

## A monograph of the genus *Bryodema* Fieb. (Orthoptera, Acrididae) and its nearest allies

By

**G. Bey-Bienko**

(With pl. XVIII — XX)

[Бей-Биенко, Г. Я. Монография рода *Bryodema* Fieb. (Orthoptera, Acrididae) и его ближайших родичей. (С табл. XVIII — XX)]

(Présenté à l'Académie le 23 Mai 1928)

The genus *Bryodema* was established by FIEBER (Lotos, Bd. III, p. 129) in 1853 for a single species *Trinchus baicalensis* FISCHER DE WALDHEIM, which has been described by its author (Orthoptera Imperii Rossici, p. 263, pl. XXVI, fig. 6—7, 1846) from Transbaikalia, East Siberia. BRUNNER VON WATTENWYL (1882) was the first author, who referred to this genus some other species included by earlier orthopterologists in the genera *Oedipoda* LATR. or *Ctyphippus* FIEB.

The first two species of the genus *Bryodema* sensu lato were described by PALLAS (1773) and FABRICIUS (1775) under the respective names *Gryllus locusta barabensis* (PALLAS) from Siberia and *Gryllus tuberculatus* (FABRICIUS) from Jutland peninsula. Some decades later STOLL (1813) described from Siberia two more species: *Gryllus locusta luctuosus* and *Gryllus locusta dilutus*, which also belong to *Bryodema*; the first of these species, i. e. *G. luctuosus* has been incorrectly synonymized by SAUSSURE (1884) with *Br. barabense* and the second with *Br. tuberculatum*.

FISCHER DE WALDHEIM in 1836 and 1846 described some species of the genus *Oedipoda* (*gebleri*, *hospes*, *lugubris* and *rhodopa*), which also belong to *Bryodema* (sensu lato); two first species have been synonymized by SAUSSURE (1884) with *Br. barabense* and the third, i. e. *rhodopa*, considered by JACOBSON in 1902 to be a variety of *Br. barabense*; further, SAUSSURE united with *barabense* another species—*Oedipoda* (= *Ctyphippus*) *thunbergi* STÅL described by its author from „Brasilía“ (1861) and erected two new species: *Bryodema brunnerianum* from „Hong-kong“ and *Br. indum* from „India“.

ZUBOVSKIY in 1898 united *Trinchus baicalensis* F.-W. described by its author only on female sex with another of FISCHER's species *Oedipoda gebleri* described from Altai Mountains (1836, see above) and known only from the male sex. Thus, *Oedipoda gebleri* is the genotype of the genus *Bryodema* and SAUSSURE's subgenus *Rhodorrhapis* (1884) erected by this author for the male of the same species, i. e. *Bryodema gebleri*, is an absolute synonym of the genus *Bryodema*. In 1900 ZUBOVSKIY redescribed *Br. luctuosum* and described a new variety *Br. gebleri* var. *mongolica* from the extreme south-eastern part of Altai Mountains near Mongolian boundary. This variety I regarded in 1926 as a good geographical race (subspecies) of *Br. gebleri*.

In 1901 BOLIVAR and KRAUSS made known from Mongolia some other forms of this genus; the first named author described *Br. mongolicum* from Urga in Northern Mongolia and the last mentioned — *Br. lugens*, *Br. holdereri* and var. *roseipennis* of *Br. barabense* from Kuku-nor region, South Mongolia; first of this species, i. e. *Br. mongolicum*, has been synonymized by JACOBSON with *Br. luctuosum* and var. *roseipennis* of KRAUSS with var. *rhodopa* of *Br. barabense*.

KARNY in 1908 described from China also two new varieties: *Br. tuberculatum* var. *hyaloptila* and *Br. barabense* var. *rhodoptila*, the first of which was synonymized by UVAROV (1926) with *Br. holdereri* and the second — with *Br. barabense* var. *rhodopa*. On the other hand UVAROV in 1914 united SAUSSURE's *Br. indum* and *Br. brunnerianum*, KRAUSS *Br. lugens* and ŠČELKANOVCEV's *Br. argunense* (1911) described from the river Argun, Transbaikalia, with *Br. luctuosum*; it is evident that the two later names, i. e. *lugens* and *argunense*, are pure synonyms of *luctuosum*, but *indum*, as indicated below, is a distinct subspecies of *luctuosum*, and *brunnerianum* is very probably a good species of the *Luctuosum*-group.

Finally, IKONNIKOV described *Br. semenovi* (1911) from Semiretshie and *Br. tuberculatum* subsp. *sibiricum* from Eastern Siberia and Korea (1913) and ZACHER (1919) — his *Br. tuberculatum* var. *bavarica* from the Bavarian Alps; the latter form is a distinct alpine subspecies of the widely distributed *Br. tuberculatum*.

At present time I divide the genus *Bryodema* sensu lato into two genera: *Bryodema* FIEB. with *Br. gebleri* as its genotype and *Angaracris*, new genus, with *Br. barabense* as the genotype; moreover I describe a third genus — *Uvaroviola*, erected for a new species from Northern Tibet, Southern Mongolia and Gan-su province, North-West China.

The three genera of the group *Bryodemae*, here separated for the first time, include at present time twenty-three species and races out of which number 20 species and races belong to *Bryodema*, 2 species to *Angaracris* and only one to *Uvaroviola*.

### Materials studied

I have been able to study over specimens of these genera from different countries; the most part of this material belongs to the Zoological Museum of the Academy of Sciences. The collections of this Museum contain a very rich material on the genus *Bryodema* and its nearest allies, which has been collected by various persons in different parts of the Palaearctic region, but especially by well known Russian explorers and travellers in Central Asia (in the broad sense): N. M. PRŽEVALSKIJ, G. B. POTANIN, P. K. KOZLOV and D. A. KLEMENTZ. The most interesting and largest material has been collected by P. K. KOZLOV's expeditions during the last thirty years in different parts of Mongolia, Tibet and North China.

Some specimens were placed at my disposal by Mr. B. P. UVAROV from the British Museum (Natural History), while four topotypes of *Br. tuberculatum* were also obtained by him through the kindness of Dr. P. ESBEN-PETERSEN and the Director of the Zoological Museum of Copenhagen and I wish to express here my sincere thanks to these gentlemen.

On the other hand I am also extremely obliged to Dr. R. EBNER, Vienna, who kindly sent to me for study type of *Br. brunnerianum* SAUSS. and was kind enough to compare specimens of *Br. luctuosum* STOLL, which I sent to him, with SAUSSURE's type of *Br. indum*.

My own collection contains also series of some species of these genera taken by myself and by some other collectors in Western Siberia, Altai Mountains, Zaisan and North Mongolia.

My cordial thanks are due to the authorities of the Zoological Museum of the Academy of Sciences, especially to the Director of this Museum Dr. A. A. BIALYNICKIJ-BIRULA, for the privilege to work out the rich materials contained there, and for their generosity which permitted me to get this paper fully illustrated; I am also obliged to Mr. A. P. SEMENOV-TIAN-ŠANSKIJ and Miss E. MIRAM for their kind support given to my work.

In conclusion, I wish to express my special and most sincere thanks to my teacher and friend Mr. B. P. UVAROV, to whom I am much obliged for his assistance and advice on some doubtful points and who took an immediate interest in my work.

### Key to the genera *Bryodema*, *Angaracris* and *Uvaroviola*

1 (4). Inner side of hind tibiae with not more than 13 straight or feebly incurved spines. The incrassate basal part of hind tibiae above quite smooth or with very indistinct and sparse puncturation, or with not strong but distinct and very regular transversal rugosities. Wings in the male with more or less broad interulnar area, which on the apex of the basal

third is not less, than two thirds the width [of the adjacent portion of discoidal area. Females with fully developed or abbreviated elytra and wings.

2 (3). Discoidal area of elytra broad; intercalate vein absent, very feeble or quite distinct, but not thicker than the first ulnar vein. Interulnar area in the middle as broad as, or a little narrower, than the adjacent part of discoidal area, in the apical part near the curve of first ulnar vein in male sex not more, than half again as broad as the widest part of discoidal area; in female sex the former as broad as, or somewhat narrower, rarely a little broader, than the latter. First ulnar vein not disappearing beyond the curve, always extending to the hind ulnar vein and confluent with it. Anterior margin of the wings not S-shaped incurved, quite straight, except the apical quarter or one fifth part regularly incurved backwards. The incrassate basal portion of hind tibiae above more or less shining, quite smooth or with very indistinct and sparse puncturation. Wings in both sexes more or less infumated or, at least, with dark radiate veins. Females with fully developed or abbreviated elytra and wings. (Genotype—*B. gebleri* F.-W.). . . . . I. *Bryodema* FIEB.

3 (2). Discoidal area of elytra narrow, always with a very strong intercalate vein, which is not thinner, than the first ulnar. Interulnar area in the middle not less, than one and half times as broad as the adjacent portion of discoidal area; in apical part not less, than twice as broad as the widest part of the discoidal area. First ulnar vein on the apex disappearing, not extending and not united by its apical end with hind ulnar vein. Anterior margin of wings distinctly S-shaped incurved. The incrassate basal part of hind tibiae from above not shining, with not strong but distinct and very regular transverse rugosities. Fully winged in both sexes. Wings not infumated in both sexes, excepting some spots in apical part. (Genotype—*A. barabensis* PALL.). . . . . II. *Angaracris* gen. nov.

4 (1). Inner side of hind tibiae with not less, than 15 strongly incurved spines. The incrassate basal part of hind tibiae from above with very strong and irregular rugosities and deeply impressed puncturations. Wings not infumated in the male, with very narrow interulnar area, which in the apical part of basal third is less, than half the width of the adjacent part of discoidal area. Females with abbreviated elytra and wings. (Genotype—*U. multispinosa* sp. nov.). . . . . III. *Uvaroviola* gen. nov.

#### Systematical position of the genera *Bryodema*, *Angaracris* and *Uvaroviola* and their geographical distribution

These three genera, as well as another Palaearctic genus *Cosmorhapis* SAUSS. (with a single known species, *C. davidiana* SAUSS., distributed in Transbaikalia, North Mongolia and North China) and two Nearctic genera:



*Aerochoreutes* REHN recently erected by its author<sup>1</sup> for two subspecies (*A. carlinianus carlinianus* THOMAS, known from the northern Great Plains, northern Rocky Mountains and central British Columbia, and *A. carlinianus strepitus* REHN, known from Great Basin and Green River regions, i. e. occupying the more southern portion of the area of this genus) and *Circotettix* SCUD. (with many species distributed, as *Aerochoreutes*, generally in north-western mountain part of North America) form within the subfamily *Oedipodinae* a natural group which I call *Bryodemae*, here separated for the first time.

This group is characterized by the following features: pronotum cut by two or three transversal sulci; metazonal disc not less, than half again as long as prozona, with angular or rounded-angular hind margin; mesosternal transverse sulcus not strongly bent backward, practically straight; elytra broad, fully developed and surpassing the apices of hind femora or, in females of Palaearctic species, often abbreviated; wings in these females markedly shorter than elytra, in both sexes of other species equal or subequal in length to the same; all or a part of principal radial veins distinctly incrassate, especially in the male sex; transverse veins between them not incrassate, very regularly spaced in the basal part; outer margin of wings in male sex and in females with normal elytra and wings always more or less distinctly sinuato-lobate. Internal calcaria of posterior tibiae not greatly unequal, normal.

The majority of species of the genera *Bryodema*, *Angaracris* and *Uvaroviola* are mongolo-siberian in their distribution and only one species, viz. *Br. tuberculatum*, extends to Europe, where it presents one of the best examples of a relic of the posttertiary (more exactly postglacial) westward invasion of the siberian steppefauna. Thus, the area of distribution of the genus *Bryodema* covers the northern and middle parts of the European continent (from the river Rhine, the northern part of Alps and the Jutland peninsula), the whole southern part of Siberia from the Ural Mountains in the West to the South-Ussuri region in the East, the northern Kirghiz steppes (now Kazakstan), Semiretshie, the whole of Mongolia, Northern and North-Western China, Manchuria, Korea, and the whole Tibet (to Karakorum-Mountains in the West and Himalayas in the South), i. e. practically the whole of Palaearctic Asia (except the eastern portion of the Eremian, subregion with Mediterranean fauna and the most northern parts of Siberia, (viz. its polar part — the „Tundra“ and the forest zone „Taiga“) and a relatively large part of Europe.

---

<sup>1</sup> REHN, J. A. I. Description of new and critical notes upon previously known forms of North American *Oedipodinae*. II. Trans. Amer. Entom. Soc., 1921, vol. XLVII, pp. 172—178.

	Europe	Kirghiz steppes	West Siberia	Altai Mountains	Zaisan and adj. countries	Scmirretshie	South-East Siberia	Mongolia (except its southern part)	Mandchuria	Korea	North China	North-West China (Gan-su prov.)	South Mongolia	Tibet and adj. regions
I. BRYODEMA														
1. <i>holdereri holdereri</i> . . . . .				*			*	*	*			*	*	
2. <i>holdereri occidentale</i> . . . . .				*			*					*		
3. <i>tuberculatum tuberculatum</i> . . . . .	*	*		*										
4. <i>tuberculatum dilutum</i> . . . . .	*	*	*	*			*	*	*	*	*	*		*
5. <i>tuberculatum barvaricum</i> . . . . .	*													
6. <i>diamsum</i> . . . . .													*	*
7. <i>zaisanicum</i> . . . . .					*									
8. <i>fallax</i> . . . . .								*						
9. <i>semenovi semenovi</i> . . . . .						*								
10. <i>semenovi orientale</i> . . . . .								*						
11. <i>heptapotamicum</i> . . . . .						*								
12. <i>gebleri gebleri</i> . . . . .		*		*	*	*	*	*						
13. <i>gebleri mongolicum</i> . . . . .				*			*	*					*	
14. <i>miramae miramae</i> . . . . .													*	
15. <i>miramae elegantulum</i> . . . . .													*	*
16. <i>kazlōi</i> . . . . .													*	
17. <i>urarori</i> . . . . .												*		
18. <i>luctuosum luctuosum</i> . . . . .							*	*	*		*		*	*
19. <i>luctuosum indum</i> . . . . .													*	*
20. <i>brunnerianum</i> . . . . .												?		?
II. ANGARACRIS														
1. <i>barabensis</i> . . . . .	3	3	1	5	2	3	4	7	3	1	2	3	7	5
2. <i>rhodopa</i> . . . . .		*	*	*			*	*	*		*		*	
III. UVAROVIOLA														
1. <i>multispinosa</i> . . . . .		1	1	2			2	2	2		1	1	1	
												1	1	1
	3	4	2	7	2	3	6	9	5	1	3	5	9	6

The genus *Angaracris* is distributed also in the southern portion of Siberia but from the Ural Mountains to Transbaikalia only, in the northern part of Kirghiz steppes, whole Mongolia, Mandchuria, Northern and North-Western China and Northern Tibet.

Finally, the somewhat aberrant *Uvaroviola* has a very narrow area of distribution, occupying only Southern Mongolia, Northern and North-Eastern Tibet and northern portion of Gan-su province, North-West China.

The present known distribution of the species and subspecies of these three genera is shown in the separate table (see p. 76).

It is evident that these three genera, as well as *Cosmorrhypis*, are Angarian in their origin, because, as shown in the table, the majority of species occupy the southern part of East Siberia and North Mongolia, i. e. the ancient Angara continent of geologists (SUSS and others). The second maximum of the species of these three genera falls on the southern parts of Central Asia; four forms from that maximum are widely distributed in more northern portions of their areas and unquestionably began to populate southern regions not earlier, than in Glacial time; other forms are more ancient and probably began to populate southern portions of Central Asia in the Upper or Middle Tertiary time.

On the other hand the North American genera *Aerochoreutes* and *Circotettix* are also Angarian in their origin. It is probable, that in the Tertiary time the ancestors of the group *Bryodema* had a continuous area of distribution and its representatives populated the Angara continent, the western mountainous portion of North America and the North Pacific land connection between them; this connection, as admitted by geologists, has disappeared during the Middle and Upper Tertiary period and our insects were separated into two groups: North American, with *Circotettix* and the more recently separated *Aerochoreutes*, northern subspecies of which. *A. carlinianus carlinianus* THOMAS, is more similar to the widely distributed primitive *Tuberculatum*-group of the genus *Bryodema* (see below), than the other southern subspecies *A. carlinianus strepitus* REHN, which shows some tendencies towards *Circotettix* (more narrow fastigium of vertex and distinctly areolate first ulnar vein of wings, which is not parallel to the second ulnar), and Asiatic, with *Bryodema* and two somewhat aberrant genera *Angaracris* and *Uvaroviola*, which occupy more narrow areas and do not reach Europe or the most eastern portion of East Siberia.

