

A taxonomic study in Deracanthinae (Orthoptera, Bradyporidae)

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Introduction

The subfamily Deracanthinae is from the taxonomic point of view very insufficiently examined. Fischer-Waldheim characterized most of his species far from exactly, which led some of the later authors to a number of mistakes (e. g. Bolivar, 1901). Some substantial mistakes were explained by Bey-Bienko (cfr. 1951), others are discussed in this paper.

Up to the present, the subfamily Deracanthinae has not been studied in detail. (The present state of study is unsatisfactory; the original descriptions of the individual genera and species and valuable supplementing descriptions and characteristics being dispersed in various journals written in different languages). The fact that some of Fischer-Waldheim's species have not been found anew since their description (e.g. *Deracantha cincta*, *Deracanthella aranea*, *D. antilope*, *D. camelus*) and that their types (or typical material) have been presumably lost adds to the confusion. For further taxonomic studies of the group of genera from the affinity of the genus *Zichya*, two works of Bey-Bienko (cfr. 1933, 1951) are of basic importance, especially that of 1951 where a brief, but telling characteristic of the genus *Zichya* (in a new interpretation), descriptions of two new genera (*Deracanthina* and *Damalacantha*) and of a few new taxons from Mongolia and China are given.

The subfamily Deracanthinae has the centre of its geographical distribution in Mongolia and neighbouring China (Dzungaria, Inner Mongolia [Manchuria], N.E. province; vicinity of Peking). Some species extend to the east as far as Korea, in the north and northwest to the territory of USSR (Far East Siberia, Transbaikalia, Irkutsk, Tuva ASSR, Altai, Kazakhstan and Kirghizia).

In this paper, the subfamily Deracanthinae is divided on the basis of external morphological characters into two tribes, i.e. Deracanthini trib. n. and Zichyini trib. n. After having studied a valuable material from Mongolia, China and USSR and the corresponding literature, the present author elaborated a key to the tribes and genera, more detailed characteristics of the genera and of some insufficiently described and up to the present obscure species. The geographical distribution is given in all species examined (in most of them it is supplemented with new data from Mongolia and Far East Siberia). Two species from Mongolia are new to science (i. e. *Deracantha mongolica*, n. sp., *Zichya piechockii*, n. sp.). Another species of *Deracantha*, as yet undescribed, is known to the author from a single female from Korea.

Acknowledgements

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The British Museum (Natural History), London, by courtesy of Dr. D. R. Ragge: Uvarov's paratypes of *D. transversa*, the female specimen of *Deracantha grandis* and two specimens of *D. onos*;

The Staatliches Museum für Tierkunde, Dresden, by courtesy of Dr. W. Götz: The holotype and paratype of *D. transversa* Uv.;

The Institut für Spezielle Zoologie und Zoologisches Museum of Humboldt-Universität, Berlin, by courtesy of Dr. K. K. Günther: a comparative material of *D. onos* and *Deracanthella verrucosa* from Mongolia;

The National Museum, Prague, by courtesy of Professor Dr. J. Mařan: the unidentified material of Deracanthinae from Mongolia;

The Zoological Institute, Academy of Sciences of the USSR, Leningrad, by courtesy of Professor Dr. G. Y. Bey-Bienko: two specimens of *Deracanthella verrucosa*;

The Naturhistorisches Museum, Vienna, by courtesy of Professor Dr. M. Beier: two specimens of *Deracantha onos* and *D. verrucosa* from Mongolia;

The Entomologisches Institut, Radeberg, by courtesy of Mr. W. H. Muche: the unidentified material of Deracanthinae from Mongolia;

The Naturhistoriska Riksmuseet, Stockholm, by courtesy of Dr. B. Hanson: two unidentified specimens of *Deracantha*;

Dr. Fer Willemsse's private collection, Eygelshoven: two specimens of the genera *Deracanthella* and *Zichya*.

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Key to the tribes and genera

- 1/4 Tarsal segments without spines (Fig. 1.). Tibiae distinctly quadrangular in cross-section and with clean-cut longitudinal furrow on upper side
..... Deracanthini, trib. n.
- 2/3 More robust insects. Eyes slightly convex, scarcely hemispherical or not more than hemispherical (Fig. 3). Interspace between the pits of antennae relatively wide, 1.7—2.4 × wider than 1st joint of antenna. All tibiae with relatively large and thick spinules on the lower side (Fig. 5). Cerci ♂ relatively short, thick, some-

- what dorso-ventrally depressed, with a strong conical spine on the inner margin and a small spinule on the inner side of the conical apical portion or in the apical part of the posterior margin (Figs. 7, 9, 10) *Deracantha* Fischer-waldheim
- 3/2 More slender insects. Eyes strongly convex, more than hemispherical (Fig. 4). Interspace between the pits of antennae distinctly narrower than 1st joint of antenna or of the same width. All tibiae with small and thin spinules on the lower side (Fig. 6). Cerci ♂ relatively long, cylindrical, distinctly incurved, their apex with two small, sharp, very approximated spinules (Fig. 12) *Deracanthella* I. Bolivar
- 4/1 Tarsal segments distinctly spinose (Fig. 2). Tibiae round or oval in cross-section; longitudinal furrow on the upper side absent. Zichyini, n. trib.
- 5/8 Hind part of pronotum quite smooth or only slightly rugose; hind margin of pronotum bow-shapedly excised or in female almost straight, smooth or with minute spinules. Anterior margin of pronotum straight or almost straight (sometimes slightly convex or concave), smooth (genus *Deracanthina*) or with minute spinules and strong conical spine in lateral parts of pronotum (genus *Damalacantha*). Lateral lobes of pronotum ♂ relatively wide, in posterior part considerably roundly broadened (Fig. 15).
- 6/7 Anterior margin of pronotum slightly concave or quite straight, smooth (Pronotum very similar to the one of *Deracantha* onos). Hind part of pronotum without two approximated black tubercles in the middle of hind margin. Posterior margin of pronotum without minute spinules. Cerci ♂ cylindrical, 1.5—3 × longer than wide, with two small, sharp, very approximated spines on the apex (Fig. 17). Subgenital plate ♂ with long, cylindrical or spindle-shaped styli, 2.5—4 × longer than wide. Last abdominal tergite ♂ on sides of hind margin with a small spinule. Abdomen ♂ in apical part distinctly broadened or with parallel margins *Deracanthina* Bey-Bienko
- 7/6 Anterior margin of pronotum straight or slightly convex with minute spinules and with strong, sharp conical spine in lateral parts of prozona. Hind part of pronotum quite smooth or only slightly rugose, in the middle of hind margin with two small approximated black or dark brown tubercles (in *D. immaculata* B.—Bienko often absent). Hind margin of pronotum with minute spinules. Cerci ♂ very short, with only one sharp spine on the apex, second spine placed in the apical part of the inner side (Fig. 21). Subgenital plate ♂ with very short, almost spherical styli. Last abdominal tergite ♂ without a small spinule on sides of hind margin. Abdomen ♂ in apical part not broadened *Damalacantha* Bey-Bienko
- 8/5 Hind part of pronotum considerably or distinctly rugose (in *Z. baranovi* with strong rugosity), hind margin of pronotum distinctly prominent, slightly rounded and strongly spinose (armed with relatively strong and sharp conical spinules, directed more or less horizontally). Anterior margin of pronotum bow-shapedly prominent, with relatively strong conical spinules placed almost vertically and with strong conical spine in lateral parts of prozona. Lateral lobes of pronotum ♂ relatively long and narrow, their hind part not broadened (most likely somewhat

narrowed) (Fig. 16.). Abdomen ♂ in apical part distinctly broadened. Cerci ♂ relatively long, cylindrical, almost straight or in apical part distinctly incurved, on the apex with two small, very approximated spines (Fig. 18).
 *Zichya* I. Bolivar.

Tribe DERACANTHINI, n. trib.

The representatives of this tribe have the tibiae distinctly quadrangular in cross-section and a clean-cut longitudinal furrow on the upper side (especially well visible on hind tibiae). All tarsal segments without spines. The following two genera belong to this tribe: *Deracantha* Fischer-Waldheim, *Deracanthella* I. Bolivar

Genus *Deracantha* Fischer-Waldheim

Deracantha Fischer-Waldheim, 1833, Bull. Soc. Natural. Moscou 6 : 375

Deracantha, Fieber, 1853, Lotos 3:205

Deracantha, Kirby, 1906, Synon. Cat. Orthopt. 2:177

Idioderus Lucas, 1873, Ann. Soc. entom. France (5)3:102

Idioderus, Kirby, 1906, Synon. Cat. Orthopt. 2:177

Bradyporus, I. Bolivar, 1901, in Zichy, Dritte Asiat. Forschungsr. 2:236—238

Type species: *Gryllus onos* Pallas

Stout insects, size medium or large. Eyes relatively small, slightly convex, scarcely hemispherical or not more than hemispherical (Fig. 3). Interspace between the pits of the antennae wide, $1.7\text{--}2.4\times$ wider than 1st joint of antenna. Pronotum relatively large, wide, mostly without spinules (in *D. spinosa* with relatively large, sharp spinules). Anterior margin of pronotum more or less concave (sometimes straight) without spinules (with exception of *D. spinosa*/*), hind margin almost straight or only slightly concave, smooth or with minute tubercles (in *D. spinosa* with spinules). Disc of prozona transversely impressed with more or less distinctly developed transverse keel in front of the middle of the prozona or distinctly convex, smooth (in *D. grandis*). Metazona (e. i., the whole of the pronotum behind transverse constriction) not strongly but distinctly wrinkled and punctured, with relatively deep and broad transverse impression in front of metazona. Lateral keels distinctly developed, straight and parallel or somewhat backwardly divergent, with minute tubercles or spinules (in *D. spinosa*). Hind part of metazona (behind transverse impression) slightly convex or with a large transverse gibbosity. Lateral lobes of pronotum more or less concave and minutely wrinkled in the posterior part, distinctly longer than deep, in posterior part not broadened. Prosternum smooth or with two small spinules. Abdomen stout, cylindrical, last abdominal tergite ♂ with a pair of short conical appendages at the sides of the round median emargination (Figs. 23—25). Cerci ♂ thick, somewhat dorso-ventrally depressed, with a conical spine on the inner margin and a small spine on the inner side of the conical apical portion or in the apical part of the posterior

