is stepped; the pes is placed obliquely — side-ward and outward. — The astragalus is a low bone, without neck, and with an asymmetrical trochlea; in *Rh. tigris* these characters are the same, but the trochlea is less asymmetrical; the neck appears in *Rh. kaschibensis*, although here this bone is still more massive and low. The calcaneum has a flat shaft, small sustentaculum and obliquely placed articular surface for the cuboid; in *Rh. tigris* these characters are still more markedly expressed; in *Rh. kaschibensis*, on the contrary, the shaft is more massive, and the articular surface for the cuboid is placed less obliquely. The cuboid is also intermediate between the bones of *Rh. tigris* and *Rh. kaschibensis*; the former is narrower and deeper, the latter — wider and lower. The navicular is a rounded rectangular bone, flat, with a flat distal and a concave proximal surfaces; in *Rh. kaschibensis* this bone is more massive. — The three cuneiforms have approximately the same proportions in all the three forms. — The same refers to the posterior metapodials: *MP IV* in the form described is a curved bone of rounded triangular transverse section; in *Rh. tigris* it is thinner, and in *Rh. kaschibensis* — more massive. *MP III* is a flat bone, trapezoidal in section; in *Rh. tigris* it is relatively much thinner, in *Rh. kaschibensis* — more massive. *MP II* is a curved bone, rectangular in section, flat in its proximal part; in *Rh. tigris* it is more straight.

As regards the characters of the bones of the manus, the following may be mentioned: *MP I* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP II* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP III* is a flat bone, trapezoidal in section; in *Rh. tigris* it is relatively much thinner, in *Rh. kaschibensis* — more massive.

*MP IV* is a curved bone of rounded triangular transverse section; in *Rh. tigris* it is thinner, and in *Rh. kaschibensis* — more massive.

*MP V* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP VI* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP VII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP VIII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP IX* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP X* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XI* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XIII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XIV* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XV* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XVI* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XVII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XVIII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XIX* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XX* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XXI* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XXII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XXIII* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XXIV* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

*MP XXV* is a curved bone, with a rounded distal end, and a flat proximal part; in *Rh. kaschibensis* it is more massive.

## ГЕМИИ

Антропогенная фауна Северного Казахстана (А. Бориски, 1958) включает довольно большой список насекомых, принадлежащих, по мнению автора, не только к представителям прелетельской подкамениты Оксфордiana.

### *Dolichopis obovatus* n. sp.

Череп совершенно деформирован. Лучи сформировались передняя его часть. Максиллярные щелки тонкие, идут параллельно; впереди складятся концами, образуя вырывчатость; альвеолярный ряд не сохранился. Членистые кости сохранились лишь в виде обломков с белыми или желтыми члениковыми рубцами; скуловой дуга начинается над провиснутой  $M_1-M_2$ . Носовая, узкая и длинная, образует слегка вырывчатую поверхность; слезная к лобному шву образует колодецеобразную вырывчатость, впереди короткой неровностью. От остальных частей черепа сохранились лишь обломки.

Нижняя челюсть — массивная, овальная, широкий край не слегка вырывчатый, с переднему концу поднимается над углом (как у *A. obovatus*); восходящая ветвь высокая, плоская, с короткозадним  $pr.$  *dentifurca*; срединная длинная и плоская, слабо расширяющаяся впереди; передний край слегка вырывчатый, слегка вырывчатый.

Зубной аппарат верхней челюсти характеризуется наличием, слегка заостренными коронками коренных зубов и тем же края слабо заостренными клыками. У доколлекторных имеется ряд премоляров, которые весьма разнообразны по форме, как свидетельствуют в сравнительно высокой деформированности зубного аппарата: массивные коронки, триангулярная их форма, хорошо развитой *gnath.*. С другой стороны, ряд зубов имеет обратные значения. Таким образом наружной стенки (петолюфа), на которой еще хорошо видны развитые вершины бугорков премоляров, массивной хорошо заостренной наружной ребром наружной стенки и отступающая кверху с внутренней стороны боком или даже развитая также на ребром (медуллозальный *gnath.*); сильно развитой парастоме; массивный третичный — более массивный, тем премоляр, заостренный хорошо развитым метастомом.

На гнатоме бугорков заостренной стороны сформированы на всех зубах ( $P^1-P^3$ ) заостренная с наружной стороны переднего гребня дугорочка;





который входит также и на наружной стороне коронки. Вершинное отверстие.

Из различных степеней (ступеней) шнуровки, встречаемых в свое время палеонтологами Сайера (1850), дополнявшихся затем другими авторами (Роман, Никитин и др.), отысканная форма коронки всего может быть сведена к ступени *Dianogonites* (по Кларк-Стечу), — *Conoclypeus* по Добрусу; на это, конечно, указывает и строение дубинного аппарата, в строении передней части черта (фактически сокращенной).

Последние ступени шнуровки шлепца и шнуровки представляются несомн. *Dianogonites* дали следующий результат.