## I. Genus *Bryodema* FIEB.

1775. *Gryllus*. FABRICIUS. Systema Entomologica, p. 290 (partim). — 1813. *Gryllus Locusta*. STOLL. Représ. exact. color. d'après nature de spectres etc., pp. 21, 24; index, p. 12 (partim). — 1836. *Oedipoda*. FISCHER DE WALDHEIM. Bull. Soc. I. Nat. Moscou, vol. IX, p. 346 (partim). — 1838. *Oedipoda*. BURMEISTER. Handbuch Entomologie, Bd. II, S. 641

(partim).—1846. *Trinchus*. FISCHER DE WALDHEIM. Orthopt. Imp. Ross., p. 263 (partim).—1846. *Oedipoda*. FISCHER DE WALDHEIM. Loc. cit., pp. 284—285, 295, 298 (partim).—1853. *Bryodema* FIEBER. Lotos, Bd. III, p. 129 (type *Trinchus baicalensis* F.-W. (female of *Oedipoda gebleri* F.-W.) (by monotypy).—1873. *Ctyphippus*. STÅL. Recens. Orthopt., I, p. 134 (nec BOLIVAR) (partim).—1882. *Bryodema*. BRUNNER VON WATTENWYL. Prodr. Europ. Orthopt., p. 167 (partim).—1884. *Bryodema*. SAUSSURE. Prodr. Oedipod., p. 178 (partim).—1884. *Rhodorhipis*. SAUSSURE. Loc. cit., p. 179 (type *Bryodema gebleri* F.-W. (male sex) (by monotypy).—1902. *Bryodema*. JACOBSON in JACOBSON and BIANCHI. Orthop. Pseudoneuropt. Imp. Ross., p. 264 (partim).—1910. *Bryodema*. KIRBY. Syn. Cat. Orthopt., vol. III, p. 230 (partim).—1914. *Bryodema*. KIRBY. Fauna Brit. India, Acrididae, p. 150.—1927. *Bryodema*. UVAROV. Acrididae of Middle Asia, p. 123 (partim) (in Russian).

Head with distinct triangular foveolae of vertex, or they are indistinct or quite absent; antennae not more than twice ( $\delta$ ) or half again ( $\phi$ ) as long as the head and pronotum taken together; fastigium more or less broad. Pronotum distinctly narrowed anteriorly, with a feeble, or distinct, constriction in prozona; prozona cylindrical, often somewhat inflated above; metazonal disc practically flat, from one and a half to two times as long as prozona; shoulders distinct, straight or feebly incurved, with indistinct or feeble lateral keels; rarely they are more or less distinct; median pronotal keel very variable, indistinct and obliterate between transversal sulci, or more or less distinct, or somewhat elevated in anterior portion of prozona; two or three transversal sulci variable, not very deep or, rarely, more or less deep. Lateral lobes vertical, not or a little deeper, than its dorsal length; hind angle more than  $90^\circ$ ; hind margin not vertical, somewhat oblique and not parallel to anterior one. Elytra broad, in  $\delta$  fully developed, loosely reticulated in their whole length; in  $\phi$  abbreviated or normal; intercalate vein in the broad discoidal area absent, very feeble or quite distinct, but not thicker than the first ulnar; first ulnar vein not disappearing beyond the curve, always extending to the hind ulnar vein and confluent with it; interulnar field in the middle as broad as, or a little narrower, than the adjacent portion of discoidal field; near the apex at the winding of first ulnar vein in  $\delta$  not more than half again as broad as the widest part of discoidal field; in  $\phi$  as broad or somewhat narrower, rarely a little broader, than the latter. Wing equal or subequal to length of elytra or in females with abbreviated elytra and wings, often distinctly shorter than elytra; anterior margin of wings not S-shaped incurved, straight, except the apical fourth or one fifth, which is regularly incurved behind; interulnar area parallel-sided at least in the basal three-quarters, in  $\delta$  always not less on the apex of basal third, than two-thirds of the width of the adjacent portion of median (discoidal) area; second lobe with two distinct parallel axillary veins, half again or twice as broad as the interspace between hind margin of this lobe and the next incrassate vein; or the second axillary vein



abbreviated, not parallel to the first axillary and the second lobe not broader, than the interspace between its hind margin and the next incrassate veins; first axillary vein not incrassate or distinctly spindle-shaped incrassate in the basal half; principal radiate vein incrassate, especially in the male sex. Hind tibiae on inner sides with not more than 13 straight or feebly incurved spines; basal incrassate portion of hind tibiae from above near the knee more or less shining, quite smooth or with very feeble and sparse impressed puncturations. Genotype — *Oedipoda gebleri* FISCHER DE WALDHEIM.

The genus *Bryodema*, as now limited, is composed of five sections, which may be called after their oldest species as 1) *Tuberculatum*-group, 2) *Semenovi*-group, 3) *Gebleri*-group, 4) *Uvarovi*-group and 5) *Luctuosum*-group. The first one of them, i. e. *Tuberculatum*-group, is the most primitive and characterised by very feeble sexual dimorphism (because the females have fully developed elytra and wings), by yellow hind tibiae (except very rare specimens of *Br. tuberculatum* which have red tibiae), by broad second lobe of wings with two distinct parallel axillary veins, first of which is distinctly spindle-shaped incrassate in the basal half of wings of the male sex and by feebly infumated wings.

The second, *Semenovi*-group, is intermediate between the *Tuberculatum*- and the *Gebleri*-groups, and characterised by distinct sexual dimorphism of its representatives, females of which have more or less abbreviated elytra and wings, by red or dark-blue hind tibiae and by the absence of intercalate vein in the discoidal area of female wings; second lobe of wings as in the *Tuberculatum*-group. It is very interesting that one species of this group, *Br. diamesum* sp. n., shows a distinct affinity to *Br. tuberculatum*, i. e. to a representative of the *Tuberculatum*-group, but strongly differs from the latter by some peculiar features and belongs unquestionably to the *Semenovi*-group.

The third, *Gebleri*-group, is characterised by the distinct sexual dimorphism, by red or dark-blue hind tibiae, by not incrassate first axillary vein in the broad second lobe of male wings, by presence of intercalate vein in discoidal area of female elytra and by strongly infumated male wings; this is the group richest in species and subspecies.

The fourth, *Uvarovi*-, and the fifth, *Luctuosum*-groups, are characterised by narrow second lobe of wings, second axillary vein of which is very short, incurved and not parallel to the first axillary. The *Uvarovi*-group is characterised by feeble sexual dimorphism (females with fully developed elytra and wings), by red basal portion of wings and by distinctly raised median keel in anterior portion of prozonal disc of pronotum. Finally, the *Luctuosum*-group is characterised by distinct sexual dimorphism, by not brightly coloured basal portion of wings and by very low pronotal keel, not raised in prozona.

### Key to species and subspecies

1 (32). Second lobe of wings in males and in females of species with fully developed elytra and wings twice or, at least, half again as broad as the interspace between hind margin of lobe and the next incrassate vein, always with two distinct and complete parallel axillary veins; if elytra and wings are abbreviated in female sex the basal portion of the wings is brightly coloured (red, rose, crimson-red or violet-crimson). Intercalate vein in discoidal elytral area distinct, feeble or quite absent.

2 (21). Males. More clumsy. Wings with a more or less distinct dark transverse band or darkened in basal part of the first lobe only; rarely the external portion of wings darkened, but hind femora on inner and lower sides and hind tibiae without admixture of red colour; first axillary vein in basal half of second lobe distinctly spindle-shaped incrassate, in apical half markedly thinner than its most incrassate basal portion. Intercalate vein in discoidal area of elytra often feebly developed, or abbreviate, or quite absent. Females. Elytra of fully winged species reaching to the middle of hind tibiae, not less than three times as long as pronotum and more than half again as long as hind femora; if elytra and wings are abbreviated and body very clumsy, the intercalate vein in discoidal elytral area is altogether absent and the largest portion of external margin of wings not darkened.

3 (12). Forms with a feeble sexual dimorphism; females not very thick, with fully developed elytra and wings; the former always extending to the middle of hind tibiae, not less than three times as long as pronotum and more than half again as long as hind femora. Hind femora black inside and low, with a pale band before the apex and often with a pale middle spot on lower surface; hind tibiae yellow; very rarely hind femora on inner and lower sides with reddish band before the apex and hind tibiae orange-red (not sanguineous) on upper and inner sides (*Tuberculatum*-group).

4 (7). Wings without a dark transverse band or, rarely, with little dark spots instead of the band; first lobe darkened in basal half or three-fifths; first axillary vein in second lobe of ♂ very strongly spindle-shaped incrassate; anal edge of the first axillary vein in places of joining with transversal vein forming very distinct, sharp, triangular projections; the distance between the anal and first axillary veins near the middle of incrassate portion of the first axillary is always less than the maximum thickness of this vein. Elytra in both sexes without intercalate vein in discoidal area or, rarely, it is very feeble and indistinct; in ♂ elytra more than twice, often almost two and half times, as long as hind femora. The lobes of hind knee very broad, almost round; maximum width of knee portion of hind femora in ♂ almost twice, in ♀ not less than half again as broad as the most narrow portion of femora before knees.

5 (6). Larger and more clumsy (length of body: ♂ 32—36 mm, ♀ 34—40 mm; of elytra: ♂ 33.5—36 mm, ♀ 32.5—38 mm). Whole Mongolia, Manchuria and North-West China . . . . . *Br. holdereri holdereri* KRAUSS.

6 (5). Smaller and more slender (length of body: ♂ 29—30 mm, ♀ 33.5 mm; of elytra: ♂ 30—31 mm, ♀ 30 mm). Altai Mountains and Minusinsk region of East Siberia . . . . . *Br. holdereri holdereri* subsp. n.

7 (4). Wings with a narrow, but always distinct dark band, or with darkened external portion and the whole of the first lobe; first axillary vein in the second lobe of ♂ not strongly incrassate; anal edge of first axillary vein in places of joining with transversal vein not forming sharp triangular projections; the distance between the anal and the first axillary veins near the middle of incrassate portion of the first axillary is always larger than the maximum thickness of this vein. Elytra in both sexes with not strongly developed, but more or less distinct, somewhat abbreviate intercalate vein in discoidal area; in ♂ elytra not more than twice or, rarely, a little more, as long as hind femora. The lobes of hind knees not very broad, distinctly elongated; maximum width of knee portion of hind femora in ♂ only half again, in ♀ less, as broad as the most narrow part before the knee.

8 (11). Body not very dark, almost always without an admixture of coal-black colour. Wings with a more or less distinct narrow transverse band, extending from costa to anal angle; external margin not darkened, pellucid but with dark veins; first lobe darkened in basal half or three fifths only, in apical portion pellucid but with darkened veins and often with small dark spots.

9 (10). Smaller and more slender (length of body: ♂ 26—29 mm, ♀ 29—39 mm; of elytra ♂ 25—29 mm, ♀ 25—30 mm). Europe, Kirghiz steppes and Altai Mountains . . . . . *Br. tuberculatum tuberculatum* (FABR.).

10 (9). Larger and more clumsy (length of body: ♂ 29—39 mm, ♀ 34—48 mm; of elytra: ♂ 29—38 mm, ♀ 28—36 mm). Pronotum in prozona often spherically inflated. Perm province in Eastern European Russia, North-Eastern Khirgiz steppes, Siberia, Altai Mountains, Mongolia (except its central and southern parts), Manchuria, Korea, North and North-West China and Tibet . . . . . *Br. tuberculatum dilutum* (STOLL).

11 (8). Body very dark, with an admixture of coal-black colour. Wings with darkened whole first lobe and external margin, occupying the apical half of second lobe and regularly narrowing posteriorly. Bavarian Alps (and probably Tirol) . . . . . *Br. tuberculatum bavaricum* ZACHER.

12 (3). Forms with a very strong sexual dimorphism: females very thick and clumsy with abbreviated elytra and wings; the former not reaching or reaching to the apex of hind femora, or extending a little beyond them, not more than three times as long as pronotum and often not

more than half again as long as hind femora. Hind femora dark-blue or red inside and beneath, or black but with a red band before the apex; hind tibiae dark-blue, sanguineous on all sides or, if hind tibiae red, hind femora unicolourly red on inner and lower sides, without an admixture of black colour (*Semenovi*-group).

13 (18). Hind tibiae sanguineous or red at least on inner and upper surfaces; hind femora red inside and low or only with a red band before the apex. Head with more or less distinct foveolae of the vertex. Median pronotal keel not obliterated in prozona between transversal sulci, distinct on the whole length of pronotum.

14 (15). Hind femora black inside and beneath, with a red band before the apex; hind tibiae sanguineous. Elytral venation normal; female elytra markedly extending beyond the hind knee, three times as long as pronotum and a little more than half again as long as hind femora. Wings in both sexes with a not sharp, narrow band; female wings a little shorter than elytra and twice as broad as the latter. North-West China (Gan-su prov.) and South Mongolia . . . . . *Br. diamesum* sp. n.

15 (14). Hind femora red inside and partly beneath; hind tibiae on inner and upper surfaces red, with orange shade, and orange-yellow on lower and outer surfaces. Female elytra not quite reaching the apex of hind femora, only two times as long as pronotum and a little longer than hind femora. Wings in both sexes with more or less sharp, not very narrow band; female wings distinctly shorter than elytra, not broader than the latter.

16 (17). Frontal costa inflated; its lateral keels not elevated and not sharpened. Metazona of pronotum in ♂ practically two times, in ♀ more than half again as long as the prozona. Apical third of elytra in ♂ with practically straight parallel branches of the second and third radial veins; first and second radial veins very approached to each other on their apical course. Zaisan and Saur , . . . . *Br. zaisanicum* sp. n.

17 (16). Frontal costa with a distinct sulcus and sharp elevated lateral keels. Metazona practically half again as long as the prozona, or in ♀ somewhat shorter. Apical third of elytra with distinctly incurved parallel branches of the second and third radial veins; first and second radial veins strongly divergent on their apical course. North-Western Mongolia . . . . . *Br. fallax* sp. n.

18 (13). Hind tibiae dark-blue at least on inner and upper surfaces; hind femora dark-blue, almost black inside and beneath, without an admixture of red colour. Head without foveolae on the vertex or they are very indistinct. Median pronotal keel in prozona obliterate between transversal sulci; in metazona very feeble and indistinct, especially in its posterior part.

19 (20). Larger (length of body: ♂ 25—27 mm, ♀ 32—34 mm; of elytra: ♂ 26.5—31 mm, ♀ 18.5—22 mm). Hind femora on inner and lower sides



without pale band before the apex, unicolourly dark-blue; hind tibiae in ♂ with 7—9 spines, in ♀ with 8—11 spines on outer side and on inner side in both sexes with 9—11 spines. Semiretchie . . . *Br. semenovi semenovi* Ikon.

20 (19). Smaller (length of body: ♂ 21—26 mm, ♀ 26—31 mm; of elytra: ♂ 24—28 mm, ♀ 15.5—17.5 mm). Hind femora on inner and lower sides with a distinct pale band before the apex; hind tibia on outer side in ♂ with 5—7, in ♀ with 6—7 spines, on inner side in ♂ with 7—9, in ♀ with 8—9 spines. North, Central and North-West Mongolia . . . . .  
 . . . . . *Br. semenovi orientale* subsp. n.

21 (2). Males. More slender. Wings infumate (except the bright-coloured basal portion) and therefore without a transverse band or, rarely, with a small pellucid spot before the apex of first and, partly, second lobe; first axillary vein in basal half of second lobe not spindle-shaped incrassate, in the apical half a little thinner than in the basal. Intercalate vein in discoidal area of elytra always evident, not abbreviate. Females. Very clumsy, always with abbreviated elytra and wings (apex of elytra not reaching to the middle of hind tibiae); intercalate vein in discoidal area of elytra always more or less distinct, although occasionally somewhat abbreviated; external margin of wings darkened, except the apices of first and second lobe. Hind tibiae in both sexes dark-blue or red, at least on inner and upper surfaces (*Gebleri*-group).

22 (27). Hind tibiae dark-blue or violaceous; hind femora dark-blue or quite black inside and beneath, without an admixture of red colour or only with an orange-red band before the apex.

23 (24). Smaller, ♂ very slender. Head with more or less distinct foveolae on the vertex. Hind femora with a distinct orange-red band on inner and lower sides before the apex. Female elytra scarcely reaching the apex of hind femora; wings in females with regular venation and two distinct parallel axillary veins in second lobe (as in male) and sharply defined wing fascia. South Mongolia . . . . . *Br. kozlovi* sp. n.

24 (23). Larger, ♂ more clumsy. Head without or with indistinct foveolae on the vertex. Hind femora on inner and lower sides without orange-red band before the apex. Female elytra distinctly reaching, or very often somewhat extending beyond the apex of hind femora. Wings in females with irregular and not distinct venation and with not very sharply defined fascia.

25 (26). Hind femora uniformly dark-blue inside and beneath, without a pale band before the apex. Basal portion of wings with distinct violaceous shade. Body smaller and ♂ more slender. Semiretchie . . . . .  
 . . . . . *Br. heptapotamicum* sp. n.

26 (25). Hind femora with a distinct pale band before the apex. Basal portion of wings without or with very feeble violaceous shade. Body larger

and ♂ more clumsy. Altai Mountains and whole Mongolia . . . . .  
. . . . . *Br. gebleri mongolicum* ZUB.

27 (22). Hind tibiae red, orange-red or dirty-red; hind femora red inside and beneath, with a pale band before the apex.