*) judging from the figure in original description

margin (Figs. 7, 9, 10). Cerci ♀ short, conical. Subgenital plate ♂ large, wide, protruding a little over last abdominal tergite; its medial longitudinal keel thin, almost indistinct, lateral keels slightly convex, well developed. Styli relatively large, cylindrical, $1.9-3.4\times$ longer than wide in the middle. Subgenital plate ♀ relatively small, trapezoidal or triangular, in the middle of hind margin more or less excised, smooth or with two longitudinal, distinctly divergent furrows (Figs. 13, 14). Ovipositor ♀ relatively long, $1.5-3\times$ longer than pronotum, more or less curved. Femora with minute spinules on the lower side. All tibiae with relatively large, sharp, dense spinules on the lower sides, distinctly quadrangular in cross-section and with clean-cut longitudinal furrow on the upper side. Tarsal segments without spines (Fig. 1).

List of known species:

D. onos (Pallas, 1772)

D. grandis (Lucas, 1863)

D. transversa Uvarov, 1930

D. mongolica, n. sp.

D. cincta (Fischer-Waldheim), 1833 — This species was described very poorly from female sex from "Siberia" and it remains unknown to orthopterists of the present time. The type is probably lost.

D. spinosa (Fischer-Waldheim), 1846 — The species was described from Irkutsk province and figured in Fischer-Waldheim's Orthoptères de la Russie (cfr. 1846). It is unknown to me and perhaps to all orthopterists. The type is probably also lost.

Key to the species

- 1/6 Size small or medium (rarely large), body more slender. Disc of prozona transversely impressed with more or less distinctly developed transverse keel in front of the centre of prozona. Ovipositor ♀ $1.9-3\times$ longer than pronotum. Subgenital plate ♀ without longitudinal furrows (Fig. 13).
- 2/3 Hind part of metazona slightly convex, without a large transverse gibbosity behind the transverse impression. Hind margin of metazona slightly concave and somewhat raised (elytra often visible under hind margin) *D. onos* (Pallas)
- 3/2 Hind part of metazona with a large transverse gibbosity behind the transverse impression. Hind margin of metazona almost straight or only slightly concave (but not raised), in front of hind margin with two broad, shallow, sublateral concavities.
- 4/5 Size medium, broad-shouldered. Lateral keels strongly developed, distinctly extend beyond the lateral lobes; hind lateral angles of prozona prominent, less obtuse than in *D. mongolica*. Ovipositor ♀ moderately recurved, nearly twice as long as pronotum *D. transversa* Uvarov
- 5/4 Size small, body slender. Lateral keels poorly developed, extend only slightly beyond the lateral lobes; hind lateral angles of prozona less prominent, more obtuse than in *D. transversa*. Ovipositor ♀ $2.4-3\times$ longer than pronotum, in basal 1/6 curved, afterwards straight, in apical 2/6 slightly incurved (Fig. 35) *D. mongolica*, n. sp.

- 6/1 Size large, body more stout. Disc of prozona distinctly convex, smooth. Ovipositor ♀ relatively short, only $1.5\times$ longer than pronotum. Subgenital plate ♀ in medial part with two divergent longitudinal furrows (Fig. 14) *D. grandis* (Lucas)

Deracantha onos (Pallas, 1772)

Gryllus onos Pallas, 1772, Spicil. zool. 9:17—19, Pl. 2, Fig. 1. Classical locality "Siberia".

Type specimen (♀) probably lost.

Ephippiger onos; Fischer-Waldheim, 1846, Orth. Russie: 190—191. Pl. XXV, Fig. 2 (♀)

Bradyporus onos; I. Bolivar, 1901, in Zichy, Dritte Asiat. Forschungr., 2: 238

Deracantha onos; Jacobson, 1905, in Jacobson & Bianki, Orthopt. and Odonata Russ.

Emp. and adjoining countries: 350, 423, Fig. 42

Deracantha onos; Pylnov, 1916, Rev. Russe Entom. 16: 283, Figs. 3—4 (♂, ♀)

Deracantha onos; Uvarov, 1925, Entom. Mitt. 14:153

Deracantha onos; Bey-Bienko, 1929, Konowia 8:99

D(eracantha) onos; Uvarov, 1930, Ann. Mag. nat. Hist., Lond. (10)5:255, 256

Deracantha onos; Chang, 1935, Mus. Heude, Not. entom. chin. 2:57

Deracantha onos; Ebner, 1938, Orth. Cat., Pars 1:64

Deracantha onos; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:68

Size medium to large (♂ 42—53; ♀ 36—55 mm).

♂: Eyes relatively small, slightly convex, scarcely hemispherical. Interspace between the pits of the antennae relatively wide, $1.8-2\times$ wider than 1st joint of antenna. Pronotum relatively large, wide (but narrower than in *D. transversa*), its maximal width in posterior $\frac{1}{3}$ of metazona. Prozona with slightly concave anterior margin, its disc transversely impressed, with transverse keel in front of middle, hind lateral angles slightly prominent, more obtuse than in *D. transversa*, with a small, nearly indistinct circular pit at the base of prominence. Metazona (i.e., the whole of the pronotum behind the transverse constriction) somewhat longer than wide, lateral keels thin, straight, backwardly distinctly divergent, with minute tubercles (but without spinules at the antero-lateral angle). Hind margin of metazona slightly concave and somewhat raised in the middle (elytra often visible under hind margin), disc delicately wrinkled and punctured, with a deep and relatively narrow transverse impression in front of the middle of metazona, with a pair of indistinct pits just behind the typical sulcus. Posterior part of metazona (lying behind the transverse impression) distinctly wider than long, slightly convex (without a large transverse gibbosity) with two broad, very shallow, sublateral concavities in lateral parts in front of hind margin of metazona. Lateral lobes slightly concave and minutely wrinkled in the posterior part, $2.1-2.5\times$ longer than deep; anterior margin slightly concave, lower margin slightly concave in prozona, roundedly-prominent opposite the lateral angle of the metazonal disc, broadly rounded in the rest. Prosternum with a pair of very short, conical spinules (in ♂ from Dalanshar-Galant without spinules). Abdominal tergites punctured, their hind margins smooth, slightly inflated. Last abdominal tergite with a pair of short conical, excurved appendages at the sides of the round medial emargination (Fig. 23). Cerci relatively large, thick, somewhat dorso-ventrally depressed, with a strong conical spine on the inner margin in

the middle and a small spinule on the inner side of the conical apical part (Fig. 9). Subgenital plate large, wide, longitudinal middle keel very thin, lateral keels more distinctly developed, its hind margin slightly concave. Styli cylindrical, $2.7-3\times$ longer than wide. Femora with minute spinules on the lower side. Tibiae distinctly quadrangular in cross-section, with clean-cut longitudinal furrow on the upper side and with relatively large, thick spinules on the lower side. Tarsal segments without spines.

♀: As male, but somewhat larger, lateral keels of metazona less divergent (nearly parallel). Lateral lobes narrower in posterior part than in the anterior one. Cerci short, conical, relatively wide, with sharp apex (Fig. 8). Subgenital plate triangular, its apex slightly excised. Ovipositor almost $2\times$ longer than pronotum, moderately recurved or in basal $\frac{1}{2}$ almost straight, in apical $\frac{1}{2}$ slightly recurved. Interspace between the pits of antennae $2-2.1\times$ wider than 1st joint of antenna.

General colouration dirty creamy-yellow to light brown. Occiput black, disc of pronotum with black stripe in lateral parts and along transverse constriction and impression. Lateral lobes of pronotum with larger or smaller black macula in upper half of posterior part of metazona. Abdominal tergites with more or less coalescent black spots in lateral parts of abdomen, sometimes dorsal part quite black. Legs dirty creamy-yellow to light brown, femora with black spot on the apex, upper side of ovipositor black.