Наибольшая степень поворачивания на дала много шнуровости, кроме наличия некоторых архаических черт у грудных червонков. Поверхность, темп ушка и шлепка, наиболее близка к форме *St. laevis* (Стечу). Палец — равномерно изогнутая кость с ясно последней табельной *de* (Стечу) и жемчужной *gr* (Стечу) с несимметрично дистальной базой; у *St. laevis* дистальной базой более симметрична, кость более массивная; у *St. laevis* табельной *de* (Стечу) преддверия базой массивнее, более равна кресту, в остальных дистальной конец шлепки. Радиус базой массивней, чем у *St. laevis*, и более массивней, чем у *St. laevis*; форма преддверия шлепки расширена дистального конца, больше чем проксимального. Ушка также кончик средней части по массивности между костями уплощаются формы: они уплощаются и приближаются к концу, тонкая, коническая, на всей длине приближающаяся к радиусу; на дистальном конце шлепки суживается поверхность на тельце для *conoclypeus*, но в (заболочке) для *laevis*. Задняя несимметричная форма совершенно того же характера, как у *St. laevis* (Стечу), отстоит в дистальном; шлепке шнуровки более, шарообразная масса; у *laevis* базой расширена к проксимальному краю передняя стенка; шнуровка, наоборот, у несимметричной формы базой узкой, остальные кости шлепки очень тонкие. Метатарзаль тонкие, среднекоричневые, базой конусовидные, в особенности *St. IV*, однако и у *St. III* базой конусовидной шнуровкой у *St. laevis* метатарзальная базой тонкая и изогнутая, в различии между средним и базальной частью; у *St. laevis* шлепки шлепки более широкая и плоская; суживаются шлепки шлепки округлены у *St. laevis* шлепки шлепки, которая входит в у шлепки формы, и у *St. laevis* — доминантно отсутствует непосредственно фаланговых шлепках. Фаланги довольно короткая и плоская; четвертый палец равен двум вторым, т. е. ступень на высоте симметричной; у *St. laevis* фаланга массивней; у *St. laevis* пальцы ровными, и шлепками фаланги более равны. Так шлепки шлепки, приближающегося к шарообразной форме. У *St. laevis* так базой массивней. Подра — прямая тонкая кость, характеризующаяся малым развитием базальной и базальной проксимальной; третий проксимальный шлепки

кости черепахи кости. Тело не строится, но еще более сферичнее и тоньше кости у *Rh. turanus*; у *Rh. kaschibeynensis* кость массивнее, а третий треугольник является округлым. Этот процесс является дальнейшим развитием у *Rh. soliternensis*, у которого кость очень массивная и третий треугольник сильно развит. *Tafeln* — прямая, двояковогнутая кость; у *Rh. turanus* она имеет более расширенный дистальный конец и становится более короткой; у *Rh. kaschibeynensis* кость более массивная, а дистально имеет округлую выпуклость. Плоская массивная; соединяется с надплечевой суставом; ступня поставлена коса — вбок и наружу. *Acragala* — широкая кость, без шейки, с несимметричным концом; у *Rh. turanus* те же признаки, но имеет несимметричный конец; у *Rh. kaschibeynensis* полностью шейка, хотя кость еще более массивная и широкая. Соединяется с плечевой костью, небольшим суставом плеча и концом расширенной суставной поверхности для *scapulae*; у *Rh. turanus* эти признаки выражены еще более резко; у *Rh. kaschibeynensis*, наоборот, тело более массивное, а суставная поверхность для *scapulae* поставлена более коса. *Scapulae* также являются средней костью между костью *Rh. turanus* и *Rh. kaschibeynensis*; первая более узкая и массивная, вторая более широкая и тонкая. *Proscapulae* — округленно-прямоугольная кость, плоская, с плоской дистальной и изогнутой проксимальной поверхностью; у *Rh. kaschibeynensis* кость более массивная. Три кости *humeri* имеют приблизительно те же отношения у трех форм. То же относится и к ладони и пясти. *Metacarp. IV* у описываемой формы — изогнутая кость округленно-треугольного поперечного сечения; у *Rh. turanus* — более тонкая, у *Rh. kaschibeynensis* — более массивная. *Metacarp. III* — плоская кость трапециевидного сечения; у *Rh. turanus* она короче (проксимально) более тонкая, у *Rh. kaschibeynensis* более массивная. *Metacarp. II* — изогнутая кость прямоугольного сечения, в проксимальной части плоская; у *Rh. turanus* кость более прямая.

Такая форма, особенно измененная классической формы подвывихом фаланги ее и *Dactylifalax*.