28 (29). Foveolae on the vertex indistinct or quite absent, especially in female sex. Pronotum in ♂ feebly wrinkled, in ♀ with strong tubercles; median carina very feebly developed, not raised in prozona and often quite obliterated between transverse sulci, first of which is not deep and seen in profile not cutting the median carina. Hind femora on the upper surface between keels without sharp velvety-black spots, or only with a not sharply defined dark band on outer surface. Female elytra reaching to apices of hind femora or a little surpassing them. Kirghiz steppes, Altai Mountains, Semiretchie, Zaisan, Minusinsk district, North-West Mongolia near Russian boundary, Irkutsk and Transbaikalia . . . . . *Br. gebleri gebleri* (F.-W.).

29 (28). Foveolae on the vertex distinct, triangular. Pronotum strongly wrinkled, with strong tubercles; median carina in prozona distinctly raised, not obliterated between transverse sulci, first of which is more or less deep and seen in profile cutting the median carina. Hind femora on the upper surface between keels with three sharp, velvety-black spots, without a dark transverse band on external surface. Female elytra not reaching to the apex of hind femora.

30 (31). Larger (length of body: ♂ 28—32 mm, ♀ 37 mm; of elytra: ♂ 35—37.5 mm, ♀ 18 mm) and more robust. Pronotum in prozona somewhat spherically inflated. South Mongolia . . . . *Br. miramae miramae* subsp. n.

31 (30). Smaller (length of body: ♂ 23—24 mm; of elytra: ♂ 28—30 mm) and slender. Pronotum in prozona not inflated spherically. South Mongolia, North-West China and North Tibet . . . *Br. miramae elegantulum* subsp. n.

32 (1). Second lobe of wings in ♂, and in ♀ with fully developed elytra, as broad as the interspace between hind margin of this lobe and the next incrassate vein; second axillary vein strongly abbreviate, S-shaped incurved and not parallel to the first ulnar; apical end of second ulnar vein united with first ulnar. In ♀ with abbreviated elytra and wings, the basal portion of the latter is never brightly coloured, pellucid or somewhat darkened. Intercalate vein in discoidal area of elytra in ♂ quite evident and not abbreviated, in ♀ always more or less distinct.

33 (34). Basal portion of wings rose, with red incrassate veins; remaining portion dark, infumate, except pellucid spots before apices of first and second lobe. Pronotum in anterior portion of prozonal disc with bow-shaped raised median keel, which in posterior portion is low. Hind tibiae yellow. Females with fully developed elytra and wings; the former distinctly extending beyond the middle of hind tibiae (*Uvarovi*-group). North-West China (Gan-su prov.) . . . . . *Br. uvarovi* sp. n.

34 (33). Basal portion of wings darkened or pellucid, with black incrassate veins. Median pronotal keel in anterior portion of prozonal disc very low, as in the posterior portion. Hind tibiae dark-blue, red or yellow (?). Females with strongly abbreviated elytra and wings; the former not reaching or scarcely reaching to the apex of hind femora; wings almost two times as short as elytra (*Luctuosum*-group).

35 (36). Hind tibiae dark-blue or almost black. Transbaikalia, Irkutsk, whole Mongolia, Manchuria, Tibet and adjacent countries, North and North-West China. . . . . *Br. luctuosum luctuosum* (Stoll).

36 (35). Hind tibiae red (or yellow?).

37 (38). Female head with not very distinct foveolae on the vertex; frontal sulcus with a feeble constriction below the middle eye. Hind tibiae red. South Tibet . . . . . *Br. luctuosum indum* SAUSS.

38 (37). Female head with quite distinct foveolae of the vertex; frontal sulcus with a strong constriction below middle eye. Hind tibiae yellow (?). Male unknown. Locality? . . . . . *Br. brunnerianum* SAUSS.

### ***Bryodema holdereri holdereri* KRAUSS**

(Pl. XVIII, fig. 1, pl. XX, fig. 5)

1901. *Bryodema Holdereri* KRAUSS. Zool. Anz., Bd. XXIV, SS. 236—237 [♂. Donkir, East from Kuku-nor (South Mongolia)].—1902. *B[ryodema] holdereri* JACOBSON in JACOBSON and BIANCHI. Orthopt. Pseudoneur. Imp. Ross., pp. 264—265.—1908. [*Bryodema tuberculata*] var. *hyaloptila* KARNY. FILCHNER'S Exped. China—Tibet. Orthoptera, p. 46 [♂. Lan-tschou, (Gan-su prov.); Urga, North Mongolia].—1910. *B[ryodema] Holdereri* KIRBY. Syn. Cat. Orthopt., vol. III, p. 261.—1916. *Bryodema tuberculatum sibirica* (sic!) PYLNOV. Rev. Russe d'Entom., vol. XVI, p. 270 (partim). [Various localities near the rivers Tshikoi and Selenga, North Mongolia].—1930. *B[ryodema] holdereri holdereri* BEY-BIENKO. Ann. Mag. Nat. Hist. (in print) [Horbonte (Manchuria)].

♂. Size large for the genus, form very robust. Head with distinct, not very deep triangular foveolae on the vertex; frontal ridge near the fastigium of vertex somewhat constricted, slightly dilated between antennae, very regularly narrowing below median ocellum and obliterate from half way between ocellum and clypeus; surface of frontal ridge, especially in its lower portion, as well as clypeus, with a feeble, but distinct not deep puncturation; antennae a little longer than the head and pronotum taken together. Pronotum distinctly constricted in prozona; median keel distinct on whole length of pronotum; seen in profile two transversal sulci in prozona are not very deep, but distinct; metazona twice as long as prozona, distinctly shorter than it is broad, minutely rugulose, with small but distinct and partly elongated tubercles; shoulder angles with very thin, often indistinct keels; hind angle distinctly more than 90°, with blunt rounded apex. Elytra almost or quite reaching to the apex of hind tibiae, more than twice, not rarely almost two and half times, as long as hind femora, with square cells in

apical third; discoidal area without intercalate vein or, rarely, with a very indistinct scarcely visible vein; maximal width of interulnar area almost half again as broad as maximal width of discoidal area (near its apical extremity); apical part of interulnar area often with 3—5 regularly spaced straight transversal veins; anal field in sharpened apical half or third part with regular, partly sloping, transversal veins. Wings triangular, markedly longer than broad; first lobe with regular transversal veins; second lobe on the apex almost twice as broad as interspace between hind margin of this lobe and the incrassate vein of the third lobe; first axillary vein in second lobe very strongly spindle-shaped incrassate in basal half and strongly approaching to hind ulnar vein; interspace between first axillary and anal veins near the middle of incrassate portion is always smaller than the maximum thickness of axillary vein; anal edge of incrassate portion of first axillary vein in places of joining with transversal veins forming very distinct, sharp, triangular projections; second axillary vein distinct, not abbreviate and parallel to first ulnar one; principal radiate veins strongly thickened, especially in their middle parts. Hind femora and tibiae relatively short; the lobes of hind knee very broad, almost round; maximum width of knee portion almost twice as broad as the most narrow part of hind femora before the apex; posterior tibiae not very densely pilose, with 8—9 spines on outer and 9—11 on inner sides.

♀. As male, but more larger and clumsy. Head large; antennae as long as head and pronotum taken together. Pronotum with very distinct, but not large tubercles; metazona twice, or a little less, as long as prozona, distinctly broader than it is long. Elytra fully developed, four or about four times as long as pronotum and almost two times as long as hind femora, distinctly extending beyond the middle of hind tibiae; intercalate vein in discoidal area quite absent; anal field with more or less straight transversal veins. Wings as in females of *Br. tuberculatum*. Hind femora thick; the lobes of hind knee not less than half again as broad as the most narrow part of hind femora before the apex; lower lobe broadly rounded, a little longer than it is broad; hind tibiae with 9—10 spines on outer and 9—11 spines on inner sides.

General colouration in both sexes dark-brown, or yellowish-brown. Antennae not darkened on the apex. Elytra unicolourous or with distinct dark spots. Wings without dark band or, rarely, with small dark spots inside of band; first lobe in basal half, or three-fifth, strongly darkened, often almost black; three first incrassate veins in ♂ bright red in basal thickened part and black apically, in ♀ they are brownish-red in basal portion; basal portion of wings between incrassate radiate veins light rose, almost hyaline, specially in male sex. Hind femora unicolour outside; on inner and lower surfaces black, with a feeble blue shade, before the apex



with yellow band, in ♀ often with yellow spot on the base of lower side and not complete yellow transverse band on the middle of inner side; hind tibiae with black-tipped spines, on inner and upper sides, in ♂ ochreous-yellow, in ♀ yellow; on outer side in ♂ yellowish, in ♀ dirty-yellow. Thorax and abdomen below brownish-yellow or light greyish-brown.

Length: of ♂—body 32—36 mm, pronotum 8.2—9 mm, elytra 33.5—36 mm, hind femora 14—14.5 mm; of ♀—body 34—40 mm, pronotum 8.5—10 mm, elytra 32.5—38 mm, hind femora 16—20 mm.

Geographical distribution. This subspecies is widely distributed in Central Asia: its area covers whole Mongolia (from Kuku-nor region in the South and the Gobi desert in Central Mongolia to the Mongolian Altai in the North-West and the rivers Tshikoi and Selenga in the North) Manchuria and Gan-su province of North-West China. Pyl'nov's record of *Br. tuberculatum sibiricum* for North Mongolia was unquestionably based partly on specimens of *Br. holdereri holdereri* because this author writes (loc. cit., p. 279) that some specimens of *Br. tuberculatum sibiricum* are characterised by absence of transverse band of wings.

This subspecies, as well as *Br. holdereri occidentale* subsp. n., show some affinity with *Anagaracris* in the absence of transverse band on wings and by venation of anal field of elytra, having in the apical half or third parts more or less regular, straight transverse veins. On the other hand these subspecies are the most primitive, because they are characterised by feeble sexual dimorphism and by absence of transversal dark band of wings, and it is probably the nearest relative of ancestors of the group *Bryodema*, from which also originated *Anagaracris* and *Uvaroviola*.

Specimens examined—36: 18 males and 18 females. South Mongolia: Bai-dun-tzsy, South Gobi, 1432 m; 20 IX 1901, 1 ♀ (Kozlov); Tzingai-sian, near the southern shore of the lake Kuku-nor, 25 VIII 1908, 1 ♂ (Kozlov).—Central Mongolia: The river Tuin-gol, middle course, Halha, 29 VII 1926, 8 ♂♂ and 7 ♀♀ (A. Kiričenko); eastern part of Ihe-bogdo, Gobian Altai, 18 VIII 1926, 5 ♂♂ and 9 ♀♀ (A. Kiričenko); Noin-bogdo, Central Gobi, 23 IX 1925, 1 ♂ (Kozlov); Uitzsyn-huduk, 15 VII 1909, 1 ♂ (Kozlov). First record.—North Mongolia: Sutzukte, 6—10 VIII 1924, 1 ♀ (Kozlov).—North-West Mongolia: shore of the Kobdo lake, Mongolian Altai, VIII 1899, 2 ♂♂ (Kozlov). First record for North-West Mongolia.

***Bryodema holdereri occidentale* subsp. nov.**

1927. *Bryodema holdereri* BEREŽKOV. Isv. Sibir. St. Zastsh. Rast., № 2 (5), pp. 47—50 (nec KRAUSS) [Monok and lake Shira, form. Minusinsk district].

As typical form, but differs from it by more slender body and smaller size, as follows: length of ♂—body 29—30 mm, pronotum 7.8—8 mm, elytra

30—31 mm, hind femora 12.5—13 mm; ♀ body 33.5 mm, pronotum 7.5 mm, elytra 30 mm, hind femora 15 mm.

Patria. Lake Shira, Minusinsk region, East Siberia, 3 VIII 1922, 1 ♂ (labelled „*Br. holdereri*, det. R. BEREŽKOV“); st. Monok, Minusinsk region, 1920, 2 ♂♂ [type and paratype] (labelled „*Br. holdereri*, det. R. BEREŽKOV“); Minusinsk region, 1920, 1 ♀; st. Kor-ketshu near Katun river, Tshuisky highway, Russian Altai, 26 VIII 1912, 1 ♂ (P. SUŠKIN and V. REDIKORCEV).

There are no structural or colour characters separating these specimens from the feebly variable in dimensions typical form but difference in dimensions and more slender body easily separate these two subspecies. It is very interesting, that these subspecies show some parallelism in geographical variation with two other related subspecies: *Br. tuberculatum tuberculatum* and *Br. tuberculatum dilutum*, first of which is western in distribution and smaller in size as *Br. holdereri occidentale*, and the second is eastern in distribution and larger in size as *Br. holdereri holdereri*.

### ***Bryodema tuberculatum tuberculatum* (FABR.)**

(Pl. XVIII, fig. 2, pl. XX, fig. 6)

1775. (*Gryllus*) *tuberculatus* FABRICIUS. Syst. Entom., p. 290. [♂ ♀; in sandy part of Jutland peninsula (North Europe)]. — 1838. *Oedipoda tuberculata* BURMEISTER. Handb. Entom., Bd. II, S. 641. — 1846. *Oedipoda tuberculata* FISCHER DE WALDHEIM. Orthopt. Imp. Ross., p. 280, pl. XXIII, fig. 7. — 1846. *Oedipoda salina* FISCHER DE WALDHEIM (nec PALLAS). Loc. cit., pl. XIV, fig. 3. — 1859. *Oedipoda tuberculata* EVERSMAAN. Bull. Soc. I. Nat. Moscou, vol. XXXII, p. 140. — 1882. *Br[yodema] tuberculata* BRUNNER VON WATTENWYL. Prodr. Europ. Orthopt., pp. 167—168, pl. VI, fig. 37 A—C. — 1884. *Br[yodema] tuberculata* SAUSSURE. Prodromus Oedipod., p. 180. — 1902. *B[r[yodema] tuberculatum* JACOBSON in JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., p. 265, pl. VI. — 1910. *B[r[yodema] tuberculata* KIRBY. Syn. Cat. Orthopt., vol. III, pp. 260—261. — 1927. *B[r[yodema] tuberculata* UVAROV. Acrididae of Central Asia, pp. 124—125 (in Russian).

♂. Size medium for the genus, form robust. Head with relatively distinct foveolae of the vertex; frontal ridge near the middle ocellum not deeply sulcate, below and above it practically flat; keels almost parallel and only near ocellum somewhat divergent; the whole frontal surface of head covered with very distinct impressed puncturations; antennae as long as, or a little longer, than head and pronotum taken together. Pronotum with distinct constriction in prozona; median keel thin, but very distinct and not obliterate between transverse sulci; prozona cylindrical, not inflated above; metazona flat, covered not densely with round or somewhat elongated small tubercles, twice or almost twice as long as prozona; first and third transverse sulci distinct; second almost or quite absent; lateral keels on metazona very thin, often represented in anterior part of metazona only or practically absent; hind margin rectangular, rounded on the apex. Elytra not or scarcely reaching the apex of hind tibiae, normally not more

than two times as long as hind femora, with square cells in apical third; discoidal area on the apex as broad as interulnar area, with a thin, abbreviate, but more or less distinct intercalate vein; apical half of anal area with very oblique irregular transversal veins. Wings triangular, elongated, markedly longer than they are broad; second lobe with two distinct parallel axillary veins, first of which not strongly but distinctly spindle-shaped incrassate in basal half, more than half again as broad in apical part as interspace between its hind margin and incrassate vein in third lobe; hind margin of incrassate portion of first axillary vein without sharp and triangular projections in places of joining with transversal veins; interspace between anal and first axillary veins near the middle of basal incrassate portion always greater than the maximum thickness of first axillary vein; radiate veins not very strongly incrassate. Hind femora thick and broad; hind tibiae with 10—11 spines on outer and 10—12 on inner sides, not densely pilose.

♀. As the male but larger and somewhat more robust. Head with almost flat frontal ridge; antennae as long as head and pronotum taken together. Pronotum as in male sex but more heavy and with strong, not large tubercles. Elytra extending to the middle of hind tibiae, more than half again as long as hind femora and more or at least three times as long as pronotum; intercalate vein very thin, abbreviate, but more or less distinct. Wings as in male, but first axillary and radiate veins not strongly incrassate. Hind femora heavy; hind tibiae with 10—11 spines on outer and 11—12 on inner sides. Interspace between mesosternal lobes as broad as, or a little narrower than each lobe, almost twice as broad as it is long.

General coloration in both sexes not very variable, uniformly greyish-brown or yellowish-dark-brown, or with dark spots; rarely general coloration with some admixture of black. Elytra without distinct transverse fasciae. Wings with rose or rose-red basal part and with a narrow, not sharp, but always distinct band which extends from the median part of anterior margin to the anal angle; first lobe infumate in basal half or three fifths not darkened in apical half or two-fifths but with black-brown veins; first axillary vein and three first incrassate radiate veins in ♂ red in basal part; all other incrassate radiate veins red on their whole course; in ♀ first axillary vein dark. Hind femora above with two or, rarely, three black spots; external surface with two more or less distinct dark transversal fasciae: inner and lower sides black, except a pale band before apical extremity, or with a pale transversal spot on the middle of lower side; hind tibiae yellow, with more or less indistinct dark band on the end of basal third and always distinctly darkened apex; very rarely hind tibiae orange-red and hind femora on lower and inner surfaces with admixture of orange colour; spines with black tips.