Material examined:

Mongolia, 3 km west of Somon Dashinchilen, Aimak Bulgan, $47^{\circ}50'N/103^{\circ}55'E$, 26. VIII. 1964, 1150—1200 m, 1 ♂, 1 ♀, K. K. Günther leg. (coll. Zool. Mus. Berlin); N. Mongolia, no data, 1 ♂, 1 ♀, Leder leg. (Coll. Naturh. Mus. Wien); Mongolia borealis, ad fl. Tsh . . . oj, VII. 1925, 1 ♀, Matveev leg. (Coll. Brit. Mus. London) (locality label undeciphered); Far East Siberia, Neighbourhood of the town Svobodnyi, distr. Amursky, VII.—VIII. 1928, 1 ♂, B. Kravtzev leg. (Coll. Brit. Mus. London); East Gobi Aimak, Dalanschar-Galant. 1. VI. 1959. ♂ (coll. Univ. Ulan - Bator in coll. Nat. Mus. Prague)

Measurements (in mm)

	Pylnov, 1916		new measurements	
	male	female	males	females
Length of body	48.2	49.2	42 —53	36 —55
Length of pronotum	15	15.4	14.2—15	14.5—17.8
Length of metazona	—	—	10.2—11.5	11 —13.2
Max. width of metazona	—	—	9.9—10.5	8.5—10.9
Length of fem. post.	17.4	20.4	18 —19	19 —22.6
Length of tib. post.	20.4	23.4	20 —21	23.2—25.2
Length of ovipositor	—	29.2	—	28.5—33

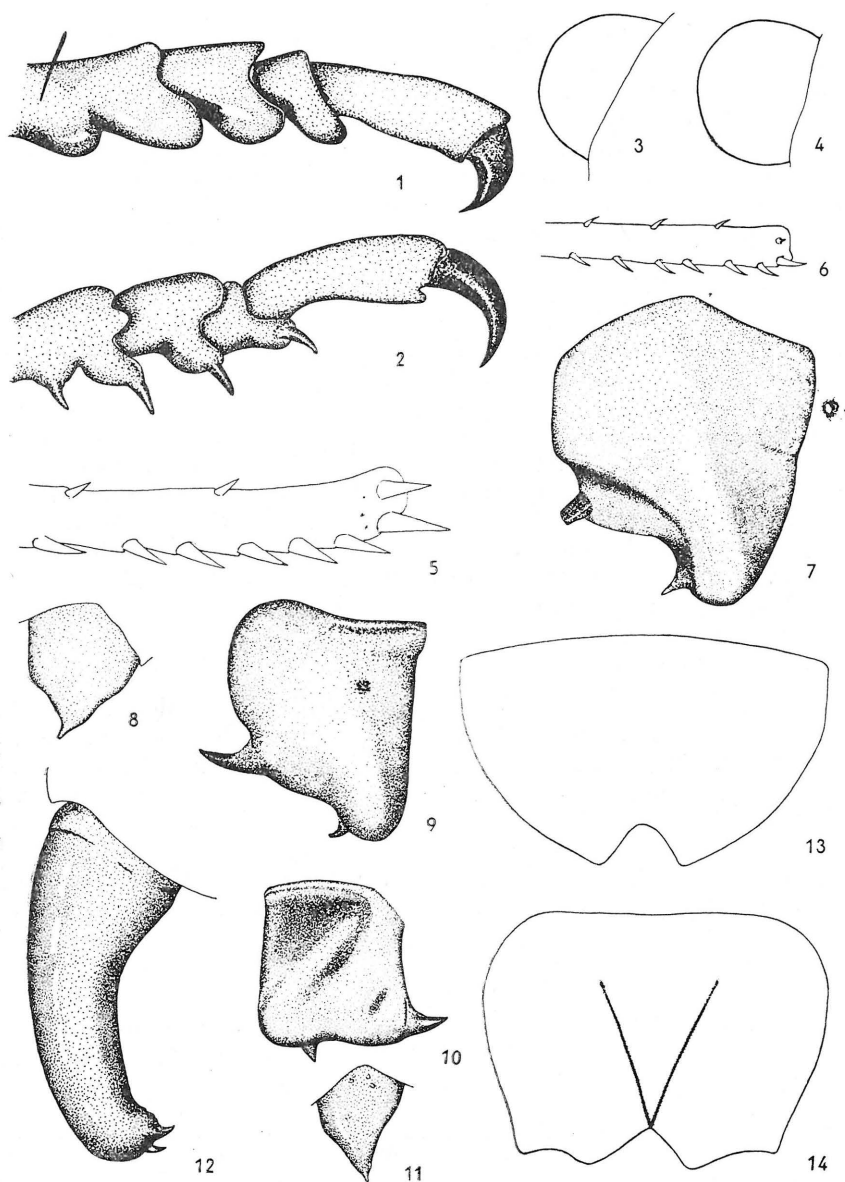


Fig. 1. *Deracantha mongolica*, n. sp. — Left tarsus in male (lateral view). Fig. 2. *Deracanthina deracanthoides* — Left tarsus in male (lateral view). Fig. 3. *Deracantha mongolica*, n. sp. — Left eye in male (lateral view). Fig. 4. *Deracanthella verrucosa* — Left eye in male (lateral view). Fig. 5. *Deracantha onos* — Apical part of hind tibia ♂ (lateral view). Fig. 6. *Deracanthella verrucosa* — Apical part of hind tibia ♂ (lateral view). Fig. 7. *Deracantha transversa* — Right cercus ♂ (holotype) (dorsal view). — Strong spine in the middle of inner margin damaged. Fig. 8. *Deracantha onos* — Right cercus

Geographical distribution: USSR (Far East Siberia!), Mongolia, China: Manchuria, N.E. province (Peking?) and Korea (?). Occurrence in the vicinity of Peking and Korea will have to be verified.

***Deracantha transversa* Uvarov, 1930**

Deracantha transversa; Uvarov, 1930, Ann. Mag. nat. Hist. (10)5:255(♂, ♀). Holotype ♂, China, Peking. In the collection of the Staatliches Museum für Tierkunde, Dresden.

Deracantha transversa; Kishida, 1934, Kontyû, Tokyo, 8:187

Deracantha transversa; Chang, 1935, Mus. Heude, Not. entom. chin. 2:57

Deracantha transversa; Mori, 1935, Rep. 1st. Scient. Exped. Manchoukuo (5/1) 5—17:7, 16, Fig. 6, Pl. 3, figs 3—4.

Deracantha transversa; Ebner, 1938, Orth. Cat., Pars 1:64

Deracantha transversa; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:68

Of medium size (♂ 35—43, ♀ 38—44 mm), more broad-shouldered than *D. onos* and *D. mongolica*, n. sp.

♂: Eyes relatively small, convex, hemispherical. Interspace between the pits of antennae $2—2.3\times$ wider than 1st joint of antenna. Pronotum relatively large, wide, its greatest width is two-thirds of its length. Prozona with the anterior margin concave, its disc transversely impressed, with transverse keel in front of middle, hind lateral angles well prominent, less obtuse than in *D. onos*, *D. mongolica* or in *D. grandis*, with a distinct small circular pit at the base of the prominence. Metazona approximately as long as broad, scarcely longer than wide, lateral keels straight or almost straight, tuberculate, extend distinctly beyond the lateral lobes. Hind margin of metazona straight or somewhat concave in the middle, broadly rounded and with some obtuse conical tubercles on the sides; disc of metazona strongly wrinkled and punctured, with a deep and broad transverse impression in front of the middle, with a pair of deep irregularly shaped pits behind the typical transverse sulcus. The posterior part of metazona (behind transverse impression) distinctly broader than long ($1.5—1.6\times$), with a large transverse gibbosity and two broad, shallow sublateral concavities behind the latter. Lateral lobes concave and minutely wrinkled in the metazona, otherwise smooth, much longer ($2—2.4\times$) than deep. Prosternum without spinules. Abdominal tergites punctured, with the hind margins smooth, but not inflated. Last abdominal tergite with a pair of short conical appendages at the sides of the round medial emargination. (Fig. 24) Cerci relatively thick, somewhat dorso-ventrally depressed, with a conical, relatively large spine on the inner margin behind the middle and a spinule on the inner side of the conical apical part (Fig. 7). Subgenital plate relatively large, wide, longitudinal medial keel very thin, lateral keels well developed, its hind margin between lateral keels distinctly

in female (dorsal view). Fig. 9. *Deracantha onos* — Right cercus in male (dorsal view). Fig. 10. *Deracantha mongolica*, n. sp. — Left cercus in male (holotype) (dorsal view). Fig. 11. *Deracantha mongolica*, n. sp. — Left cercus in female (dorsal view). Fig. 12. *Deracanthella verrucosa* — Left cercus in male (dorsal view). Fig. 13. *Deracantha onos* — Subgenital plate ♀ (ventral view). Fig. 14. *Deracantha grandis* — Subgenital plate ♀ (ventral view).

concave. Styli cylindrical, $2-3.4 \times$ (Type) longer than wide in the middle. Hind femora with minute spinules on the lower side. Tibiae distinctly quadrangular in cross-section, with clean-cut longitudinal furrow on the upper side and with relatively large, thick spinules on the lower side. Tarsal segments without spines.

♀: As male, pronotum, however, relatively smaller, tubercles on its margins more distinct and acute. Cerci very short, conical, approximately as long as wide at the base, their apices sharp but not elongated in spine. Ovipositor nearly twice as long as pronotum, moderately recurved. Interspace between the pits of antennae $1.9-2.4 \times$ wider than 1st joint of antenna.

General colouration brownish buff. Pronotum above blackish brown along the lateral margins, the colour extending more deeply inwards on the impressed portions of the disc. Lateral lobes chocolate-brown, broadly pale below. Abdominal tergites with transversely placed black spots.