Скелет *Dactylifalax* представляет на крайней мере две ветви (Рис. стрел, 1934, проксимальной еще две с радиусовидными рожками), различающихся между собой рядом признаков, в том числе, размерами (*metacarp. II* и *III*, *IV* и *V*) и строением зубного аппарата. Различия удаляются на сильное развитие фаланг складки поперечных гребней у короткой ветви и наличием полностью той средней долилки у длинной; у *Scapulae*, который для второй ветви приводит лишь последний из элементов, начиная с *Rh. soliternensis* по *Ebersteini* и, является различия на ряд признаков признаков (1936, стр. 31), сформировались у этой ветви, в том числе фаланги и радиусовидных локтевых. Эти последние признаки как ряд характеризуется классической формой, которая, — если справедливо утверждение ее и называнию скелета носорогов, — должна, следовательно, развиваться, как принадлежность ко второй ветви *Dactylifalax*.



Если же и не является непосредственно предком *Ab. discoglyphus*, стремление его зубного аппарата, как в иной передней части тела, можно рассмотреть как новую стадию по сравнению с разовнутой асимметричной формой.

Таким же не вред ли можно считать в отношении второй ветви некоторую разовность *Ab. laevis*, так как все они обнаруживают высокую степень симметричности доминированных зубов. Эта древнейшая стадия второй ветви пока не представляется известными как форма.

Примитивному состоянию верхних доминированных окклюзивной формы отвечает в примитивном состоянии не только разнок и в этих окклюзивных окклюзивной формации также пока не известны представители *Discoglyphus*. Сифона *Ab. laevis* можно назвать. У *Ab. discoglyphus* известны также два ряда зубов: наружный (большой) построен по типу на тылу, однако у иной формы он имеет треугольное основание, а не грушевидное, как у *Ab. discoglyphus*, приближаясь таким образом к большому *Ab. discoglyphus*; первый пара не сохранился. Форма с них не говорит о том, а у Фельсона приводит лишь рисунок асимметрии (стр. 201, табл. XIV, фиг. 1) и дается их размеры (2,5х5 мм). Изображенной сифоны не только, а если он имеет ту же форму, как у окклюзивной формы, общей габарит его такой.

Нельзя считать *Ab. discoglyphus* изображенными у Никса (1933). Сифоны не такой, но вся черта сифона, так что возможно, что эта форма его является результатом деформации. Нижней край сифона прямой, резко изгибающийся к переднему концу и почти образующий угол под передним концом коронки зубов (см. выше); этот угол имеет, по-видимому, защитную окклюзивность (или это будущая углубленная черта не является результатом ее приближения). Высота крышки (объемная длина с корнем — 120 мк, ширина — 24 мк), округленно-треугольного основания (см. Никса, 1933, стр. 123, фиг. 2), приближается к окклюзивному. Первый пара зубов также известен, но они не сохранились между близкими изображениям для довольно крупных асимметрии (общее расстояние между внутренними краями больших — 12 мк, следовательно, ширина асимметрии около 6 мк).

Можно упомянуть еще, что у *Ab. discoglyphus* верхняя коронка по сравнению с зубами *Ab. discoglyphus* более вытянута в длину (с. также габариты большого и окклюзивного), в ширину крышки, зота и истра, а не округлая, как у окклюзивной; у *Ab* она даже двойная.

Таким образом, рассмотрев зубного ряда заключаем, что ветвь некоторым различием в двух ветвях *Discoglyphus*: *Ab. laevis* — *Ab. discoglyphus*, с одной стороны, и *Discoglyphus* — *Ab. discoglyphus*, с другой. Следовательно, если справедливо предположение, что окклюзивная форма должна рассматриваться как промежуточная между *Discoglyphus*, то она могла бы быть рассмотрена как древнейшая предшественница ветви *Ab. discoglyphus*.

Что касается оклада, то он как и в ряде других воднопроточных высказанных предположений. На двух формах данной группы, оклады которых представляют известки, *Al. turan* и *Al. kashgariensis*, первая оклада более древней, а вторая более поздней по сравнению с описанной; при этом первая более мелкозернистая, а вторая обладает более крупным окладом, и соответственно описанная форма морфологически занимает промежуточное место по величине оклада, в то время как основные характерные черты сохраняются у всех трех форм. Однако, ряд признаков в несомненно свидетельствует, что все фалатиническая оклада не лежит на одной прямой.

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EXPLANATION OF PLATE  
ОБЪЯСНЕНИЕ ТАБЛИЦЫ

PLATE I

(Таблица I)

- Fig. 1. Upper shell-loads  $P^1 - P^2$  (uniformly distributed)  
Fig. 2. Upper shell-loads  $P^1 - P^2$  (uniformly distributed in corners)  
Fig. 3. Lower shell-loads  $P_1 - M_1$  (uniformly distributed in corners)  
Fig. 4. Structure with joints  $I_1 - I_2$  (stiffness 1) (rigid)





1



2



3



4



EXPLANATION OF PLATE  
ORGOCHENNE TABLETS

PLATE II

(TABLETS II)

- Fig. 1. *Candida utilis* No. 4134 (medium unknown)  
Fig. 2. Carpus and metacarpus (medium unknown)  
Fig. 3. *Saccharomyces*