Length: of ♂ — body 26—29 mm, pronotum 6.8—7.5 mm, elytra 25—29 mm, hind femora 12.5—14.5 mm, max. width of elytra 6.2—6.6 mm; of ♀ — body 29—39 mm, pronotum 7.5—9 mm, elytra 25—29 mm, hind femora 16—18.5 mm, max. width of elytra 6.2—7 mm.

Geographical distribution. Denmark [Jutland (type locality) and Zeeland], West Germany (Rhine province), North Germany (Schleswig-Holstein, Hamburg, Hannover, Schwerin on Warthe, Silesia, Mecklenburg, Brandenburg, Bremen, West Prussia), Sweden, Finland, Northern and Middle European USSR from 57°—62° lat. in the North to 52°—49° lat. in the South (Karelia, Leningrad, Smolensk, Moscow, Riazan, Nizhny-Novgorod, Minsk, Viatka, Kazan, Vladimir, Kiev, Tshernigov, Kharkov, Poltava, Voronezh, Simbirsk, Samara and Ufa provinces), South-East European USSR (Saratov, Don and Orenburg provinces), Kazakstan, or Kirghiz steppes (Uralsk, Turgai, Kustanai and southern portions of Akmolinsk and Semipalatinsk provinces) and Russian Altai.

Specimens from localities near the boundary of the area of distribution of *Br. tuberculatum dilutum* (Ufa province in European USSR, and Turgai, Kustanai, Akmolinsk and Semipalatinsk provinces in Kazakstan and Russian Altai) are not always typical *Br. tuberculatum tuberculatum*.

Specimens examined—208: 129 males and 79 females.

Typical *Br. tuberculatum tuberculatum*: Jutland peninsula, 2 ♂♂ and 2 ♀♀. — European USSR: St. Tolmatchovo (formerly Preobrazhenskaia), Luga district, Leningrad province, 2 ♂♂ and 1 ♀ (MAZARAKY); Luga, Leningrad province, 1 ♂ (CHOLODKOVSKIY); Gorenki, Kaluga district, Kaluga province, 7 VIII 1904, 1 ♂ (PORECKIJ); Nolinsk, Viatka province, 27 VII 1899, 1 ♂ (PORECKIJ); Korsunsk district, Simbirsk province, 10 VII 1864, 2 ♂♂ (ČEKANOVSKIY); Jareski, Mirgorod district, Poltava province, 26 VII 1924, 4 ♂♂ and 6 ♀♀ (HILDEBRANDT); Sarepta, on the river Volga, 1 ♂ and 1 ♀ (SAUSSURE det.) and 1 ♀ (BRUNNER det.); the river Irgizla, Orenburg province, VII 1999, 19 ♂♂ and 3 ♀♀ (A. JACOBSON). — Kazakstan (Kirghiz steppes): Ak-Bulak, Turgai province, 2 ♂♂ and 1 ♀; Arganaty Mountains, Kustanai province, 1898, 1 ♀ (SUŠKIN); the river Nura, South from Akmolinsk, Akmolinsk province, 16 VII 1900, 1 ♂ and 1 ♀ (BALYKLEJSKIY). — Altai Mountains: Ongudai, 2 VII 1898, 4 ♂♂ (A. JACOBSON); same locality VI—VII 1898, 28 ♂♂ and 22 ♀♀ (BEREZOVSKIY and STEINFELD); upper Uimon, 2 ♂♂, 4 ♀♀ (SILANTJEV); between Katanda and upper Uimon, 10—18 VIII 1897, 5 ♂♂ and 4 ♀♀ (SILANTJEV); river Tumuliuk, Tshulyshman Mountains, 21—22 VII 1912, 2 ♂♂ (SUŠKIN and REDIKORCEV); Tshernovaia on the river Bukhtarma, 7 VIII 1897, 5 ♂♂, 2 ♀♀ (SILANTJEV); river Topolevka, basin of the river Argut, 22 VIII 1897, 3 ♂♂ (SILANTJEV); valley of the river Bukhtarma near the village Artshaty, 24 VIII 1926, 2 ♂♂ (V. BARANOV).



Atypical *Br. tuberculatum tuberculatum* and intermediate between this subspecies and *Br. tuberculatum dilutum*. European USSR: Belebei district, Ufa province, 3 ♂♂ and 3 ♀♀ (SKOSAR-PESKOVA).—Kazakhstan: village Borovoi, Kustanai province, IX 1998, 1 ♀ (SUŠKIN); Ak-Bulak, Turgai province, 4 ♂♂, 2 ♀♀ (MORITZ); river Nura, South from Akmolinsk, Akmolinsk province, 16 VII 1900, 1 ♀ (BALYKLEISKIJ); Akmolinsk, 25 VII 1925, 1 ♂ (MUČAČEV).—Altai Mountains: Ongudai, VI–VII 1898, 14 ♂♂ and 12 ♀♀ (BEREZOVSKIJ and STEINFELD); between Katanda and upper Uimon, 10–18 VIII 1897, 9 ♂♂, 4 ♀♀ (SILANTJEV); river Tshulyshman, 16–18 VIII 1901, 8 ♂♂, 1 ♀♀ (IGNATOV); the village Inia, 24 VIII 1925, 3 ♂♂, 3 ♀♀ (BEY-BIENKO).

### *Bryodema tuberculatum dilutum* (STOLL)

1813. [*Gryllus Locusta*] *dilutus* STOLL. Représ. exact. colorée d'après nature des spectres etc., p. 21, pl. IX b, fig. 31; index, p. 12 („en Sibérie“).—1907. *Bryodema tuberculata* KARNY. FILCHNER'S Exped. China—Tibet. Orthoptera, p. 45 [Lan-tshou, Gan-su province, North-West China].—1913. *Bryodema tuberculatum sibirica* IKONNIKOV. Über die von Schmidt aus Korea mitgebrachten Acridiideen, SS. 17–18 [♂, ♀; Korea and whole Eastern Siberia from South-Ussuri region (Hanka lake) to Krasnojarsk in Yenisei province].—1914. *Bryodema tuberculatum sibirica* PYLNOV. Revue Russe d'Entom., vol. XIV, p. 108 [South-Ussuri region, East Siberia; Omsk, West Siberia].—1916. *Bryodema tuberculatum sibirica* PYLNOV. Revue Russe d'Entom., vol. XVI, p. 279 (partim). [Different localities near the rivers Tshikoi and Selenga, North Mongolia].—1918. *Bryodema tuberculatum sibirica* PYLNOV. Mém. Inst. Agron. Voronezh, vol. III, pp. 134–135, 137–138 [Perm province (East European Russia); different parts of Russian Altai].—1925. *Bryodema tuberculata holdereri* UVAROV (nec KRAUSS). Ann. Magaz. Natur. Hist., vol. XVI, p. 172 [Tinki Dzong and Shekar, Himalayas].—1927. [*Bryodema*] *tuberculatum sibiricum* BEY-BIENKO. Revue Russe d'Entom., vol. XXI, p. 103. [Borovoie (Koktshetav Mountains, Akmolinsk province); village Javlenka (Petrovsk district, Akmolinsk province)].—*Bryodema tuberculatum* auct. (partim).

As the typical form, but differs from it by following features: body larger and more clumsy, elytra broad, pronotum in prozona often distinctly inflated; general coloration usually darker than in the typical form.

Length of: ♂—body 29–39 mm, pronotum 7.8–9 mm, elytra 28–38 mm, hind femora 14.5–18 mm, max. width of elytra 7.4–8.2 mm; of ♀—body 34–48 mm, pronotum 8.5–10 mm, elytra 29–36 mm, hind femora 17.5–21.5 mm, max. width of elytra 7.2–8.5 mm.

Geographical distribution. The present subspecies is more widely distributed than all other forms of the genus *Bryodema* and its area of distribution covers southern and middle portion of the whole Siberia, from South-Ussuri region in the East and Jakutsk province (to 64° N) in North-East, to the Ural Mountains on the West and even Eastern European Russia (Perm province), Korea, North and North-West China, Manchuria, North, Central and North-West Mongolia, Tibet to Himalayas, Altai Moun-

tains and the northern parts of Semipalatinsk and Akmolinsk provinces in Kazakstan. There are no distinct structural or colour characters separating this subspecies from the typical form but specimens from Siberia and adjacent countries are distinctly more robust and larger than specimens from Europe and therefore these two subspecies are easily separable one from another.

Specimens examined—266: 169 males and 97 females. Tibet and Himalayas: Gyangtse, 3962 m, June 1904, 1 ♂, 1 ♀ (Tibet Exped. H. J. WALTON) [British Museum coll.]; Lhasa, VIII—IX 1904, 1 ♂, 1 ♀ (Tibet Exped. H. J. WALTON) [British Museum coll.]; Shekar, 4419 m, 9 VIII 1924, 1 ♂ (R. W. G. HINGSTON) [British Museum coll.]; Mt. Everest Exped., up to 5638 m, July 1921, 1 ♀ [British Museum coll.]. First exact record for these regions.—North China: Pekin, 1908, 1 ♂, 1 ♀ (J. VASILJEV); Pekin, 22 IV 1907, 1 ♂. First record for North China.—North-West China: King-ang-fan, Eastern Gan-su province, 1 ♂. First record.—Korea: Pung-tung, Kang-wondo, 1884, 3 ♂♂ (O. HERTZ); 3 ♀♀ (without exact data), 1901 (SCARLETT) [British Museum coll.].—Manchuria: Guntshulin, South from Kuantshen, VIII 1905, 2 ♂♂ (SERIKOV). First record.—North Mongolia: Urga, 5 VII 1926, 1 ♂ (KIRIČENKO); near Urga, VI 1909, 1 ♂ (Kozlov); Ulan-daban, East from Urga, 31 VII 1897, 1 ♂, 1 ♀ (KLEMENTZ); river Tshikoi, near Russian boundary, VII 1925, 20 ♂♂, 16 ♀♀ (MARVEEV).—Central Mongolia: Noin-bogdo Mountains—Orok-nor, Central Gobi, 26 IX—10 X 1926, 1 ♂ and 1 ♀ (Kozlov); middle course of the river Tuin-gol, 28 VII 1926, 9 ♂♂, 7 ♀♀ (KIRIČENKO). First record.—North-West Mongolia: river Dzurche, Tzagangol system, 28 VII 1898, 3 ♂♂ (KLEMENTZ);—Nikolskoye, Urianchai country, VII 1916, 3 ♂♂, 3 ♀♀. First record.—East Siberia: South-Ussuri region, 1 ♂ (MOLTRECHT); Katshikatsky nasleg, Jakutsk province, 12 VII 1925, 15 ♂♂, 3 ♀♀ (BIANCHI); Jakutsk, 15 VII 1925, 6 ♂♂, 2 ♀♀ (BIANCHI); Sergeliak near Jakutsk, 15 VII 1925, 2 ♂♂, 2 ♀♀ (BIANCHI); five versts above Tshkurskaya, East from Olekminsk, Jakutsk province, 4 IX 1925, 1 ♂, 6 ♀♀ (BIANCHI); st. Solianka, Olekminsk district, Jakutsk province, 10 VII 1902, 1 ♀ (OLENIN); Hatyngytördö on the river Amga, Jakutsk province, 7 VIII 1925, 1 ♂, 1 ♀ (BIANCHI); st. Bertlach, between Jakutsk and Amginskoye, 19 VIII 1925, 2 ♂♂ (BIANCHI); Amginskoye, Jakutsk province, 10 VIII 1925, 1 ♂ (IVANOV); lake Keedey, near the river Amga, Jakutsk province, 15 VII 1925, 1 ♂ (BIANCHI); river Amga, Jasem-konsky nasleg, 18—20 VII 1902, 1 ♂ (OLENIN); river Ya, basin of the river Onon, Transbaikalia, 30 VII 1908, 5 ♂♂ and 2 ♀♀ (MICHNO); basin of the river Zeya, Transbaikalia, 1 VIII 1911, 1 ♂ (NIKIFOROV); Urulga, Transbaikalia railway, VI—VII 1910, 1 ♂ and 3 ♀♀ (E. ŽUKOVA); river Tytun, system of the river Onon, 14 VII 1894, 2 ♂♂ (KAŠKAROV); river Borchka, system of the river Onon, Transbaikalia, 16 VII 1894, 1 ♂ (KAŠKAROV);

Tshita, Transbaikalia, VI—VII 1866, 1 ♂ and 1 ♀ (ČEKANOVSKIJ); isle Olhon, Baikal lake, 15 VII 1915, 1 ♀ (TICHOMIROV); North Baikal, 3 ♂♂ (RADDE); Irkutsk, Irkutsk province, 1903, 1 ♂ (JURINSKIJ) and 4 ♂♂ (JAKOVLEV); valley of the river Irkut, Irkutsk province, 30 VI 1916, 1 ♀ (RODIONOV); village Osnatshennaia, Minusinsk country, Yenisei province, 1 ♂ (EHNBERG); Minusinsk, Yenisei province, 2 ♂♂ and 1 ♀ (IVANOVA) [author's coll.]. Altai Mountains: Upper Uimon, 14—16 VII 1897, 3 ♂♂, 6 ♀♀ (SILANTJEV); Ust-Bashkaus, South from Teletzkoye lake, 16—18 VII 1912, 9 ♂♂, 1 ♀ (SUŠKIN and REDIKORCEV); Ust-Kan, elevation 1500 m, 13 VII 1920, 4 ♂♂ (VINOGRADOV and BOLENSKIJ); valley of the river Bukhtarma, 14 VII 1899, 4 ♂♂, 2 ♀♀ (KAZNAKOV); village Berezovka, 11 VIII 1897, 1 ♂ (SILANTJEV); Katon Karagai, 1 VII 1906, 2 ♂♂ (A. JACOBSON); Kuraiskaya steppe, 22 VII 1925, 2 ♂♂, 1 ♀ (BEY-BIENKO) [author's coll.]. — West Siberia: lake Tshany, Barabinskaya steppe, 2 VII 1868, 2 ♂♂ (MIDDENDORFF); Omsk, VII—VIII 1925—1927, 27 ♂♂, 18 ♀♀ (BEY-BIENKO) [author's coll.]; village Bolsheretshinskoye between Omsk and Tara, VIII 1926, 2 ♀♀ (V. MARTYNOVA); village Parkovskoye, Tkalinsk district, VII 1903, 1 ♂; Ishim, 11 VII 1905, 6 ♂♂ and 3 ♀♀ (KALUGINA); Javlenka near Petropavlovsk, VII—VIII 1926, 2 ♂♂, 1 ♀ [author's coll.]. — Kazakstan: Mountain Boiartshikha, Ust-Kamenogorsk district, Semipalatinsk province, VII 1924, 1 ♂ 1 ♀ (KOŽEVNIKOV and POPPEL); river Sekisovka, Ust-Kamenogorsk district, Semipalatinsk province, VIII 1924, 1 ♀ (KOŽEVNIKOV and POPPEL); Areševskij khutor, Semipalatinsk district, 1921, 3 ♂♂, 1 ♀; Borovoje, Koktshetav Mountains, Akmolinsk province, 6 VIII 1926, 2 ♂♂ (BEY-BIENKO); Javlenka, Petropavlovsk district, Akmolinsk province, VIII 1926, 1 ♂.

***Bryodema tuberculatum bavaricum* ZACHER**

1919. *Bryodema tuberculata* var. *bavarica* ZACHER. Entom. Mitteil., Bd. VIII, № 4—6, SS. 96, 99—101, fig. 5. [♂, ♀; Berchtesgaden (eastern part of Bavarian Alps)].—1921. *Bryodema tuberculata bavarica* RAMME. Archiv für Naturg., Bd. 86, Abt. A, Heft 12 (1921), SS. 138, 144—145. [Allgäu, western part of Bavarian Alps].

♂. Very like in general habitus to typical form but differs from it in some features. Pronotum with a strong constriction in prozona; prozona cylindrical, not inflated above; metazona without longitudinal callosities, smooth, seen in profile distinctly convex, less than two times as long as prozona; lateral keel on the shoulders absent; maximum width of metazonal disc distinctly larger than its length. General coloration uniformly black-brown from above, excepting some almost coal-black parts, and more light below. Elytra dark-brown, with indistinct dark spots. First lobe and external margin of wings dark-smoky; inner side of external margin of wings near the rose basal portion somewhat darker than the outer. Hind femora above with two distinct velvety-black spots; external side with two more or less distinct

dark transversal fasciae; inner and lower sides black, excepting pale spot on the middle and pale band before the apex; basal part of hind tibiae, specially on the inner side, black; apex of basal third with a very distinct dark band; lower side of apical part of hind tibiae black.