Material examined:

Holotype ♂, China, Peking, 1929, Exp. Stötzner (Coll. Staatl. Mus. f. Tierkunde, Dresden); paratype ♀, same data as type, also in the coll. of Staatl. Mus. f. Tierkunde, Dresden; paratype ♀, Peking, no data, Exp. Stötzner (Coll. Brit. Mus. London); China, Peking, no data, 1 ♂, Exp. Stötzner (Coll. Brit. Mus. London); China, Peking, no data, ♂, ♀, Exp. Stötzner (Coll. Riksmuseum Stockholm).

Measurements (in mm)

	males			females		
	min.	max.	\bar{x}	min.	max.	\bar{x}
Length of body	35	43	38.3	38	44	—
Length of pronotum	14.5	18.5	16	15.5	15.6	15.5
Length of metazona	10.8	13.4	11.7	19.8	11.9	11.2
Max. width of metazona	10	11.6	11.1	10	11.2	10.7
Length of fem. post.	17	23.5	19.5	18.2	19.1	18.7
Length of tib. post.	19.9	21	—	21.8	24	22.6

Note: Apical part of ovipositor in all females studied more or less damaged.

I have had the opportunity of studying the holotype of *D. transversa*, 2 ♀ paratypes and 3 practically topotypical specimens (2 ♂♂, 1 ♀) from Peking (also from Exp. Stötzner), between which I have found considerable variability. The studied paratypes and topotypical specimens differ somewhat from the holotype by smaller size and slender body, by the shape of cerci ♂♂ (and by much shorter styli ♂♂) stylus in holotype $3.4 \times$ longer than wide, in the other

specimens examined from Peking only $2-2.2\times$ longer than wide). In general habitus these specimens resemble more *D. mongolica*, n. sp. than the holotype of *D. transversa*, however, they differ from *D. mongolica* primarily by larger size and more broad-shouldered pronotum. Final opinion on this problem will be formed after investigation of more extensive material from various localities.

Geographical distribution: North-eastern China (Peking), Manchuria, Korea, Mongolia (probably confusion with *D. mongolica*, n. sp.). Its occurrence in Korea will have to be verified. According to Kishida's paper (cfr. 1934:188), the Korean specimens seem to be different from those from Manchuria (after Kishida the Korean specimens are more slender, smaller in size and paler in colouration).

Deracantha mongolica, n. sp.

Size small (σ 34—35, ϕ 32—38 mm), body relatively slender.

σ : Eyes relatively small, slightly convex, scarcely hemispherical (Fig. 3). Interspace between the pits of antennae $1.7-1.8\times$ wider than 1st joint of antenna. Pronotum relatively small, narrow, its greatest width in the place of transverse gibbosity behind the middle of metazona. Prozona with anterior margin concave, its disc transversely impressed, with transverse keel in front of middle, hind lateral angles scarcely prominent, more obtuse than in *D. transversa*, with very small nearly indistinct circular pit at the base of prominence. Metazona approximately as long as broad or somewhat longer, lateral keels poorly developed in comparison with *D. transversa*, straight or somewhat incurved in hind part of metazona, tuberculate, only slightly extended beyond lateral lobes. Hind margin of metazona in the middle straight or only slightly concave, broadly rounded at sides with some small, blunt tubercles. Disc of metazona slightly wrinkled and punctured with a deep and broad transverse impression in front of the middle, with a pair of shallow irregularly shaped pits just behind the typical sulcus. Posterior part of metazona (behind the transverse impression) distinctly broader than long ($1.3-1.6\times$) with a large transverse gibbosity and two broad, shallow, sublateral concavities behind the latter. Lateral lobes of pronotum slightly concave, minutely wrinkled in metazona, $2-2.2\times$ longer than deep. Anterior margin slightly concave, lower margin straight in prozona, roundedly-prominent opposite the lateral angle of the metazonal disc, broadly rounded in the rest. Prosternum armed with a pair of very small spinules. Abdominal tergites punctured, with hind margins smooth, but not inflated. Last abdominal tergite with a pair of very short conical excurved appendages at the sides of the round medial emargination (Fig. 25). Cerci relatively short, thick, almost as long as wide, somewhat dorso-ventrally depressed, in apical part of the posterior margin with small, conical spine, a second distinctly larger and stronger spine is placed in apical part of the inner side (Fig. 10); its sharp top is directed slightly vertically. Subgenital plate relatively large, wide, longitudinal keel very thin, lateral keels well developed, its hind margin slightly concave. Styli cylindrical, relatively long, $1.9-2.1\times$ longer than wide in the middle (Fig. 19). Femora with minute spinules on the lower side. Hind tibiae distinctly quadrangular in cross-section, with longitu-

dinal furrow on the upper side and with relatively large, thick spinules, which are well visible especially on the lower sides of middle and hind tibiae. Tarsal segments without spines. ♀: In general habitus as in male, but somewhat larger in size, cerci (Fig. 11) very short, conical, $1.1-1.3\times$ longer than wide at the base, their apex pointed but not elongated in spine. Ovipositor $2.4-3\times$ longer than pronotum, in basale $\frac{1}{6}$ curved, further $\frac{3}{6}$ practically straight, in apical $\frac{2}{6}$ slightly incurved. Subgenital plate small, trapezoid, in the middle of hind margin slightly but distinctly excised. Interspace between the pits of antennae $1.8-2\times$ wider than 1st joint of antenna. General colouration dirty creamy yellow. Occiput and lateral parts of pronotum more or less black; the colour extending more deeply inwards on the impressed portions of the disc. Lateral lobes of pronotum with relatively large black macula in upper half of posterior part of metazona. Abdominal tergites dark-brown or black, their hind margins bordered with narrow dirty creamy-yellow band (sometimes discontinuous). In some specimens abdomen with a pair of longitudinal dirty creamy-yellow or light brown bands in lateral parts. Legs dirty creamy-yellow, femora on their apex with black spot; upper side of ovipositor black.

Material examined:

Holotype ♂, Mongolia, Aimak Bulgan, Somon Dashinchilen, 3. VII. 1962 (Mongol. Germ. Biol. Exp. 1962) (Coll. Zool. Inst., Halle-Wittenberg), Allotype ♀, same data as type, also in coll. of the Zool. Institute, Halle-Wittenberg; paratype ♀, same data as type (coll. A. Čejchan); paratypes ♂, 2 ♀♀, Mongolia, Aimak Archangaj, Somon Khachat (= Somon Chašat), 3. VII. 1962 (Mongol. Germ. Biol. Exp. 1962) (Coll. Zool. Inst., Halle-Wittenberg).

Measurements (in mm)

	males		females		
	min.	max.	min.	max.	\bar{x}
Length of body	34	35	32	28	35.7
Length of pronotum	12.6	13.1	10	13	11.3
Length of metazona	9.2	10	7.5	10	9
Max. width of metazona	8	9.9	8	9.8	8.7
Length of fem. post.	14.2	15	15.8	17	16.2
Length of tib. post.	17	17.1	17.1	20	18.2
Length of ovipositor	—	—	28	31	29.9

D. mongolica, n. sp. is very closely related to *D. transversa* Uv. but differs from it by smaller body and more slender size, by relatively smaller and slender pronotum and by less developed lateral keels. In the female sex it differs mainly in shape and size of the ovipositor, which is $2.4-3\times$ longer than

pronotum. By the specific shape of ovipositor it differs from all species of the genus *Deracantha*.

Geographical distribution: Central Mongolia.

Deracantha grandis (Lucas, 1863)

Callimenus grandis Lucas; 1863, Ann. Soc. entom. France (4)3, Bull. entom.: XX (♀) (Communication). Holotype ♀, China, Peking. In the collection of the Muséum National d'Histoire Naturelle, Paris (?). Type probably lost.

Idioderus grandis Lucas; 1873, Ann. Soc. entom. France (5) 3:103, Pl. 3, Figs 1–9 (Description)

Idioderus grandis; Zacher, 1909, Zool., Anz., 34:372 (♂, ♀)

D(eracantha) grandis; Uvarov, 1930, Ann. Mag. nat. Hist. (10)5:255, 256

Deracantha grandis; Chang, 1935, Mus. Heude, Not. entom. chin. 2:57

Deracantha grandis; Ebner, 1938, Orth. Cat., Pars 1:64

Deracantha grandis; Ebner & Beier, 1964, Orth. Cat., Pars 1–2:68

Material examined:

China, Peking, no data, 1 ♀ (coll. Brit. Mus. London)

Measurements:

♀; Length of body 53 mm, pronotum 19.1 mm, metazona 14 mm, maximum width of pronotum 13 mm, length of fem. post. 25 mm, tibia posterior 30 mm, ovipositor 30 mm.

Lucas described this large and stout species from a single female taken by Mr. Armand David in the environs of Peking. The male was described very briefly by Zacher (cfr. 1909) from Kiautschao. He gives the following short description of ♂: "Die Seitenränder des Labrum bilden mit dem Clypeus keinen einspringenden Winkel, und die Mandibeln werden fast völlig bedeckt. Subgenitalplatte zwischen den Styli ausgerandet, über den Styli mit erhöhten Kielen. Die Styli klein, stiftförmig." The specimens of *Idioderus grandis* (♂♂, ♀♀) from Kiautschao were preserved in the Zoological Museum in Wroclaw (Breslau). Professor Dr. W. Rydzewski informed me that this material was absent from the collections of the above mentioned Museum and it is therefore very probable that it was lost during the second World War. The type of *Callimenus grandis* was preserved in the collections of the Muséum National d'Histoire Naturelle in Paris. According to kind information of Dr. M. Descamps there is no specimen of *Callimenus* (or *Idioderus*) *grandis* in the mentioned collections and it seems probable that the type was also lost. One practically topotypical female specimen from Peking (Fig. 30) is in the collections of the British Museum (Natural History) in London; it corresponds very well with the Lucas's description and figure and doubtless represents this species. If no type is found this female specimen should designated neotype.