♀. As the male but larger and more clumsy. Pronotum with a feeble longitudinal callosity in metazona, which is markedly less than two times as long as prozona and considerably shorter than it is broad at the shoulders. General coloration more light than in male sex, dark brownish-grey. Wings as in the male but with relatively broader darkened external margin; inner side of the latter not darker than the outer. Hind femora outside without distinct dark transverse fasciae; basal part of hind tibiae dark-brown on external and upper sides and black on lower and inner sides.

Length: of ♂ — body 29 mm, pronotum 6.7 mm, elytra 29 mm, hind femora 14 mm; of ♀ — body 35 mm, pronotum 7.6 mm, elytra 30 mm, hind femora 16 mm.

Geographical distribution. Bavarian Alps and probably Tirol.

Specimens examined — 2; 1 male and 1 female (topotypes). Bavarian Alps: Berchtesgaden, Eisgraben, VIII 1925, 1 ♂ and 1 ♀ (ZACHER).

This interesting subspecies shows in the absence of transversal band of wings and in the coloration of the latter, a tendency towards the *Gebleri*-group, which is also characterised by the absence of transversal band and by darkened first lobe and all external portion of wings.

#### ***Bryodema diamesum* sp. nov.<sup>1</sup>**

♂. Very like in general habitus and partly in coloration to *Br. tuberculatum tuberculatum*. Size medium for the genus, body not slender (as in *Tuberculatum*- and *Semenovi*-groups). Head with distinct triangular foveolae on the vertex; frontal ridge above and below the middle ocellum markedly constricted, near the ocellum dilated; lower end of frontal ridge not reaching to the upper margin of clypeus; frontal sulcus not deep, without puncturations; lower part of genae and lower margin of front, below lower end of frontal ridge, with distinct impressed puncturations; antennae a little longer than the head and pronotum taken together. Pronotum with median keel slightly elevated in anterior margin of prozona and distinct on its whole course; metazona a little more than twice as long as prozona and as broad as long. Elytra with distinct but feeble intercalate vein in discoidal area; wings elongated, triangular; second lobe almost twice as broad as the interspace between this lobe and first incrassate radiate vein deposited behind with two distinct parallel axillary veins, first of which distinctly spindle-shaped incrassate in basal half; radiate veins strongly incrassate.

<sup>1</sup> From *διμεσος* = intermedial. In allusion to the intermediate position of this species.



General coloration dark brownish. Elytra with an indistinct band in the middle and dark spots in apical third. Wings as in *Br. tuberculatum tuberculatum* and *tuberculatum dilutum*, i. e. with rose base and not very sharp, narrow transversal band. Hind femora black inside and beneath, excepting a red band before the apex; external side more or less unicolourly dark, with greyish-yellow band before the apical extremity; upper surface of hind femora with three black spots. Hind tibiae sanguineous, somewhat darkened in apical portion of lower side.

♀. Very clumsy. Head as in the ♂ but thicker, antennae markedly shorter than head and pronotum together. Pronotum as in male sex but metazona only two times as long as prozona; hind margin broadly rounded on the apex. Elytra somewhat abbreviate, but not so strongly as in other species of *Semenovi*-group, markedly extending beyond the hind knees but not reaching to the middle of hind tibiae, almost three times as long as pronotum and half again as long as hind femora; intercalate vein in discoidal area quite absent. Wings elongated, triangular, a little shorter than elytra; venation very distinct; second lobe distinctly broader than interspace between hind margin of same and the incrassate vein deposited behind. General coloration as in the male. Elytra with regularly distributed little dark spots. Wings in basal half of first lobe dark, light-rose at the base, with not very dark and not sharp, narrow transversal band on the middle; apical half of first lobe, two-fifths of second lobe and apical end of anterior half of postaxillary field not darkened, more or less pellucid, with dark veins. Hind femora and tibiae as in male sex.

Length: of ♂ — body 26 mm, pronotum 7.1 mm, elytra 28 mm, hind femora 13 mm; of ♀ — body 32 mm, pronotum 8.4 mm, elytra 23 mm, hind femora 15 mm.

Patria. Darindo, upper reaches of Yang-tse-kiang, Kam, East Tibet, VIII 1900, 1 ♂ (type) (Kozlov); Danger-tin, Nan-Shan Mountains, near southern part of Kuku-nor lake, South Mongolia, 3048 m, VIII 1901, 1 ♀ (Kozlov).

This very interesting species is very like and related to *Br. tuberculatum tuberculatum* and *Br. tuberculatum dilutum* but differs from these two subspecies by the coloration of hind femora and tibiae and by somewhat abbreviated elytra and wings in female sex, i. e. by features which characterise the *Semenovi*- and *Gebleri*-groups. Thus this species shows that *Semenovi*- (and *Gebleri*-) groups originated from the most primitive *Tuberculatum*-group.

***Bryodema zaisanicum* sp. nov.**

(Textfig. 1, B).

♂. Belonging to *Semenovi*-group and very related to *Br. fallax* mihi from North-West Mongolia.

♂. Head with distinct and elongated triangular foveolae of the vertex. Antennae somewhat longer than the head and pronotum together; their middle joints more than two times as long as broad; frontal costa inflated, with a feeble sulcus; its lateral keels not elevated and not or feebly sharpened. Pronotum somewhat impressed in prozona, with almost plane pronotal disc; metazona with distinct but not sharp lateral keels, almost two times as long as prozona; median keel thin and low but more or less distinct

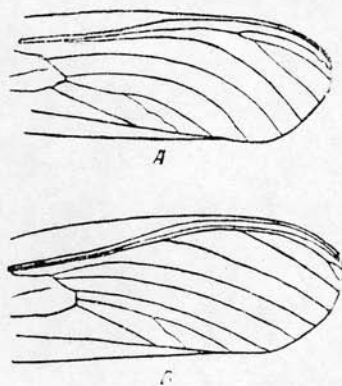


Fig. 1. Apical parts of elytra:  
A—*Bryodemella fallax* sp. n. ♂ (paratype); B—*Bryodemella zaisanicum* sp. n. ♂ (type).

on the whole length of pronotal disc; metazonal disc as long as broad, covered with very scarce and small rounded or somewhat elongated tubercles; hind margin a little more than 90°, not rounded on the apex. Elytra scarcely reaching to the apex of hind tibiae; discoidal field with more or less distinct intercalate vein; apical third of elytra with feebly incurved, almost straight parallel branches of the second and third radial veins; first and second radial veins very approached to each other on their whole course. Wings triangular, distinctly longer than broad; second lobe almost twice as broad as the interspace between this lobe and the next incrassate vein, first axillary vein in basal half of the second lobe distinctly spindle-shaped incrassate. Hind femora and tibiae as in other species of the group.

General coloration dark greyish-brown. Elytra with more or less distinct dark spots or, sometimes, without them. Wings rose in basal part, with very sharp and dark broad transverse band; apices of the first and second lobe with some small dark spots not forming large spot, as in *Br. fallax*. Hind femora red inside and low, with a pale band before the apex; hind tibiae red, at least on inner and lower surfaces; spines with black apices.

♀. Very clumsy. Head with distinct elongated triangular foveolae. Middle joints of antennae twice, or a little more, as long as broad. Pronotum with somewhat inflated prozonal disc; metazona feebly wrinkled, with scarce tubercles, more than half again as long as the prozona and distinctly shorter than it is broad at the shoulders. Elytra strongly abbreviate, not reaching the apex of hind femora, without or with very feeble intercalate vein in discoidal area; wings triangular, elongated, almost twice as short as elytra, with indistinct venation. Hind femora thick.

General coloration more variable than in the male sex, often greenish-brown, yellowish-brown, greenish-grey, light greyish-brown and others. Wings rose in basal part, excepting the first lobe; the most part of the

first lobe darkened; transverse band distinct, not narrower than a quarter length of wings; apex of the first, second and third lobe not darkened, only with darkened veins.

Length: of body — ♂ 29—31 mm, ♀ 30—36 mm, of pronotum — ♂ 8—8.5 mm, ♀ 8.5—10.5 mm, of elytra — ♂ 26—29 mm, ♀ 15—16 mm, of hind femora ♂ 12—13.8 mm, ♀ 15—17 mm.

Patria. Kishkene-tau Mountains near the town Zaisansk, 27—28 VII and 2—3 VIII 1928, 11 ♂♂ and 8 ♀♀ (including type ♂); Karatas, between Zaisansk and Saur Mountains, 29 and 31 VII 1928, 5 ♂♂, 2 ♀♀; western part of Saur Mountains near the river Tshur-tshut-su to alpine zone, 29—31 VII 1928, 8 ♂♂, 5 ♀♀. All specimens were taken by the author. This handsome insect may be separated from related *Br. fallax* in the structure of the frontal costa in longer metazona of pronotum and in disposition of the first and second radial veins of male elytra.

***Bryodema fallax* sp. nov.**

(Textfig. 1, A)

♂. Size medium for the genus, form a little slender than in *Br. tuberculatum tuberculatum* but distinctly more robust than in representatives of *Gebleri*-group. Head with more or less distinct, regularly triangular foveolae of the vertex; frontal ridge with a deep sulcus and sharp, elevated keels, distinctly constricted at the fastigium of the vertex, above the middle ocellum between bases of antennae markedly dilated; constricted again, below the ocellum and with the keels diverging towards the clypeus; lower end of frontal ridge a little not reaching the clypeus; antennae a little longer than the head and pronotum taken together. Pronotum somewhat constricted in prozona, with almost flat prozonal disc; median keel thin and low but distinct and not obliterated between transversal sulci; the latter not deep, but more or less distinct; metazona with visible but not sharp lateral keels which do not extend beyond the hind transversal sulcus, a little more longer than prozona; metazonal disc a little broader than it is long, with low but more or less distinct elongated tubercles; hind margin a little more than 90°, slightly rounded or sharpened at the apex. Elytra moderately long, scarcely reaching the apex of hind tibiae, a little more than two times as long as hind femora; basal third with relatively dense reticulation; apical third with more or less incurved parallel branches of the second and third radial and first ulnar veins and with almost square or feebly rounded cells; discoidal field with a thin more or less distinct, sometimes abbreviate intercalate vein; the latter markedly approaching in the apical portion to hind radial vein; maximum width of interulnar area (near the apex) not larger or a little larger than

maximum width of discoidal one; first and second radial veins strongly divergent on their apical course. Wings triangular, distinctly longer than broad; second lobe with strongly projecting apex, twice as broad as interspace between hind margin of this lobe and first incrassate radiate vein deposited behind, with two distinct parallel axillary veins, first of which not strongly but distinctly spindle-shaped incrassate in basal half. Hind tibiae not densely pilose, with 8 spines on outer and 9—11 spines on inner side. General coloration light greyish-brown. Elytra with somewhat darkened basal quarter, with incomplete transverse band on the middle and with more or less distinct dark spots in apical half. Wings rose in basal part, with rose-red incrassate radial veins; transverse dark fascia very distinct and sharp, more or less broad; maximal width of this fascia not larger than one fourth of the second lobe; basal three-fifths of the first lobe darkened, apical two-fifths light, pellucid, except the darkened apex; apical third of second lobe pellucid, not darkened, except dark apical spot; external margin of postaxillar area, from hind margin of second lobe to the apex of second incrassate vein, pellucid; external margin from second radiate vein to anal angle dark. Hind femora red on the lower and the inner sides, with a distinct pale band before the apex; external side with two indistinct dark transverse fasciae. Hind tibiae orange-red on inner and upper surfaces and yellowish-orange on outer and lower surfaces; spines with a black apex.

♀. Very clumsy. Head with more or less distinct foveolae of the vertex; antennae a little shorter than head and pronotum taken together. Pronotum with distinctly inflated prozonal disc; median keel not high, not obliterate between transverse sulci, distinct on its whole course; metazona with distinct tubercles, clearly wrinkled, as long as, or a little longer than, the prozona, with parallel lateral keels; maximum width of metazonal disc half again as broad as it is long. Elytra strongly abbreviated, not reaching to the apex of hind knees, as long as, or a little longer, than the hind femora and as broad as, or a little broader, than the wings; intercalate vein in discoidal area absent. Wings triangular, with irregular venation, almost half the length of elytra. Hind tibiae with 9 spines on outer and 10 spines on inner side. General coloration as in male sex. Elytra without basal dark band, with equally distributed spots. Wings in basal half rose, excepting first lobe; the greatest part of the latter darkened; transverse band distinct, not narrower than a quarter of length of wings; apex of first and second lobes, as well as external margin of postaxillar field, from hind margin of second lobe to second incrassate vein, not darkened, pellucid. Hind femora and tibiae as in male.

Length: of ♂ — body 25—30 mm, pronotum 6.5—7.3 mm, elytra 26—30.5 mm, hind femora 11.7—13 mm; ♀ — body 32—33 mm, pronotum 7.8—9 mm, elytra 15—17.5 mm, hind femora 14.2—15 mm.



Patria. River Dsurhe, basin of the river Tzagangol, North-West Mongolia, 28 VII 1898, 6 ♂♂ (including the type) and 3 ♀♀ (KLEMENTZ); river Tashilmy, North-West Mongolia, 26 VII 1898, 4 ♂♂, 1 ♀ (KLEMENTZ).

Males of this species, as well as of *Bryodema zaisanicum*, are very like in general habitus and partly in coloration to *Bryodema tuberculatum* and *Br. diamesum* but are easily separated from both by the coloration of hind femora and tibiae, and by more distinct and sharp transverse band of wings. On the other hand females of these two new species strongly differ from the males; they are very like to females of *Br. gebleri gebleri*, *Br. miramae miramae* and other species of the *Gebleri*-group, but distinctly separated from these by the practical absence of intercalate vein in discoidal area of elytra.

***Bryodema semenovi semenovi* IKONN.**

(Pl. XVIII, fig. 3, pl. XX, fig. 1)

1911. *Bryodema semenovi* IKONNIKOV. Revue Russe d'Entom., vol. XI, pp. 350—357. ♂, ♀ [river Kegen, district Dsharkent (Semiretchie)].—1927. *B[ryodema] semenovi* UVAROV. Acrididae of Middle Asia, pp. 124, 125 (in Russian).

♂. Size medium for the genus, body robust. Head with very indistinct foveolae of the vertex or they are quite absent; frontal ridge with a feeble sulcus, almost smooth or with very thin and indistinct puncturations, dilated above the middle ocellum and with a little constriction near the lower end; the latter not reaching to the clypeus; antennae as long as the head and pronotum taken together. Pronotum in prozona with a feeble, but distinct constriction; median longitudinal carina in prozona very thin and low, almost or quite obliterated between transverse sulci; prozonal disc not inflated, flat; transverse grooves, especially first and third not deep, more or less indistinct; metazona twice, or a little more, as long as prozona; metazonal disc a little longer than it is broad at the shoulders, with very low median carina, which is almost absent in the posterior portion of disc; hind margin a little more than 90° or rectangular, with sharp or rounded apex. Elytra just reaching or extending feebly beyond the apex of hind tibiae, with more or less square cells in apical third; intercalate vein in discoidal area feebly developed, abbreviated or altogether absent. Wings triangular, distinctly longer than broad; second lobe twice as broad as the interspace between hind margin of same and first superjacent incrassate vein deposited behind; two axillary veins in second lobe distinct, parallel; first axillary vein not strongly but distinctly spindle-shapedly incrassate in basal half. Hind tibiae not densely pilose, with 7—9 spines on the outer side and with 9—11 on inner side. General coloration greyish-dark or dark sepia brown. Elytra with more or less darkened basal quarter, and with indistinct dark spots in other part. Wings rose at the base, with more or less distinct

violet shade; transverse dark band very sharp and distinct, relatively broad on its middle and narrowing posteriorly; maximum width of band not larger than third portion of length of wings; basal three-fifths parts of first lobe dark, apical two-fifths pellucid, with more or less indistinct little spots near the apex; apical third of second lobe and external margin of postaxillary field from second lobe to the second superjacent incrassate vein pellucid; hind portion of external margin from the second superjacent incrassate vein to anal angle darkened, as well as the apex of second lobe. Hind femora dark-blue on the lower and inner sides, without pale band before the apical extremity; external surface of femora with very indistinct greyish-pale band before the apex. Hind tibiae dark-blue. Thorax and abdomen dark-bluish-brown below.

♀. Very clumsy and thick. Head with almost flat frontal ridge; antennae a little shorter than the head and pronotum taken together. Pronotum with somewhat inflated prozonal disc; median keel feeble, especially in posterior part of metazonal disc; transversal sulci sometimes almost quite absent; metazona almost twice as long as prozona, with broad disc, which is broader than it is long; hind margin distinctly more than 90°, with rounded or pointed apex. Elytra abbreviate, not reaching or scarcely reaching to the apex of hind femora, less than half again as long as hind femora; intercalate vein absent. Wings triangular, distinctly shorter than elytra, with irregular and indistinct venation. Hind tibiae with 8—11 spines on outer and 9—11 on inner sides. Coloration greyish-dark-brown or greyish-brown. Elytra unicolour or with very indistinct dark spots. Wings rose at the base, sometimes with violet shade; transverse dark band very distinct and sharp; the largest part of external margin of wings, including first lobe, not darkened, pellucid. Hind femora dark-blue, almost black inside and beneath; hind tibia dark-blue on inner and upper surfaces and dirty greyish-blue on lower and outer sides. Thorax and abdomen dark-blue, almost black below.

Length: of ♂ — body 25—27 mm, pronotum 7.1—7.8 mm, elytra 26.5—31 mm, hind femora 12—12.5 mm; of ♀ — body 32—34 mm, pronotum 9.2—10 mm, elytra 18.5—22 mm, hind femora 14—16 mm.

Geographical distribution. North-East Semiretchie (now Dzhetysay) from the river Kegen and Ketmen Mountains on the South, to Dshungarian Alatau on the North (formerly Dsharkent district) and very probably Chinese Dshungaria near the Semiretchie boundary.

Type locality. River Kegen, 10—40 km South from Ketmen Mountains, about 43°, North-East Semiretchie.

Material examined — 8 specimens: 6 males and 2 females. Semiretchie: Ketmen Mountains, in the steppe, 1917, 2 ♂♂ and 2 ♀♀ (BEIK); Dshungarian Alatau, 1917, 3 ♂♂ (BEIK). „Mongolia“ (probably Chinese Dshungaria), 1 ♂ (LERCHE) (EVERSMANN'S coll.).

Females of this species are very like to females of *Br. gebleri mongolicum* ZUB., from which they differ by the absence of intercalate vein in discoidal area of elytra and by the coloration of hind femora, and to *Br. heptapotamicum* n. sp.; from the latter species females of *Br. semenovi semenovi* are easily separated by the absence of intercalate vein of elytra and by more abbreviate elytra and wings. The specimen from „Mongolia“ in EVERSMANN'S collection is a typical *Br. semenovi semenovi* and is unquestionably not from Mongolia because this country is occupied by *Br. semenovi orientale* subsp. n.; it is very probable that this specimen has been taken by its collector in Chinese Dshungaria, beyond the Russian boundary.

***Bryodema semenovi orientale* subsp. nov.**

Very similar to the typical form but differing from it by smaller size, especially in the female sex, and by coloration of hind femora, which have a distinct pale band on inner and lower sides before the apical extremity. Hind tibiae in ♂ with 5—7 spines on outer and 7—9 spines on inner sides; in ♀ with 6—7 spines on outer and 8—9 spines on inner sides. General coloration very variable, often with distinct dark spots; thorax and abdomen in females light below, with a bluish shade.

Length: of ♂—body 21—26 mm, pronotum 6—6.7 mm, elytra 24—28 mm, hind femora 10.5—11.5 mm; of ♀—body 26—31 mm, pronotum 7.5—10 mm, elytra 15.5—17.5 mm, hind femora 11—15 mm.

Patria: Steppe near Dzasatu-han, North-West Mongolia, 15 VII 1894, 3 ♂♂ (KLEMENTZ); basin of the river Kobdo, North-West Mongolia, VIII 1899, 1 ♀ (KOSLOV); Uliasutay, North-West Mongolia, 18 IX 1926, 1 ♀ (type) (KIRIČENKO); river Dsaphyn, North-West Mongolia, 8 IX 1926, 2 ♂♂ (KIRIČENKO); Hangay Mountains, North-West Mongolia, 1877, 1 ♂ (POTANIN); North-West Mongolia (without exact data), 1894, 7 ♂♂ and 5 ♀♀ (KLEMENTZ); river Tshargalany, South from Urga, North Mongolia, 20 VII 1909, 1 ♂ (KOZLOV); upper course of the river Ongiin-gol, Central Mongolia, 13 VII 1926, 1 ♂ (KIRIČENKO).

This beautiful insect as shows the material indicated above is widely distributed in North-West, North and Central Mongolia and probably will be discovered in other parts of Mongolia.

***Bryodema kozlovi* sp. nov.<sup>1</sup>**

♂. Size small for the genus, form slender. Head with distinct triangular foveolae of the vertex; frontal ridge dilated above the middle ocellum,

---

<sup>1</sup> I dedicate this beautiful and very interesting species in honour of its collector P. K. KOZLOV, the well known Russian traveller and explorer of Central Asia, who studies this country nearly thirty years and discovered a very large series of new forms of animals.

almost flat; below ocellum distinctly narrowing, with a deep sulcus; near the lower margin of front strongly dilated; antennae almost half again as long as head and pronotum taken together. Pronotum with feebly inflated prozona; median keel in prozona low but distinct and not obliterated between transverse sulci; metazona feebly wrinkled, without tubercles, almost twice as long as prozona; median keel in metazona very thin and low, not distinct; lateral metazonal keels indistinct; shoulder angles extending a little beyond the hind transverse sulcus; hind angle a little less than 90°. Lateral lobes vertical, their depth somewhat greater than dorsal length of same. Elytra reaching to the apex of hind tibiae or a little extending beyond them; apical third with irregular square cells; intercalate vein in discoidal area very distinct. Wings broad, with more or less strongly incrassate superjacent radiate veins; second lobe almost two times as broad on the apex as interspace between hind margin of this lobe and the first superjacent incrassate vein deposited behind; two axillary veins in second lobe very distinct, parallel; first vein not spindle-shapedly incrassate in basal half, near the apex slightly thinner than in basal portion. Hind femora relatively thick; hind tibiae more or less densely pilose, with 9—10 spines on external side, and with 10—11 spines on inner side. General coloration brownish-ash-grey. Antennae unicolour, brownish. Elytra in the basal quarter feebly darkened, in other portion unicolour or with indistinct dark spots. Wings crimson-red at the base, dark-smoky in the rest, excepting little, very narrow pellucid stripe between apical portions of first and second lobes, as well as between the apex of second lobe and apical portion of anterior margin of postaxillary field. Hind femora black inside and beneath, except the bright-orange-red band before the apical extremity, and uniformly dark-grey outside, with not very distinct greyish-pale band before the apex on external side; velvety-black spots on upper surface of hind femora always absent. Hind tibiae violet-blue, brownish near the base on external side. Thorax and abdomen shining, dark-grey below, with more or less distinct bluish shade.

♀. Body robust, small. Head with distinct foveolae of the vertex; antennae as long as the head and pronotum taken together; vertex with more or less distinct keel on the apex near the base of frontal ridge; the latter with strongly divergent lateral keels, not reaching to the clypeus. Pronotum with inflated prozona; median keel very distinct in prozona, especially in its anterior portion and distinctly elevated here; in metazona median keel very thin, not very distinct; metazona half again as long as prozona, a little shorter than it is broad at the shoulders, clearly wrinkled, but with small round tubercles; hind margin rectangular. Lateral lobes of pronotum vertical, not deeper than broad. Elytra strongly abbreviated, scarcely reaching to the apex of hind femora, almost two and half times as



long as the pronotum, and a little longer than hind femora; intercalate vein in discoidal area fully developed. Wings a little shorter than elytra, with distinct and regular venation; second lobe as in ♂, with two distinct parallel axillary veins; maximum width of wings markedly larger than maximum width of elytra. Hind tibiae with 9 spines on outer side, and 11 — on inner side. General coloration as in ♂. Elytra in basal third slightly darkened. Wings crimson-rose at the basal part, with broad sharp dark band, narrowing towards the hind margin; external margin darkened, excepting apices of first and partly second lobe.

Length: of ♂ — body 22.5—25 mm, pronotum 6.1 mm, elytra 27—29.5 mm, hind femora 12—13 mm; of ♀ — body 27 mm, pronotum 7.6 mm, elytra 17 mm, hind femora 15 mm.

Patria. The gorge Hotyn-gol, Ala-Shan Mountains, South Mongolia, 18—20 VI 1908, 4 ♂♂ (including the type) and 1 ♀ (Kozlov); Dyn-yuan-in, northern Ala-Shan steppe, South Mongolia, 22 VI 1908, 1 ♂ (Kozlov).

Males of this handsome insect are very like in general habitus to some representatives of the North American genus *Circotettix* SCUDDER, but are easily separated from them by many features which characterise the genus *Bryodema* FIEB.

### ***Bryodema heptapotamicum* sp. nov.**

♂. Size medium for the genus, form slender. Head with almost obliterate foveolae of the vertex; frontal ridge not deeply sulcate, somewhat dilated near the middle ocellum, strongly widened towards the clypeus; antennae half again as long as the head and pronotum taken together. Pronotum without an impression on the hind transverse sulcus; prozonal disc not inflated; metazona almost twice as long as prozona; metazonal disc as broad at the shoulders as long, without tubercles, very feebly wrinkled, almost smooth; median keel very thin, indistinct, especially between transverse sulci and in posterior portion of metazona; metazonal shoulders not sharp, without distinct keels and not extending beyond the hind transverse sulcus; transverse sulci feebly visible; hind pronotal margin rectangular, with a sharp apex. Elytra distinctly extending beyond the apex of hind tibiae, with distinct, not abbreviated, intercalate vein in discoidal area; apex with irregular rounded cells. Wings elongated, triangular; second lobe almost twice as broad on the apex as interspace between hind margin of this lobe and first superjacent incrassate vein in postaxillary field; two axillary parallel veins distinct, first of which not spindle-shapedly incrassate in basal half. Coloration uniformly dark-brownish-grey. Antennae yellowish-pale. Elytra unicolour or with very indistinct dark spots. Basal part of wings violet, with a feeble rose shade; all other portion of wings dark

smoky. Hind femora uniformly dark-grey outside, with bluish shade, and unicolourly dark-blue inside and beneath, without pale band before the apex. Hind tibiae dark-violet-blue on inner and lower sides and greyish-blue outside.

♀. Very clumsy. Frontal ridge flat, with a feeble impression near the middle ocellum; antennae slightly shorter than the head and pronotum taken together. Pronotum with feebly inflated prozonal disc, without impression along hind transverse suture; metazona almost twice as long as prozona, flat, with feeble, round tubercles; maximum width of metazonal disc slightly larger than its length; hind margin rectangular, with rounded apex. Elytra abbreviate, but somewhat extending beyond hind knees, with distinct intercalate vein in discoidal area; maximum width of interulnar area distinctly greater than maximum width of discoidal one; elytra a little more than two and half times as long as pronotum and half again as long, or slightly longer, than hind femora. Wings almost half the length as elytra, broad; maximum width of wings markedly larger than maximum width of elytra. Hind tibiae with 6—9 spines on the outer and 10—11 spines on the inner sides. General coloration as in male sex. Wings violet at the base, with rose shade; median portion of wings with distinct, but not sharp dark band; apex of first and second lobe and partly apex of interspace between hind margin of second lobe and first superjacent incassate vein not darkened, pellucid. Hind tibiae yellowish-grey outside and blue or violet-blue inside and beneath.

Length: of ♂ — body 28—30 mm, pronotum 7—8 mm, elytra 33—37.5 mm, hind femora 13—16.5 mm; of ♀ — body 32—33 mm, pronotum 9—9.5 mm, elytra 25—26 mm, hind femora 16—17 mm.

Patria. Semiretchie, 1 ♂ and 3 ♀♀. without exact data (KUŠAKEVIČ); the river Tokty (near Issyk-kul lake?), Semiretchie, 1 ♀ (Roževic); Dzhabyk Mountain near Ala-kul lake, North-East Semiretchie, 2500 m, 12 VII 1923, 1 ♂ (the type) (DOBRŽANSKIJ).

The species is very like and unquestionably closely related to *Bryodema gebleri* (in broad sense), especially to its subspecies — *Br. gebleri mongolicum*; I am inclined to think that this species is relatively young in origin and probably separated recently from *Br. gebleri* (in broad sense). Males of *Br. heptapotamicum* may be confused with males of *Br. gebleri mongolicum*, but are easily separable from this subspecies by somewhat more slender habitus, by very feebly wrinkled pronotal metazona, which is not covered by tubercles, by coloration of wings and especially by coloration of hind femora, which always have no pale band on inner and lower sides before the apical extremity. Females may be confused with females of *Br. gebleri mongolicum* (from which they are easily separated by coloration of hind femora and basal portion of wings) and especially with females of *Br. seme-*

*novi semenovi*, which also occur in Semiretchie (this subspecies is characterised like *Br. heptapotamicum* by the absence of the pale band on inner and lower sides of apex of hind femora); however, females of *Br. heptapotamicum* have fully developed intercalate vein in discoidal elytral area and relatively longer elytra which extend somewhat beyond the apex of hind femora.

***Bryodema gebleri mongolicum* ZUB.**

1900. *Bryodema gebleri* var. *mongolica* ZUBOWSKIJ. Horae Soc. Entom. Ross., vol. XXXIV, pp. 17—18 [♂, ♀; river Kalanyngyr and Tshagan-burgasa (Tshuiskaya steppe), Altai Mountains (near Mongolian boundary); river Kara-su, (system of the river Bashkaus), Altai Mountains (near Mongolian boundary)].—1902. *B[ryodema] gebleri* var. *mongolica* JACOBSON in: JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross, p. 266.—1918. *B[ryodema] gebleri* var. *mongolica* PYLNOV. Mém. Inst. Agron. Voronezh, vol. III, p. 138 [„Altai“; valley of the river Tshuya to Kuiahtanar (Altai Mountains near Mongolian boundary); Kosh-Agatsh (Tshuiskaya steppe, Altai Mountains near Mongolian boundary)].—1926. *Br[yodema] gebleri mongolica* BEY-BIENKO. Trans. Siber. Acad. Agricult. and Forestry, vol. V, pp. 51—52 [Kuraiskaya and Tshuiskaya steppes (Altai Mountains near Mongolian boundary)].

This subspecies differs from *Br. gebleri gebleri* (see below) by its somewhat larger dimensions, extremely variable general coloration, especially in female sex, very often with distinct dark spots, dark-blue inner and lower sides of hind femora and by dirty-violet or dark-blue hind tibiae.

Length: of ♂—body 30—38 mm, pronotum 8.2—9.5 mm, elytra 40—46 mm, hind femora 15—17 mm; of ♀—body 35—45 mm, pronotum 9.5—12 mm, elytra 20—25 mm, hind femora 17—19 mm.

Geographical distribution. From south-eastern portion of Russian Altai near Mongolian boundary and North-West and West Mongolia (first record) to Tian-Shan Mountains (first record) on the South and to Central and South Mongolia on the South-East (first record).

Type locality. River Kalanyngyr, Tshuiskaya steppe, South-East Altai near Mongolian boundary.

Specimens examined—159: 104 males and 55 females.

Typical *Br. gebleri mongolicum*. South-East Altai: Kuraiskaya steppe, 10 VII 1925, 1 ♀ (BEY-BIENKO) [author's coll.]; Tshuiskaya steppe, 12—17 VII 1925, 20 ♂♂ and 18 ♀♀ (BEY-BIENKO) [author's coll.] and VII 1926, 11 ♂♂ and 3 ♀♀ (BARANOV) [author's coll.]; Kalanyngyr river, Tshuiskaya steppe, 25 VII 1897, 1 ♂ (NEVSKIJ) [the type specimen]; Kosh-Agatsh Tshuiskaya steppe, 4 VIII 1912, 1 ♂, 5 ♀♀ (SUŠKIN and REDIKORCEV); Kara-su river, 10 VIII 1897, 1 ♀ (NEVSKIJ) [paratypic specimen].—North-West and West Mongolia: Basin of the river Kobdo, VIII 1899, 2 ♂♂, 1 ♀ (KOZLOV); the river Kobdo, 16 VII 1911, 8 ♂♂, 8 ♀♀ (JURGANOVA); North-West Mongolia, 1894, 18 ♂♂, 4 ♀♀ (KLEMENTZ); Malyi Namir, 11 VIII 1911, 2 (JURGANOVA);

residence of the Khan Dchasakty, 1894, 2 ♀♀ (KLEMENTZ); river Dzhirgalantu near Taishir-ola, 2 VII 1877, 1 ♂, 3 ♀♀ (POTANIN); Hangay Mountains near Uliasutaj, 1880, 2 ♂♂ (POTANIN); valley of the river Diuiantu, 12 VIII 1899, 1 ♀ (KOZLOV); river Dsaphyn, 8 IX 1926, 2 ♂♂ (KIRIČENKO). First record. — Tian-Shan Mountains: 1879, 3 ♂♂ (no exact data but specimens have been taken probably in Chinese Tian-Shan) (ALFERAKI). First record. — Central Mongolia: Hara-hoto,<sup>1</sup> Central Gobi, 1 VII 1926, 1 ♂ (KOZLOV); Dundusaihan, Central Gobi, 13 VII 1909, 3 ♂♂, 1 ♀ (KOZLOV); Ulan-buluk, 6—8 VII 1909, 2 ♂♂ (KOZLOV); Tzogonda, 26 VII 1909, 1 ♂ (KOZLOV); Huran Mountains, North Gobi, 3 IX 1925, 1 ♂ (KOZLOV); Hurkurol-Debek, 6 IX 1925, 1 ♂ (KOZLOV); middle course of the river Tuin-gol, Halha, 28 VII 1926, 8 ♂♂ (KIRIČENKO); eastern portion of Ihe-bogdo, Gobi, 15 VIII 1926, 14 ♂♂, 6 ♀♀ (KIRIČENKO). First record. — South Mongolia: Eastern Delger-hantshu, 18—19 VII 1908, 1 ♂ (KOZLOV). First record.