Geographical distribution: Known only from two Chinese localities: Peking and Kiautschao.

Genus *Deracanthella* I. Bolivar

Deracanthella I. Bolivar, 1901, in Zichy, Dritte Asiat. Forschungsgr. 2:240

Type-species: „*Deracantha aranea* Fischer-Waldheim“

Size small or medium, slender insects. Eyes strongly convex, more than hemispherical. Interspace between the pits of antennae hardly wider than 1st joint of antenna. Pronotum relatively narrow, long, its anterior margin straight or slightly concave (in *D. camellus* protruding strongly forward and covering the whole head). Hind margin of pronotum slightly rounded or straight, or in the middle distinctly concave, sometimes armed with small, relatively strong spinules. Lateral keels well developed, with small, short, blunt tubercles. Disc of metazona either distinctly wrinkled and punctured or covered by relatively strong tubercles. Lateral lobes narrow, relatively long, in ♂ narrowed in posterior part, in ♀ lower margin nearly parallel with the upper margin. Prosternum with two small spinules. Abdomen slender, cylindrical. Cerci ♂ relatively long, cylindrical, distinctly incurved; their apex with two small, sharp, very approximated spines (Fig. 12). Subgenital plate ♂ relatively short, wide, its hind margin broadly excised. Styli relatively long, strong, with rounded apex. Cerci ♀ relatively thick, conical, their apex sharp. Ovipositor in basal half nearly or quite straight, feebly incurved in apical half, especially near the apex. Legs relatively slender, hind femora with minute spinules on the lower side. All tibiae with relatively small and thin spinules on the lower side (by comparison with the genus *Deracantha*) (Fig. 6). Hind tibiae distinctly quadrangular in cross-section and with clean-cut longitudinal furrow on the upper side. Tarsal segments without spines.

The following four species of the genus are known:

D. aranea (Fischer-Waldheim), 1833 — described poorly from Transbaikalia and it remains unknown to orthopterists of the present time.

D. verrucosa (Fischer-Waldheim), 1846 — probably synonymous with the preceding species (see p. 000).

D. antilope (Fischer-Waldheim), 1833 — described from "Siberia" and it remains unknown.

D. camelus (Fischer-Waldheim), 1833 — described from Transbaikalia and also remains unknown.

***Deracanthella verrucosa* (Fischer-Waldheim, 1846)**

Ephippiger verrucosa Fischer-Waldheim, 1846, Nouv. Mém. Soc. Natural. Moscou 8:199, Pl. 25, Fig. 3 (♂). Classical locality: Dauria (Transbaikalia). Type specimen probably lost.

Ephippiger verrucosus; Fischer-Waldheim, 1846, Orthopt. Russie: 199, Pl. 25, Fig. 3 (♂)

Deracanthella aranea; I. Bolivar, 1901, in Zichy, Dritte Asiat. Forschungsr. 2:241 (♂)

Deracanthella verrucosa; Pyl'nov, 1916, Rev. Russe Ent. 16:284, Figs. 5, 6 (♂, ♀)

Deracanthella verrucosa; Bey-Bienko, 1933, Bol. Soc. Esp. nat. Hist. 33:110 (♀)

Deracanthella verrucosa; Chang, 1935, Mus. Heude, Not. entom. chin. 2:58

Deracanthella verrucosa; Ebner, 1938, Orth. Cat., Pars 1:65

Deracanthella verrucosa; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:69

Slender insect, of medium size (♂ 22—28.4 mm, ♀ 30—33 mm). Head relatively small, interspace between the pits of antennae narrow, approximately as wide as 1st joint of antenna. Eyes strongly convex, more than hemispherical. Pronotum narrow, long, anterior margin either straight or slightly convex, with small, blunt tubercles. Lateral part of prozona with short, relatively strong spinule. Hind margin of pronotum slightly rounded, armed with not

long but wide triangle-shaped spinules. Lateral keels well developed, straight, parallel, tuberculate, with one or two short spinules behind the transverse constriction. The most characteristic feature is the peculiar structure of metazona; the latter is characterised by strong spherical convexity placed between hind and lateral margins of metazona and broad transverse impression. The convexity is covered by relatively strong tubercles. Disc of anterior part of metazona (between transverse constriction and impression) is slightly convex, covered by relatively large, blunt tubercles. Lateral lobes of pronotum narrow, long, in ♂ distinctly narrowed in hind part, in ♀ lower margin is nearly parallel with the upper one. Prosternum with two small spinules or without spinules. Abdomen in both sexes slender, cylindrical. Hind margins of tergites feebly thickened. Last abdominal tergite ♂ in the middle slightly excised, without spinules in lateral parts. Cerci ♂ relatively long, strong, cylindrical, slightly incurved, their apex with two small, sharp, very approximated spines (Fig. 12). Subgenital plate relatively short, almost quadrate, middle longitudinal keel very thin, lateral keels more distinct; its hind margin broadly excised. Styli relatively long, strong, in apical $1\frac{1}{2}$ slightly broadened, their apex rounded. Cerci ♀ relatively strong, short, conical, their apex sharp (but not elongated in spine). Subgenital plate ♀ transverse, with a feebly rounded triangular emargination on its hind margin. Ovipositor in basal half nearly or quite straight, and feebly incurved in apical half, especially near the apex. Legs relatively slender, hind femora with minute spinules on the lower side. All tibiae with relatively small and sparse spinules on the lower side. Hind tibiae distinctly quadrangular in cross-section and with clean-cut longitudinal furrow on the upper side. Tarsal segments without spines.

General colouration light-ochreous (sometimes with a feebly greenish shade). Pronotum at lateral parts of transverse constriction and along transverse impression black. Lateral lobes of pronotum with greenish shade in upper half, in lower half with large light-orange macula, bordered on upper and lower margins with narrow black band. Abdomen with a pair of medial and lateral longitudinal light-ochreous stripes on the upper surface (often indistinct); medial stripes straight, lateral slightly curved. Hind margins of abdominal tergites with very narrow interrupted border in general colouration. All legs and ovipositor dirty ochreous; upper side of ovipositor black.

Material examined:

Mongolia, Central Aimak, Ulan-Bator, VIII. 1960, 1 ♀ (Pokorný leg.) (Coll. Nat. Mus. Prague); Mongolia, East Gobi Aimak, Tschajor, 1. IX. 1958, 4 ♂♂, 1 ♀ (Coll. Univ. Ulan-Bator; in coll. Nat. Mus. Prague); Mongolia, Aimak Archangaj, Changej, Sept. 1 ♀ (coll. Dr. F. Willemse); N. W. Mongolia, Chanchaj near Uljasutaja, 1877, 1 ♀ (Potanin leg., Coll. Zool. Inst. Leningrad); no data, 1 ♂ (Staudinger) (coll. Zool. Inst. Leningrad); Mongolia, Aimak Uvs, 20 km SE of Somon Undurchangaj, 49° 10', N/95° E, 1700 m, Caragana-steppe, 15. VIII. 1954 1 ♂, 1 ♀ (Dr. K. K. Günther leg.) N. Mongolia, no data, 1 ♂, 1 ♀, Leder leg. (Coll. Nat. Mus. Vienna).

Measurements (in mm)

	Bolivar	Pylnov		Bey-Bienko	new measurements	
	male	males	female	female	males	females
Length of body	22	26.4—28.4	32.6	33	22 —23.5	30 —33
Length of pronotum	8	8.8— 9.2	10.1	9	8.2— 9.1	10 —10.2
Length of fem. post.	11	11.4—12	15.2	13.	10 —11.5	13.4—15
Length of tib. post.	13.5	13.4—13.6	18.4	16	12.6—14	15.6—17.8
Length of ovipositor	—	—	26.6	22.7	—	21.7—24.8

The species *verrucosa* was described very poorly after a male from Dauria (= Transbaikalia) as a representative of the genus *Ephippiger*. The female was described by Pylnov (cfr. 1916) from Northern Mongolia. A brief, but very telling characterization of the species *verrucosa* was given by Bey-Bienko in 1933.

Studying Bolivar's original description of the genus *Deracanthella* and his detailed characterization of a male of *D. aranea* (cfr. Bolivar, 1901: 240—241), I came to the conclusion that Bolivar was wrong in identifying the male from Mongolia (Bain-bilch) as *aranea* (in fact Bolivar had in his hand a male of the species known under the name *verrucosa*). In 1916 Pylnov (p. 284) called attention to Bolivar's wrong identification of the male. As Bolivar had in description of a new genus *Deracanthella* in fact the species *verrucosa*, it should become the type species of this genus. I do not recommend a change of the type species for the following reasons:

The species *aranea*, too, was described very insufficiently from Dauria in 1833. Fischer-Waldheim possessed both the sexes in description, but the described and figured male seems to be a nymph. This species has not been found again since the description.

Two different females under the name of *Ephippiger Antilope* are depicted in Fischer—Waldheim's monograph in Table IX. Only the female in Fig. 2 undoubtedly belongs to this species. Bolivar also noticed this mistake (apparently a misprint) and stated in his paper: "L'espèce représentée par Fischer de Waldheim sous le nom d'*Ephippiger Antilope* dans la fig. 5 de la pl. IX se rapporte probablement à cette espèce". The female in Fig. 5 is not conspecific with the female of *antilope* and by its general appearance, especially by the shape of the pronotum, closely resembles ♀ *verrucosa* (according to the picture it differs from it only by a slightly concave hind margin of pronotum). As Fischer-Waldheim did not know the female of *verrucosa*, the female in Fig. 5 is most probably *aranea* (the mistake appeared in printing apparently). A

striking resemblance of the depicted female with the female *verrucosa* and the fact that the *aranaea* has not found again for more than 130 years lead to an assumption of both the species being conspecific. According to the law of priority an older name of *aranaea* would be valid (therefore I do not change the type species of the genus *Deracanthella*).

Geographical distribution: Transbaikalia and Mongolia.

Tribe ZICHYINI, n. trib.

The representatives of the tribe Zichyini have the tibiae round or oval in cross-section, longitudinal furrow on the upper side is absent (upper side sometimes slightly flattened). Tarsal segments distinctly spinose (especially well visible on hind legs).

The following three genera belong to this tribe:

Deracanthina Bey-Bienko

Damalacantha Bey-Bienko

Zichya I. Bolivar

Genus *Deracanthina* Bey-Bienko

Deracanthina Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:169

Type species: *Ephippiger granulatus* Fischer—Waldheim

Eyes convex, hemispherical or slightly more than hemispherical. Interspace between the pits of antennae distinctly narrower than in *Damalacantha*, on the average $1.5 \times$ wider than 1st joint of antenna. Pronotum long, narrow, very similar to the pronotum of *Deracantha onos*. Anterior margin quite straight or slightly concave, or convex, without spinules. Hind margin of pronotum bow-shapedly excised (without minute spinules) or in female almost straight. Hind part of pronotum slightly rugose, without two approximated black tubercles in the middle of hind margin. Lateral keels well developed, tuberculate or nearly smooth, in anterior part of metazona (behind first transverse furrow) with 1—2 small spinules (often absent). Lateral lobes of pronotum ♂ strongly widened in posterior part, with broadly rounded lower and hind margins; hind margin of lobes distinctly prominent beyond middle part of the hind margin of the metazona. In female lateral lobes not widened in posterior part. Prosternum without spinules or with two short but distinct spinules. Abdomen ♂ in apical part distinctly broadened or with parallel margins. Last abdominal tergite ♂ with small spinule on sides of hind margin. Cerci ♂ long, $1.5—3 \times$ longer than wide at the middle, with two very approximated spines in the apical part of inner side: cerci ♀ relatively short, conical. Subgenital plate ♂ relatively large, reaching slightly beyond the last abdominal tergite. Styli long, cylindrical or spindle-shaped, $2.5—3 \times$ longer than wide. Subgenital plate ♀ broadly triangular, with not strong triangular excision on the middle of hind margin. Ovipositor relatively short, straight, except for feebly incurved apical third, on average $1.9—2.1 \times$ longer than pronotum. Anterior and middle femora with minute spinules on the lower sides, hind femora with a distinctly larger spinules on the lower side. Hind tibiae round or somewhat

oval in cross-section, without longitudinal furrow on the upper side. Tarsal segments not strongly but distinctly spinose.

Only two species are known in this genus:

D. granulata (Fischer-Waldheim, 1839) — known from Zaisan valley and adjacent parts of the Altai Mountains.

D. deracanthoides (Bey-Bienko, 1933) — Hitherto known from N. W. Mongolia and Tuva ASSR.

***Deracanthina deracanthoides* (Bey-Bienko, 1933)**

Zichya deracanthoides Bey-Bienko, 1933, Bol. Soc. Esp. Hist. nat. 33:110, 114, Fig. 1. Holotype ♂ *), N. W. Mongolia, environs of Ulankom. In the collections of the Zoological Institute, Leningrad.

Zichya deracanthoides; Chang, 1935, Mus. Heude, Not. entom. chin. 2:58

Zichya deracanthoides; Ebner, 1938, Orth. Cat., Pars 1:66

Deracanthina deracanthoides; Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:169

Zichya deracanthoides; Tcherepanov, 1952, Ent. Obozr. 32:206

Deracanthina deracanthoides; Stebav, 1964, Ent. Obozr. 43:614, 615

Deracanthina deracanthoides; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:72

Material examined: Mongolia, Aimak-Archangaj, Somon Khachat, 3. VII. 1962, 1 ♀ (Mongol. Germ. Biol. Exp. 1962); Mongolia, South Gobi Aimak, Dalanzadgad, VI. 1964, 3 ♂♂, 4 ♀♀ (W. H. Mucbe leg.).

Measurements (in mm)

	males			females		
	min.	max.	\bar{x}	min.	max.	\bar{x}
Length of body	27	29	28	31	33	31.8
Length of pronotum	8.9	9.1	9	8.8	10.2	9.1
Length of fem. post.	11	11	11	13	14.5	13.9
Length of tib. post.	13	13.3	13.1	15	17	15.8
Length of ovipositor	—	—	—	17	20	18

This peculiar species was originally described from N. W. Mongolia (environs of Ulankom) as representative of the genus *Zichya*. In 1951 it was transferred by Bey-Bienko to the new genus *Deracanthina*.

The studied Mongolian specimens agree well with the original description and figure of *Z. deracanthoides* (only the measurements are somewhat smaller than those of Bey-Bienko).

Geographical distribution: Northwestern, Southern and Central Mongolia and Tuva ASSR (cfr. Tcherepanov, 1952 and Stebaev, 1964).

*) Bey-Bienko, in his original description, does not specify the sex of holotype.

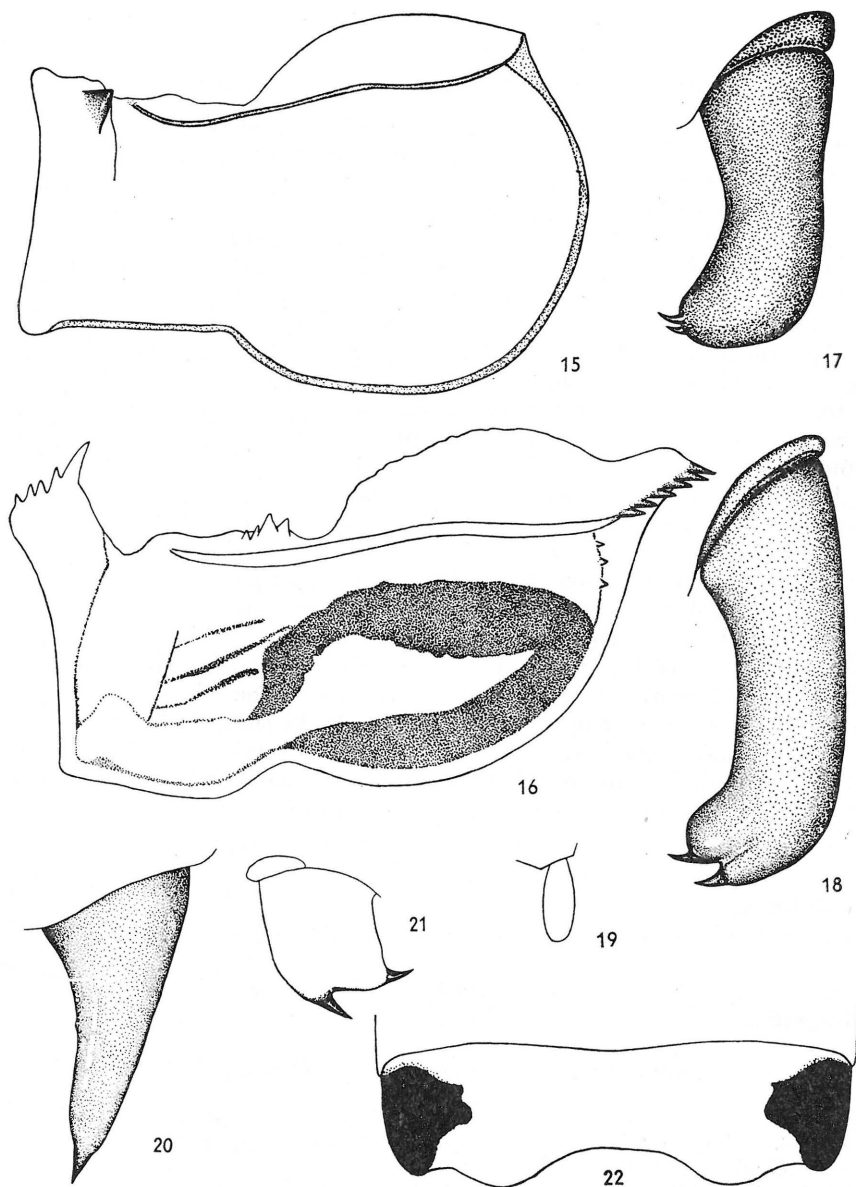


Fig. 15. *Deracanthina deracanthoides* — Pronotum in male (lateral view). Fig. 16. *Zichya piechockii*, n. sp. — Pronotum in male (holotype) (lateral view). Fig. 17. *Deracanthina deracanthoides* — Right cercus in male (dorsal view). Fig. 18. *Zichya piechockii*, n. sp. — Right cercus in male (holotype) (dorsal view). Fig. 19. *Zichya piechockii*, n. sp. — Right stylus ♂ (holotype) (dorsal view). Fig. 20. *Zichya piechockii*, n. sp. — Right cercus in ♀ (allotype) (dorsal view). Fig. 21. *Damalacantha vacca sinica* — Left cercus ♂ (dorsal view). Fig. 22. *Damalacantha vacca sinica* — Last abdomin. tergite ♂ (dorsal view).