Intermediate between *Br. gebleri mongolicum* and *Br. gebleri gebleri*. North-West Mongolia: North-West from Ulankom, 21 VII 1903, 1 ♂; southern declivities of Tannu-ola, Urianhay country, 20 VIII 1915, 2 ♂♂, 1 ♀ (TUGARINOV).

Notes. General coloration of this subspecies is strongly variable (greyish-yellow, bluish-grey, brownish-lilac, ash-grey, brownish-orange green etc.); it is very interesting that the coloration of the more agile males is not so variable than in the very heavy and sluggish females. My observations on this insect made during July of 1925 in Tshuiskaya steppe on Altai Mountains showed that general coloration of this insect is very like (especially in the female sex) to differently coloured stones, which covered this steppe. This „protective“ coloration is however not always utilised by representatives of *Br. gebleri mongolicum* and I observed many specimens of this insect sitting on places with other, dissimilar coloration of stones.<sup>2</sup> Specimens from Ulankom and southern declivities of Tannu-ola, North-West Mongolia, are intermediate between *Br. gebleri mongolicum* and *Br. gebleri gebleri*, because they are characterised by dirty-violet hind tibiae and lower side of hind femora with very distinct red shade. It is evident, that in North-West Mongolia we have a connection of the areas of these two subspecies.

### *Bryodema gebleri gebleri* (F.-W.)

(Pl. XVIII, fig. 4, 7, pl. XIX, fig. 1, pl. XX, fig. 2, 3, 4)

1836. *Oedipoda Gebleri* FISCHER DE WALDHEIM. Bull. Soc. I. Nat. Moscou, vol. IX, p. 346, pl. IV, fig. 1. [♂; Katun Mountains (Russian Altai)].—1846. *Trinchus baicalensis* FISCHER DE WALDHEIM. Orthopt. Imp. Ross., p. 263, pl. XXVI, fig. 6—7 (not 1—2 as indicated in the text). [♀; Transbaikal province; Karabagh steppes (Kaukasus) (in error)].—

<sup>1</sup> This is a very ancient town, ruins of which have been discovered by P. K. KOZLOV.

<sup>2</sup> See also my paper: Contributiones ad cognitionem Orthopterorum Altaji et confinium. Trans. Siber. Acad. Agricult. and Forestry, 1926, vol. V, p. 52.



1846. *Oedipoda Gebleri* FISCHER DE WALDHEIM. Loc.cit., pp. 284—285, pl. XXI, fig. 3 and pl. XXIII, fig. 3. [♂; Siberia; Katun Mountains; Omsk (in error)].—1853. *Bryodema baicalensis* FIEBER. Lotos, Bd. III, p. 129.—1859. *Oedipoda Gebleri* EVERSMAHN. Bull. Soc. I. Nat. Moscou, vol. XXXII, p. 140 [♂; Guberlin Mountains on the river Ural, Eastern Kirghiz steppes].—1859. *Oedipoda baicalensis* EVERSMAHN. Loc. cit., p. 140 [♀; Guberlin Mountains].—1882. *Br[yodema] Gebleri* BRUNNER v. WATTENWYL. Prodr. Europ. Orthopt., p. 167 [Dshungaria; river Ural; Siberia].—1882. *Br[yodema] baicalensis* BRUNNER v. WATTENWYL. Loc. cit., p. 167 [Eastern Kirghiz steppes and Transbaikalia].—1884. *Br[yodema] baicalensis* SAUSSURE. Prodr. Oedipod., p. 180 [♀; Dshungaria and other localities].—1884. *Br[yodema] gebleri* SAUSSURE. Loc. cit., p. 182 [♂; Dshungaria and other localities].—1898. *Bryodema gebleri* ZUBOWSKIJ. Ann. Mus. Zool. Acad. Sc. St.-Petersb., pp. 31—33 [♂, ♀; Arkatsky picket and Semitau (both in Semipalatinsk province) (syn. incl.)].—1900. *Bryodema gebleri* ZUBOWSKIJ. Horae Soc. Entom. Ross., vol. XXXIV, p. 17 [♂, ♀; (the river Ui-bat, Minusinsk district (not Kuznetzk district as indicated by the author))].—1902. *Br[yodema] gebleri* JACOBSON in: JACOBSON and BIANCHI. Othopt. Pseudoneuropt. Imp. Ross., p. 265—266.—1905. *Bryodema gebleri* KUTHY. Ann. Mus. Nat. Hungar., vol. III, p. 217 [Sary Bel and the defile Kizyl-su (both in Semiretchye)].—1906. *Br[yodema] gebleri* ADELUNG. Mater. to the knowledge of the fauna and flora of the Russian Empire, vol. VI, p. 4 (of separate copy) (in Russian) [♂; Kazan-basy, Kustanay (formerly Turgay) province (Kirghiz steppes)].—1907. *Br[yodema] gebleri* MIRAM. Öfv. Finska Vet. Soc. Förh., Bd. XLIX, № 6, p. 8 [rivers Kemtshik and Soldan, North-East Mongolia (near Russian boundary)].—1911. *Br[yodema] gebleri* IKONNIKOV. Revue Russe d'Entom., vol. XI, p. 107 [Bal-Kaldzhir near Zaisan lake].—1911. *Bryodema gebleri* UVAROV. Revue Russe d'Entom., vol. XI, p. 426 [station Mugodzhary; Ak-Tekendy-Aulie (both in Mugodzhary Mountains, Eastern Kirghiz steppes)].—1911. *Bryodema gebleri* IKONNIKOV. Ann. Mus. Zool. Acad. Sc. St.-Petersb., vol. XVI, p. 256 [Irkutsk (East Siberia)].—1926. *Br[yodema] gebleri gebleri* BEY-BIENKO. Trans. Siber. Acad. Agricult. and Forestry, vol. V, p. 51.—1927. *Br[yodema] gebleri* UVAROV. Acrididae of Middle Asia, p. 125 (in Russian).

♂. Size medium for the genus, form relatively slender. Head with indistinct foveolae of the vertex, or they are altogether absent; frontal ridge with broad sulcus; near the middle ocellum markedly dilated, below and above somewhat constricted and distinctly expanded near the clypeus; lower end of frontal ridge not reaching the clypeus; genae with slightly incurved or almost straight keels; lower surface of front covered with distinct impressed puncturations; antennae longer than the head and pronotum taken together. Pronotum distinctly wrinkled, not rarely with distinct impression on the disc along hind transverse sulcus; the whole surface of pronotal disc, especially in metazona, covered with not large tubercles; median keel very fine, not elevated in prozona, often obliterated between transverse sulci; the latter not deep, but more or less distinct; prozona not inflated above, almost flat; metazona flat or rarely somewhat convex, twice or a little more, as long as prozona; metazonal length subequal to greatest width of metazonal disc; hind margin rectangular, with an acute or, rarely, with narrowly-rounded apex; lateral carinae of metazona not sharp, often elevated, especially in anterior part, not rarely extending beyond the hind transverse sulcus. Elytra very long, distinctly extending

beyond the apex of hind tibiae; apex with irregular, rounded or, rarely, with more or less square cells; discoidal area with very distinct intercalate vein. Wings large, elongated, markedly longer than broad; second lobe near the apex twice as broad as interspace between the hind margin of this lobe and the first incrassate vein behind it; two axillary veins distinct, parallel, not spindle-shaped incrassate in basal half; principal radiate veins not very strongly incrassate. Interspace between mesosternal lobes slightly broader than the width of each lobe, twice as broad as long. Hind tibiae not densely pilose, with 9—10 spines on outer side and 10—12 spines on inner side. General coloration not very variable, ash-grey, ferruginous brownish-yellow, clayish-grey, often with dark spots. Antennae not darkened, unicolourous. Elytra not rarely with somewhat infumated basal part, with incomplete dark fascia on the middle and with dark spots in apical part. Wings red or reddish-rose at the base and darkened in other parts; rarely first lobe with distinct pellucid spot on the apex or before the apex. Hind femora red inside and beneath without black colour, with a pale band before the extremity; external surface unicolourous or with more or less indistinct dark spots or bands; hind tibiae red, at least on the inner side. Thorax and abdomen brownish below, with bluish shade.

♀. Very clumsy. Head large, frontal costa broad, strongly constricted above the middle ocellum, with broad but not deep sulcus; antennae slightly shorter than the head and pronotum taken together. Pronotum strongly wrinkled, with dense but not very large tubercles; prozonal disc often inflated; metazona markedly shorter than broad, half again as long as prozona; metazonal disc flat or slightly inflated; median keel very thin, not obliterate between transverse sulci, but not very distinct in metazona; impression on the disc of pronotum along hind transversal sulcus more or less distinct; hind margin with rounded or acute apex, normally more than 90°; lateral carinae in metazona reaching the hind transverse sulcus or extending slightly beyond it. Elytra strongly abbreviated, reaching the apex of hind femora, or, not rarely, extending a little beyond it, not less than twice as long as pronotum and not more than half again as long as hind femora. Wings triangular, as broad as elytra, but considerably shorter than the latter; venation very irregular and indistinct. Interspace between mesosternal lobes two times as broad as each lobe. Hind femora very thick; hind tibiae as in the male. General coloration more variable than in male sex. Wings rose at the base, with more or less broad band, which is not sharp on the external margin; apices of first and second lobes not darkened; body light-brown below.

Length: of ♂—body 25—32 mm, pronotum 6.5—8.5 mm, elytra 32—38.5 mm, hind femora 13.8—15 mm; of ♀—body 32—42 mm, pronotum 8—11.5 mm, elytra 20—24 mm, hind femora 15—17 mm.

Geographical distribution. This subspecies is distributed from Guberlin Mountains on the river Ural and Kustanay province (not recorded from Akmolinsk province) to Semipalatinsk province, Zaisan, Semiretchie, Chinese Dshungaria, Altai Mountains (only Russian part), North-West Mongolia near Russian boundary, Minusinsk district, Irkutsk and Transbaikalia.

Type locality. Katun Mountains („Katunskie belki“), Russian Altai.

Specimens examined — 104: 80 males and 24 females. Orenburg province (Western Kirghiz steppes), River Guberlia, Guberlin Mountains near the river Ural, 1 ♂ and 1 ♀ (labelled „*Oedipoda baicalensis*“) [EVERSMANN's coll.]; Kustanay province (Central Kirghiz steppes). Pine forest Kazan-Bassy, 1898, 1 ♂ (SUŠKIN); Semipalatinsk province (Eastern Kirghiz steppes). Delbegitei Mountains, 96 km South-West from Semipalatinsk, 2 ♂♂ (RAEVSKIJ). — Semiretshie: The river Inyltshik near Chinese boundary, formerly Przhewalsk district, 1 VIII 1912, 5 ♂♂ (ŠNITNIKOV); valley of the river Konurulen, formerly Przhevalsk district, 1 VII 1908, 2 ♂♂, 1 ♀ ROŽEVIC; Kok-Dzhar, 27 VII 1912, 1 ♂ (ŠNITNIKOV); Terek-tau near the lake Issyk-kul, 1908, 2 ♂♂ (ROŽEVIC); summit of the mountain Semiz-bel, South-East from the lake Issyk-kul, VII 1909, 1 ♂ (NAZIMOV); river Baratala, southern declivities of Dshungarian Alatau, 27 VII 1872, 1 ♀ (KUŠAKEVIČ); valley of the river Kotshkorka, 15 VII 1908, 1 ♀ (ROŽEVIC); mountain Diure, VII, 1 ♂ and 1 ♀ (HOLBECK); mountain Shamsin, 25 VII 1910, 1 ♂ (HOLBECK). — Altai Mountains: Shores of the river Katun near the village Inia, 24 VII 1925, 10 ♂♂, 8 ♀♀ (BEY-BIENKO); the village Tshibit, 23 VII 1925, 1 ♀ (BEY-BIENKO); valley of the river Tshulyshman, 30 VIII 1897, 37 ♂♂, 1 ♀ (SILANTJEV); the river Tshulyshman, 19 VII 1912, 2 ♂♂, 1 ♀ (SUŠKIN and REDIKORCEV); the river Tumuliuk, Tshulyshman Mountains, 21—22 VII 1912, 2 ♂♂ (SUŠKIN and REDIKORCEV); the river Ulagan, 26 VII 1901, 2 ♂♂, 1 ♀ (IGNATOV); the river Topolevka, affluent of the river Argut, 22 VII 1897, 1 ♂ (SILANTJEV); Altai, 1 ♂, 1 ♀ (EVERSMANN's coll., labelled „*Trinchus baicalensis*“). — North-West Mongolia (near Russian boundary): the river Kemtshik, 1 ♂ (EHNBERG); the river Soldan, 1 ♀ (EHNBERG); river Helezhu, southern declivities of Tannu-ola, Urianhai country, 20 VII 1915, 4 ♂♂, 2 ♀♀ (TUGARINOV); river Tes, 7 VII 1915, 3 ♂♂ (TUGARINOVA); northern declivities of Tannu-ola, Urianhai country, 12 VII 1915, 1 ♀ (TUGARINOV).

Notes. The area of distribution of *Br. gebleri gebleri* occupies only mountainous regions and this distribution in Central and Western Kirghiz steppes (which are covered sporadically by very ancient mountains, fragments of the Angara continent) shows the relic character of this subspecies in this region.

Some specimens from Semiretshie (the river Konurulen, Terek-tau, Semiz-bel, the river Baratala) differ from typical specimens by coloration

of male wings, which have not darkened the pellucid apex of first lobe; I do not want to separate these specimens into a subspecies because this feature is not constant.

***Bryodema miramae miramae* subsp. nov.<sup>1</sup>**

♂. Size medium for the genus, form relatively slender. Head with distinct foveolae of the vertex; frontal ridge with almost parallel keels, not extending to the lower end of front, with broad but not deep sulcus; seen from above the vertex is as long as broad; antennae somewhat less than half again as long as the head and pronotum taken together. Pronotum feebly constricted in prozona; prozonal disc distinctly inflated; metazona less than two times, but more than half again as long as prozona; metazonal disc feebly wrinkled, with strongly rounded tubercles; median longitudinal keel very distinct on its whole length, elevated, especially in prozona and dissected here by the first not very profound transverse sulcus; hind sulcus distinct but not dissecting median keel; hind margin rectangular, with a sharp apex. Elytra large, extending somewhat beyond the apex of hind tibiae; discoidal area with distinct, complete intercalate vein; apical elytral portion with more or less rectangular cells. Wings broad, not longer than their maximum width; second lobe nearly twice as broad as the interspace between hind margin of the same and first incrassate vein placed behind, with two distinct, parallel axillary veins; first axillary vein not spindle-shaped incrassate in basal half; principal radiate veins strongly incrassate before their middle. Hind tibiae not densely pilose, with 9—10 spines on the outside and 10—11 spines on the inside. General coloration brownish-green, brownish or dark dirty-green. Apical part of antennae somewhat darkened. Elytra without transversal bands, unicolourous or with more or less distinct dark spots. Wings in basal third rose and smoky-dark in other part. Hind femora with three very distinct velvety-black spots on upper side, first of which is in basal part of femora, the second, (triangular) on the middle and the third near the apical extremity; inner and lower surfaces orange-red, excepting not sharp lemon-yellowish band before the apex. Hind tibiae orange-red, with brownish-dark basal part and black-tipped spines.

♀. Very clumsy. Head with very distinct triangular foveolae of the vertex; frontal ridge somewhat dilated above the middle ocellum and with a not deep sulcus below it; antennae almost as long as the head and pronotum taken together. Pronotum with very strong tubercles, especially in metazona; prozona distinctly inflated; median keel very distinct, clearly

<sup>1</sup> I dedicate this insect to Miss E. MIRAM, curator of the *Orthoptera* in the Zoological Museum of the Academy of Sciences of USSR.



elevated in anterior part of prozona; first and second transverse sulci very indistinct, third deep, viewed in profile distinct; metazonal disc half again as long as prozona and clearly shorter than it is broad at the shoulders; hind margin rectangular, with broadly rounded apex. Elytra strongly abbreviated, a little longer than double length of pronotum, not reaching the apex of hind femora; intercalate vein in discoidal area very distinct. Wings not broader than elytra, a little longer than one half of the same, roundly-triangular; venation indistinct and irregular. Hind femora thick, broad; hind tibiae with 10—11 spines on the outer and 11—12 spines on the inner sides. General coloration brownish-green. Wings rose at the base, with broad dark, but not sharply defined, transverse band; apical part of the first lobe not darkened, pellucid. Hind femora and tibiae as in the male.

Length: of ♂ — body 28—32 mm, pronotum 6.6—7.2 mm, elytra 35—37.5 mm, hind femora 14.5—15.5 mm; of ♀ — body 37 mm, pronotum 8.2 mm, elytra 18 mm, hind femora 16 mm.

Patria. Valley of the river Sinin-he, Eastern Nan-Shan Mountains, South Mongolia, 29 VII 1908, 3 ♂♂ (including type) and 1 ♀ (Kozlov).

This species is easily separated from the very similar *Br. gebleri gebleri* in the structure of the pronotum, distinct foveolae of the vertex, the coloration of upper margin of hind femora and somewhat shorter female elytra and wings.