Genus *Damalacantha* Bey-Bienko

Damalacantha Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:168

Type species: *Ephippiger vacca* Fischer-Waldheim (nec I. Bolivar)

Eyes convex, hemispherical or slightly more than hemispherical. Inter-space between the pits of antennae $1.5-1.8 \times$ wider than 1st joint of antenna. Pronotum, especially the anterior part, somewhat similar to that of the genus *Zichya*. Anterior margin almost straight or slightly convex with minute spinules and with strong, sharp, conical spine in lateral parts of prozona, directed almost vertically. Hind margin bow-shapedly excised or in female almost straight with minute spinules, placed nearly vertically. Hind part of pronotum quite smooth or only slightly rugose (especially in narrow stripe along lateral keels), in ♂♂ slightly convex, in ♀♀ almost flat, in the middle of hind margin with a pair of small, black, very approximated tubercles (in *D. immaculata* these tubercles are often absent or very small, dark-brown, not pronounced). Lateral keels well developed, slightly convex, distinctly rugose, straight or only slightly incurved, in anterior part of metazona (behind first transverse furrow) with two conical spines and with a pair of black and deep pits. Lateral lobes ♂ relatively wide, in posterior part considerably roundly broadened (in ♀ not broadened). Abdomen in apical part not broadened. Cerci very short in both sexes, in ♂ with one sharp spine on the apex, second spine placed in apical part of the inner side (Fig. 21). Subgenital plate ♂ large, reaching far beyond the last abdominal tergite, wide; styli very short, almost spherical. Femora with relatively strong spinules on the lower side. Subgenital plate ♀ as in representatives of the genus *Deracanthina*, in the middle of hind margin somewhat broadly excised. Ovipositor almost straight, only apical part slightly incurved. Tibiae round in cross-section, without longitudinal furrow on the upper side. Tarsal segments distinctly spinose.

Two species are known. *D. vacca* is divided into two subspecies.

D. vacca vacca (Fischer-Waldheim, 1846) — Known from Kazakhstan and Kirghizia.

D. vacca sinica Bey-Bienko, 1951 — Hitherto known from N. W. China only.

D. immaculata Bey-Bienko, 1951 — The species was described from N. W. Mongolia.

Damalacantha vacca sinica Bey-Bienko, 1951

Damalacantha vacca sinica Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:168. Holotype ♂, N. W. China, Oasis Chami in E. Kashgaria. In the collections of the Zoological Institute, Leningrad.

Damalacantha vacca sinica; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:71

Material examined: S. Mongolia, Aimak Bajanchongor, Oasis Echin-gol, 14. VI. 1962, 2 ♂♂ (Mongol. Germ. Biol. Exp. 1962); S. Mongolia, Aimak Bajan-chongor, Cagan-bogd-ul, Cagan—Bulag, 16. VI. 1962, 1 ♂, 1 ♀ (Mongol. Germ. Biol. Exp. 1962); the same locality, 19. VI. 1962, 3 ♂♂, 3 ♀♀ (Mongol. Germ. Biol. Exp. 1962); S. Mongolia, "South Gobi Aimak", June 1962, 10 ♂♂, 2 ♀♀ (Mongol. Germ. Biol. Exp. 1962).

Measurements (in mm)

	males			females		
	min.	max.	\bar{x}	min.	max.	\bar{x}
Length of body	32	40	37.1	33	46	38.5
Length of pronotum	10.9	15.2	13.1	12	19	13.5
Length of fem. post.	14.8	18	16	16	19	16.7
Length of tib. post.	17	23	20	20	24	21.5
Length of ovipositor	—	—	—	21	24	22.5

This subspecies was described and hitherto known from N. W. China (Holotype ♂, Oasis Chami in eastern Kashgaria). From typical subspecies from Kazakhstan it differs mainly in the colouring of dorsal part of abdomen. Lateral parts of the last abdominal tergite in *sinica* with relatively large black maculae (Fig. 22). Sometimes smaller black maculae are present also on the sides of 8th—9th tergites. In all specimens studied there is also a larger or smaller black macula on the paraproct. Also the sides of 1st abdominal tergite sometimes with black spot (poorly visible under hind margin of pronotum). In general colouring the creamy-white colour is dominant. Head, pronotum and all extremities are creamy-white. Abdomen of dirty light-brown colour with small black dots on the tergites.

The specimens of *D. vacca* from S. Mongolia correspond very well with the original description of *D. vacca sinica* Bey-Bienko.

Geographical distribution: N. W. China and S. Mongolia.

Genus *Zichya* I. Bolivar

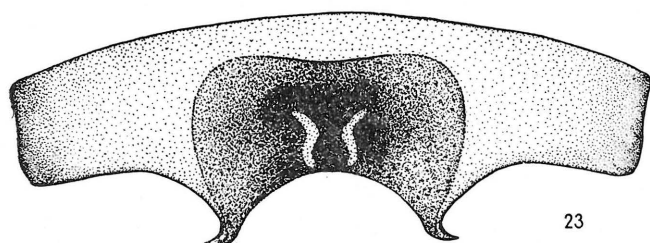
Zichya I. Bolivar, 1901, in Zichy, Dritte Asiat. Forschungsgr. 2:238

Zichya, Bey-Bienko, 1933, Bol. Soc. Españ. Hist. nat. 33:110—114

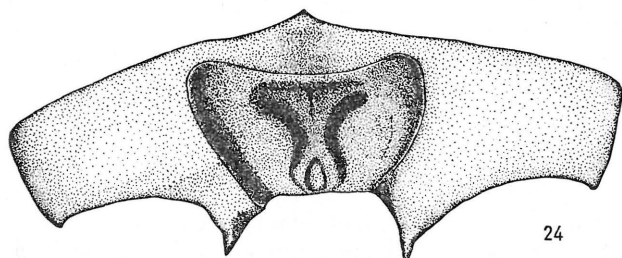
Zichya, Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:164

Type species: *Zichya baranovi mongolica* Uvarov (= *vacca* I. Bolivar nec Fischer-Waldheim)

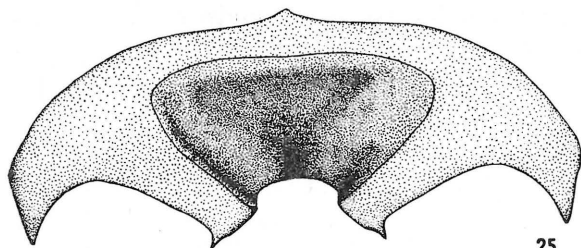
Eyes strongly convex, more than hemispherical. Interspace between the pits of antennae slightly narrower than 1st joint of antenna. Pronotum relatively large, distinctly rugose. Anterior margin of pronotum bow-shapedly prominent, with relatively strong conical spinules, placed nearly vertically and with strong, conical spine in lateral parts of prozona. Hind margin of pronotum distinctly prominent, slightly rounded and strongly spinose (armed with relatively strong and sharp conical spinules, directed more or less horizontally). Hind part of pronotum considerably or distinctly rugose, sometimes with very strong rugosity, with two small approximated black tubercles in the middle of hind margin. Lateral keels well developed, almost parallel or slightly divergent, armed with minute sharp spinules, directed more or less horizontally. (Behind the 1st transverse furrow one or two somewhat larger spinules.) Lateral lobes of



23



24



25

Fig. 23. *Deracantha onos* — Last abdomin. tergite ♂ (dorsal view). Fig. 24. *Deracantha transversa* — Last abdomin. tergite ♂ (paratype) (dorsal view). Fig. 25. *Deracantha mongolica* — Last abdomin. tergite ♂ (holotype) (dorsal view)

pronotum narrow, not broadened in posterior part. Abdomen ♂ distinctly widened in apical part. Cerci ♂ relatively long, strong, cylindrical, almost straight or distinctly incurved in apical part, with two small, very approximated spines on the apex (Fig. 18). Cerci ♀ relatively long, conical, their apex sharp and sometimes elongated in spine. Subgenital plate ♂ large, reaching a little over the last abdominal tergite, longitudinal medial keel thin, lateral keels more distinct. Styli relatively long, cylindrical, their apex rounded. Subgenital plate ♀ blunt triangle-shaped, slightly excised on the apex. Ovipositor relatively long, more or less incurved. Hind femora with minute spinules on the lower side. Tibiae round (sometimes oval) in cross-section, without longitudinal furrow on the upper side, sometimes upper side of the hind tibia slightly flattened.

The following species and subspecies are known in the genus *Zichya*:

Z. baranovi baranovi Bey-Bienko, 1933 (March) — Northern race (♂, ♀)

Z. baranovi mongolica Uvarov, 1933 (May) — Southern race (♂, ♀)

Z. alashanica Bey-Bienko, 1951 (♂, ♀)

Z. brevicauda Bey-Bienko, 1951 (Male unknown)

Z. gobica Bey-Bienko, 1951 (♂, ♀)

Z. crassicerca Bey-Bienko, 1951 (Male unknown)

Z. piechockii, n. sp. (♂, ♀)

Zichya baranovi baranovi Bey-Bienko, 1933

Zichya baranovi Bey-Bienko, 1933, Bol. Soc. Esp. Hist. nat. 33:112—113, Fig. 2. Holotype ♂, N. W. Mongolia, vicinity of Ulanom. In the collections of the Zoological Institute, Leningrad.

Zichya baranovi; Chang, 1935, Mus. Heude, Not. entom. chin. 2:58

Zichya baranovi; Ebner, 1938, Orth. Cat., Pars 1:65

Zichya baranovi; Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:165

Zichya baranovi; Tcherapanov, 1952, Ent. Obozr. 32:206—207

Zichya baranovi; Stebaev, 1964, Ent. Obozr. 43:614, 615

Zichya baranovi; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:69

Material examined: N. E. Mongolia, Aimak Chentij, Errenij, 26. VIII. 1958, 2 ♂♂, 1 ♀ (coll. Univ. Ulan-Bator; in coll. Nat. Mus. Prague)

Measurements (in mm)

	Bey-Bienko, 1933		new measurements	
	males	females	males	female
Length of body	23 —26	27 —29	22 —23	31
Length of pronotum	8.5— 9.2	10	10.7—11.5	12.2
Length of fem. post.	12	14.5	12.9—13.6	16.8
Length of tib. post.	—	—	15 —16	20
Length of ovipositor	—	22	—	22.5

The species was originally described from N. W. Mongolia (Holotype ♂ from the valley of the lake Atshit-Nor). It differs from other species of the genus *Zichya* by smaller size and relatively slender body and by strongly rugulose metazona.

The specimens studied by me correspond very well with the original description and figure of pronotum of *Z. baranovi* (only the measurements are somewhat larger than those of Bey-Bienko).

Geographical distribution: Northwestern and Northeastern Mongolia and Tuva ASSR (cfr. Tcherapanov, 1952 and Stebaev, 1964).

Zichya gobica Bey-Bienko, 1951

Zichya gobica Bey-Bienko, 1951, Arb. Allunion entom. Ges. (Horae) 43:166, Figs. 28, 30. Holotype ♂, S. Mongolia, Ichen-gun, Central Gobi. In the collections of the Zoological Institute, Leningrad.

Zichya gobica; Ebner & Beier, 1964, Orth. Cat., Pars 1—2:70

Material examined: Mongolia, South Gobi Aimak, Oasis Shargelin, 21. VI. 1962, 1 ♂ (Mongol. Germ. Biol. Exp. 1962); Mongolia, Aimak Bajanchongor, Cagan-bogd-ul, Cagan-bulag, 19. VI. 1962, 1 ♀ (Mongol. Germ. Biol. Exp. 1962); Mongolia, South Gobi Aimak, Dalanzadgad, VI. 1964, 1 ♂, 1 nymphe (W. H. Mucbe leg.); South Gobi Aimak, Bulgan, Gurwan Sajan, VI. 1964, 4 ♀♀ (W. H. Mucbe leg.); Mongolia, Munko Sardyk, Sajan mount., 1 ♀ (coll. Dr. F. Willemse).

Measurements (in mm)

	Bey-Bienko, 1951		new measurements	
	males	females	male	females
Length of body	31 —34	34 —42	34	30 —38
Length of pronotum	10 —10.3	12 —13	10.7	12 —12.5
Length of fem. post.	13.5—14.5	17 —19	15	14.3—18.1
Length of tib. post.	—	—	19	17.6—21
Length of ovipositor	—	26 —30	—	25 —30

The species was described from S. Mongolia (Holotype ♂, Ichen-gun, Central Gobi). The specimens studied correspond very well with the original description of *Z. gobica* and doubtless represent this species.

Z. gobica is somewhat larger than *Z. baranovi* and differs from it primarily by indistinct rugosity on the metazona. Series of black dots on the upper margin of anterior and middle femora seems to be characteristic of this species.

Geographical distribution: Southern Mongolia.

Zichya piechockii, n. sp.

Of medium size (♂ 31, ♀ 35 mm).

Male (Holotype): Head of the same structure as in other species of the genus *Zichya*. Eyes very convex, more than hemispherical. Interspace between the pits of antennae slightly narrower than 1st joint of antenna. Pronotum relatively large, wide, distinctly rugose. Anterior margin of pronotum considerably prominent, rounded, with minute, sharp, vertically directed spinules. Lateral margins of prozona with strong, sharp spine (placed before 1st trans-

verse furrow). Prozona with very distinctly developed transverse keel. Hind margin of pronotum distinctly rounded, armed with relatively strong and sharp conical spinules, directed more or less horizontally (these spinules distinctly larger than those of the anterior margin). In the middle of hind margin two black, slightly raised and very approximated tubercles. Lateral keels low, slightly divergent (developed only as a low border, extending also along hind margin), armed with very minute spinules, exclusive of strong and sharp spinule, placed in anterior part of metazona (just behind 1st transverse furrow) and directed horizontally. Metazona (i. e., the whole of the pronotum behind the 1st transverse furrow) almost quadrate, $3 \times$ longer than prozona, with a deep and relatively broad transverse impression in front of the middle, with a pair of deep irregularly shaped black pits just behind the 1st transverse furrow; the part of metazona behind transverse impression distinctly vaulted, its surface sculptured with relatively large, deep, dense, irregularly shaped pits. Lateral lobes of pronotum narrow, relatively long, not broadened in posterior part. Prosternum with two small, sharp spinules. Abdomen in apical part distinctly broadened, hind margins of the abdominal tergites slightly thickened. Subgenital plate broad, with a feeble but broadly rounded excision on hind margin, medial longitudinal keel delicate, low, lateral keels more distinctly developed. Styli long, cylindrical, $2.6 \times$ longer than wide in the middle, their apex rounded (Fig. 19). Cerci relatively very long, strong, cylindrical, approximately $3.3 \times$ longer than wide at the middle, in the middle part almost straight, in apical part distinctly incurved, on apex with two small, sharp, very approximated spines (Fig. 18). Femora with minute spinules on the lower side. Tibiae almost round in cross-section, without longitudinal furrow on the upper side. Tarsal segments distinctly spinose.

Female (Allotype): Somewhat larger than male. Pronotum slightly narrower than in male, hind part of metazona less distinctly sculptured (the pits less deep) than in male. Lateral lobes as in male, but in posterior part more narrowed than in male. Abdomen in apical part not broadened. Subgenital plate short, triangular, with very feeble triangular emargination on the apex. Cerci short, conical, their apex elongated in sharp spine (Fig. 20). Ovipositor relatively long, $1.6 \times$ longer than hind femora, feebly incurved, especially near the apex.

General colouration of male light-ochreous with greenish shade on the occiput and on the disc of metazona. Lower half of lateral lobes of pronotum with narrow, creamy stripe, distinctly broadened in triangular form behind the middle (Fig. 16); triangular part of creamy stripe is bordered by dark-brown fascia. Abdomen with indistinct dark brown medial longitudinal stripe and with two very distinct broad, dark brown lateral stripes on the upper surface; medial longitudinal stripe somewhat more distinct in apical part of abdomen. Ventral part of abdomen and all legs dirty creamy-coloured, posterior knees slightly dirty-brown.

General colouration of female light-brown, disc of metazona with greenish shade. Colouration of the lateral lobes of pronotum nearly as in male, but less contrast. Abdomen light-brown, with larger and smaller dark-brown spots and dots along the hind margins of tergites. Longitudinal stripes absent. All

legs, head and larger part of ovipositor dirty creamy-coloured, apical part of ovipositor brown on upper side and on apex.

This species is named in honour of Dr Rudolf Piechocki of the Zoologisches Institut of the Martin-Luther-Universität, Halle-Wittenberg.

Material examined: Holotype ♂, Mongolia, Aimak Uburchangaj, promontory of Arc-bogd-ul, Somon Bogd. 28. VI. 1962 (Mongol. Germ. Biol. Exp. 1962); Allotype ♀, Aimak Archangaj, Somon Khachat (=Somon Chašat), 3. VII. 1962 (Mongol. Germ. Biol. Exp. 1962). The type is preserved in the Zoological Institute, Halle-Wittenberg.

Measurements

Length of body: ♂ 31, ♀ 35 mm; Length of pronotum: ♂ 13, ♀ 13 mm; Length of fem. post.: ♂ 15.2, ♀ 15.1 mm; Length of tib. post.: ♂ 17.9, ♀ 18.6; Length of ovipositor: ♀ 25 mm.

Zichya piechockii, n. sp. is closely related to *Z. alashanica* Bey-Bienko and *Z. gobica* and it has intermediate position between them. By the shape of pronotum it resemble *Z. gobica*, metazona, however, is distinctly wider, more sculptured and distinctly vaulted as in *Z. alashanica*. Colouring on lateral lobes of pronotum nearly as in *Z. alashanica*. It is easily distinguishable from *alashanica* by the shape of cerci (in *Z. piechockii* and *Z. gobica* cerci distinctly incurved in apical part, in *Z. alashanica* they are almost straight). Ovipositor is much shorter as compared with *Z. alashanica* and somewhat shorter than in *Z. gobica*./*

Geographical distribution: Southern and Central Mongolia.

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