***Bryodema miramae elegantulum* subsp. nov.**

♂. Size small for the genus, form very slender. Frontal ridge with parallel keels and distinct sulcus on its whole length; antennae half again as long as head and pronotum together. Pronotum strongly wrinkled, with more or less rounded and very strong tubercles; prozona not inflated; median keel in prozona dissected by very distinct and deep first transverse sulcus; metazona twice or a little more as long as prozona. Coloration as in typical form.

Females unknown.

Length: of body 23—24 mm, pronotum 6—6.3 mm, elytra 28—29.5 mm, hind femora 11.5—12 mm.

Patria. Valley of the river Tetun and North Tetun, Nan-Shan Mountains, South Mongolia, IX 1901, 1 ♂ (Kozlov); the gorge Hatu, North Burhan-Budda, North-East Tibet, elevation 3,292 m, VI—VII 1901, 1 ♂ (Kozlov); North Dzherku, Yang-tse-kiang, Kam, East Tibet, elevation 3,518 m, VIII 1909, 1 ♂ (type) (Kozlov).

This subspecies differs from the typical form by its smaller size and by the structure of pronotum.

**Bryodema uvarovi** sp. nov.<sup>1</sup>

♂. Size relatively large for the genus, form somewhat robust. Head with very distinct, but not deep triangular foveolae on the vertex; eyes strongly prominent; anterior margin of the vertex somewhat elevated near the eyes; frontal ridge without impressed puncturations, distinctly dilated above the middle ocellum, slightly constricted below and feebly dilated towards the lower end of front; genae with distinctly incurved keels; antennae half again as long as the head and pronotum together. Pronotum somewhat constricted and strongly inflated in prozona; anterior part of prozonal disc with bow-shapedly elevated keel, which is normal, i. e. low, in the posterior part; three transverse sulci distinct; metazona two times as long as prozona with feeble tubercles and wrinkles; metazonal disc with more or less distinct lateral keels, which extend to the hind transverse sulcus, as long as, or a little shorter than, its maximum width; hind margin rectangular, rounded at the apex. Elytra large, extending distinctly beyond the apex of hind tibiae; intercalate vein in discoidal area distinct; apical portion with irregular square cells. Wings broad with relatively strong incrassate radiate veins; second lobe as broad at the apex as the interspace between hind margin of the same and first incrassate radiate vein behind it; second axillary vein strongly abbreviated, S-shapedly incurved, fusing at its apex with the anterior axillary vein. Hind femora relatively slender; hind tibiae densely pilose, with 9 spines on the outside and 10 spines on the inside. General coloration greyish-brown; head greyish-blue behind the eyes; antennae unicolour, brownish-yellow. Lateral lobes of the pronotum with a small light-yellow spot on the middle. Elytra darkened in basal quarter, with indistinct dark band at their middle and with dark spots in apical two-thirds. Wings rose at the base, darkened in other parts, except a light transverse band before the apex of first and second lobes, i. e. the transverse band is very broad, with apices of first and second lobe darkened; incrassate radiate veins red in basal part and blackish or quite black in the rest. Thorax and abdomen shining-black below. Hind femora black inside and beneath, except pale band before the apex; hind tibiae yellow, except somewhat darkened median portion and the apex.

♀. As the male, but somewhat larger and more clumsy. Head with not very distinct foveolae of the vertex. Pronotum with the prozona in basal portion of lateral lobes strongly impressed; metazonal disc strongly wrinkled, a little longer than it is broad, and almost half again as long as prozona. Elytra as in the male sex but scarcely reaching the apex of hind

---

<sup>1</sup> I dedicate this extraordinarily interesting species to Mr. B. P. UVAROV, who has done much excellent work on systematics of *Orthoptera*, especially of *Acrididae*, of various parts of the World.

tibiae; wings as in male, but with not strongly incrassate radiate veins. Hind tibiae with 8—10 spines on outer side and 10—11 on inner side. Coloration as in male, excepting greyish-brown lower surface of thorax and abdomen.

Length: of ♂ — body 31.5—32 mm, pronotum 7—8 mm, elytra 37—40 mm, hind femora 15—16.5 mm; of ♀ — body 38—39 mm, pronotum 8.5 mm, elytra 36 mm, hind femora 17.5—18 mm.

Patria. Gui-de-tin, province Gan-su, North-West China, 6—20 X 1908, 3 ♂♂ (including the type) and 2 ♀♀ (Kozlov).

This species is very like in general habitus and in coloration to *Cosmorrhhipis davidiana* (SAUSS.), known from Transbaikalia, North Mongolia and North China. It is very interesting that some species of the genus *Bryodema* show a distinct morphological parallelism, sensu A. SEMENOV-TIAN-ŠANSKIJ,<sup>1</sup> to related genera (*Br. uwarovi* to *Cosmorrhhipis davidiana*, *Br. kozlovi* to species of the genus *Circotettix*); on the other hand this fact may be regarded as an example of the law of homologous series in variation.<sup>2</sup>

### *Bryodema luctuosum luctuosum* (STOLL)

(Pl. XIX, fig. 2)

1813. (*Gryllus Locusta*) *luctuosus* STOLL. Représ. exactem. colorée d'après nature des spectres etc., p. 24, pl. XIb, fig. 37; index, p. 12 [♂; „en Sibérie“].—1900. *Bryodema luctuosum* ZUBOWSKY. Horae Soc. Entom. Ross., vol. XXXIV, pp. 18—19 [♂, ♀; lake Gusinoie, Transbaikalia (East Siberia)].—1901. *Bryodema lugens* KRAUSS. Zool. Anz., Bd. XXIV, S. 238 [♂, ♀; Taotain-ho, South Kuku-nor Mountains].—1901. *Bryodema mongolica* BOLIVAR (nec ZUBOWSKIJ) in ZICHY. Dritte Asiatische Forschungsreise, SS. 233—235 [♀; Uрга, North Mongolia].—1902. *B[ryodema] luctuosum* JACOBSON in: JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., p. 226 (syn. incl.).—1908. *Bryodema luctuosum* ADELUNG. Ann. Mus. Zool. Acad. Sc. St.-Petersb., vol. XIII, pp. LVII—LVIII [♂ „North Tibet“].—1910. *B[ryodema] luctuosum* KIRBY. Syn. Cat. Orthopt., vol. III, p. 261 (syn. incl.).—1911. *Bryodema argunense* STICHELKANOVITZEV. Arb. Zool. Labor. Univ. Warschau, SS. 26—28 (in Russian) (of separate copy, fig. 15) [♂; Abagaitui on the river Argun, Transbaikalia].—1911. *Bryodema luctuosum* var. *vitrea* IKONNIKOV. Ann. Mus. Zool. Acad. Sc. St.-Petersb., vol. XVI, p. 256 [♂; Irkutsk (East Siberia) (syn. nov.)].—1914. *Bryodema luctuosum* UVAROV. Rev. Russe d'Entom., vol. XIV, pp. 232—234 [♂, ♀; Chany-Tash, Karakorum Mountains (South-East from Pamir) (syn. excl.)].—1916. *B[ryodema] luctuosum* PYLNOV. Rev. Russe d'Entom., vol. XVI, p. 279. [Various parts of North Mongolia, near the rivers Selenga and Tshikoi].—1925. *Bryodema luctuosa* UVAROV. Mission G. BABAUT dans les provinces centrales de l'Inde et dans la région occidentale de l'Himalaya. Insectes. Orthoptères, Acrididae, pp. 15—16 [Rukshu. Tscho-Moran, Tibet

<sup>1</sup> SEMENOV, A. Horae Soc. Entom. Ross., 1897, vol. XXXI, p. 498; 1898, vol. XXXII, p. 478; 1900, vol. XXXIV, pp. 255 and 614.

<sup>2</sup> VAVILOV, N. The law of homologous series in variation. Journ. of Genetics. Cambridge, 1922.

frontier] (syn. excl.).—1927. *B[ryodema] luctuosa* UYAROV. Acrididae of Middle Asia (in Russian), p. 124 (syn. excl.).—1929. *B[ryodema] luctuosum luctuosum* BEY-BIENKO. Konowia, Bd. VIII, p. 108 [Anda, Manchuria].

♂. Size medium for the genus, form relatively robust. Head with more or less distinct foveolae of the vertex; rarely the latter practically absent; frontal ridge with a distinct sulcus; lateral carinae somewhat constricted above and below the median ocellum, slightly diverging toward the lower end of front; antennae as long as the head and pronotum taken together. Pronotum with a thin but distinct median carina, except the interspace between first and third transverse sulci, where median carina is somewhat obliterate or altogether absent; prozona not rarely inflated; metazona twice, or a little more, as long as prozona, with distinct but not very strong tubercles and wrinkles; metazonal disc as broad or a little broader than its length; lateral carinae in the metazona usually distinct, especially in anterior part, often extending beyond the hind transverse sulcus; rarely lateral carinae indistinct; hind angle of metazonal disc right or obtuse, often with rounded apex. Elytra not very long, reaching the apex of hind tibiae or slightly extending beyond them, with irregularly square cells in apical third; discoidal area always with very distinct, complete intercalate vein. Wings very broad, not longer than broad; second lobe at the apex as broad as the interspace between hind margin of this lobe and first incassate radial vein behind it, with only one complete first axillary vein; second axillary vein strongly abbreviate, rudimentary, S-shapedly incurved and fusing at its apex with anterior axillary vein; radiate veins very strongly incassate before the external margin and very thin on their apical ends. Hind tibiae not densely pilose, with 8—10 spines on outer and 9—13 on inner side. General coloration usually uniformly-grey or brownish-grey, often with a feeble blue shade; rarely coloration with a rose shade, or with more or less distinct dark spots. Head with bluish occiput. Elytra unicolor, without distinct transverse bands, or rarely with more or less distinct dark spots. Wings not brightly coloured at the base; incassate radiate veins deeply black; basal part not infumate, pellucid, and the median dark band very distinct on its external margin, or the whole basal part and median portion are more or less infumate, rarely quite dark; external part not darkened, but not transparent, whitish, often with a feeble bluish shade. Hind femora dark-blue or black inside and beneath, with a pale band before the apex; hind tibiae blue or dirty-violet.

♀. Body very clumsy, strongly variable in size. Frontal ridge with a feeble sulcus; antennae as long or slightly shorter as the head and pronotum taken together. Pronotum strongly wrinkled, with small tubercles; prozona usually inflated; metazona almost twice or quite twice as long as prozona, distinctly broader than its length; hind margin blunt; its apex



angulate or rounded. Elytra strongly abbreviated, oval, not reaching the apex of hind femora; intercalate vein in discoidal area distinct. Wings triangular, almost half the length of elytra, and not broader than the latter; venation very dense and indistinct. Mesosternal lobes distinctly broader than their length; interspace between them clearly broader than the width of one of the mesosternal lobes. Hind tibiae with 7—10 spines on the outer side and 9—12 on the inner side. General coloration more variable than in the male: grey, greyish-brown, bluish-grey, brownish-green or with a rose shade. Wings not infumated in basal third and on the external margin, with not distinct darkened median portion; incrassate radiate veins black on their whole length. Thorax and abdomen not darkened on lower surface, often with a feeble bluish shade. Hind femora and tibiae as in the male.

Length: of ♂ — body 26—32 mm, pronotum 7.5—9 mm, elytra 35—43 mm, hind femora 13—13.5 mm; of ♀ — body 25—38 mm, pronotum 8—9 mm, elytra 15—20 mm, hind femora 15—16 mm.

Geographical distribution. This subspecies is widely distributed in Central Asia, occupying the whole of Mongolia from Hangai Mountains in North-West Mongolia to North, Central and South Mongolia, Manchuria and province Tshili in North China, Transbaikalia, Irkutsk, Karakorum Mountains (South-East from Pamir), the whole of Tibet, except southern slopes of Himalayas, and Tzaidam.

The present (sub) species has been synonymized by UVAROV (1914 and 1925) with many other later described species: *Br. indum* SAUSS., *Br. brunnerianum* SAUSS., *Br. lugens* KRAUSS and *Br. argunense* STSHELKANOVITZEV, but it is evident that *Br. indum* is a good subspecies of *Br. luctuosum*, differing from it by red hind tibiae (see below), which are always dark-blue or violet in typical form; on the other hand *Br. brunnerianum* is very probably an independent species.

The degree of infumation of male wings of this subspecies is very variable individually and has no taxonomic value; I had before me a large series of this insect from one or from different localities and I could not observe any regularity in variation of coloration of wings in males.

Type locality. This insect has been described by STOLL from „Siberia“ without definite locality, but I am inclined to think that the type was from Transbaikalia, East Siberia, and I select this country from which this species was recorded by ZUBOVSKIY in 1900, as its type locality (lake Gusinoie).

Specimens examined—245: 129 males and 116 females. Transbaikalia: Lake Gusinoie, 2 VII 1896, 5 ♂♂, 1 ♀ (WEBER).—North-West Mongolia: Hangai Mountains near Uliasutai, 1880, 2 ♂♂ (POTANIN). First record for North-West Mongolia.—North Mongolia. Ulan-daba: East from

Urga, 31 VII 1897, 2 ♂♂, 1 ♀ (KLEMENTZ); river Bain-hol near Kerulen, East from Urga, 30 VII 1897, 2 ♂♂ (KLEMENTZ); Hatzka-huduk, Tshagan-tsholotai, East from Urga, 5 VIII 1897, 2 ♂♂, 4 ♀♀ (KLEMENTZ); between Tsholotai-buluc and Hetzik, East from Urga, 9 VIII 1897, 2 ♂♂, 6 ♀♀ (KLEMENTZ); lake Buruldzh-Dzhilkanty, East from Urga, 7 VII 1897, 7 ♂♂, 5 ♀♀ (KLEMENTZ); Nalaiha, 40 km East from Urga, 5 VIII 1897, 1 ♀ (KLEMENTZ); the sources of the river Kerulen, East from Urga, VII 1894, 5 ♂♂ (KAŠKAROV); river Kerulen, 2—4 VIII 1899, 2 ♂♂ (PALIBIN); valley near Namtu, 16 VII 1899, 1 ♂ (PALIBIN); Ahyrtein, South from Urga, 23 VI 1897, 1 ♂, 1 ♀ (KLEMENTZ); Urga, 20 VI 1894, 1 ♂ (KLEMENTZ); river Tolam, North-East from Urga, 4 VII 1897, 1 ♂, 3 ♀♀ (KLEMENTZ); between Urga and Ala-Shan (South Mongolia), 1909, 3 ♀♀ (KOZLOV). — Central Mongolia: Isarhol-hair-han, Halha, 23 VII 1909, 1 ♂ (KOZLOV); river Holt, North Gobi, 20 VI—3 VIII 1926, 7 ♂♂, 10 ♀♀ (KOZLOV); upper course of the river Ongin-hol, Halha, 12 VII 1926, 42 ♂♂, 58 ♀♀ (KIRIČENKO); Lamyn-gegen, South-Eastern Hangai, 16—22 VII 1926, 5 ♂♂, 12 ♀♀ (KIRIČENKO); Nain-bogdo, Central Gobi, 15 VII 1926, 2 ♂♂ (KOZLOV). First record for Central Mongolia. — South Mongolia: Dzhangalante-Etzhinhol, Ala-Shan Mountains, 21 VII 1909, 2 ♂♂, 2 ♀♀ (KOZLOV); Pin-fan-tshen, eastern Nan-Shan, 20—21 VII 1908, 1 ♀ (KOZLOV); south-eastern shore of the lake Kuku-nor, elevation 3.200 m, VIII 1901, 3 ♂♂, 1 ♀ (KOZLOV) and 16—22 VIII 1908, 5 ♂♂, 5 ♀♀ (KOZLOV). — Tzaidam: Dulan-Kit Mountains, north-eastern Tzaidam, VIII 1901, 1 ♂, 1 ♀ (KOZLOV). — Karakorum Mountains: Khany-Tash, 14 VIII 1912, 1 ♂, 1 ♀ (AVINOV). — Tibet: Shaga valley, 4.877 m, 4 ♂♂ (G. C. CHAMPION) [Brit. Mus. coll.]; Rukschu, Tscho-morau, Tibet frontier, 1 ♂ (G. BABAULT) [Brit. Mus. coll.]; the gorge Hatu, North Burhan-Budda, 3.292 m, VI—VII 1901, 2 ♂♂ (KOZLOV); Darindo, sources of the river Yang-tse-kiang, VIII 1900, 5 ♂♂, 2 ♀♀ (KOZLOV); North from Dzherku, river Yang-tse-kiang, 3.518 m, VIII 1900, 1 ♂ (KOZLOV); river Go-tshu, basin of Yang-tse-kiang, V 1901, 1 ♂ (KOZLOV); between Sogon-homba and the river Hi-tshu, sources of the river Yang-tse-kiang, VII 1900, 4 ♂♂, 1 ♀ (KOZLOV); sources of the river Hi-tshu, basin of Yang-tse-kiang, 3.962—4.267 m, VII 1900, 1 ♂, 1 ♀ (KOZLOV); lake Rhombo-ntzo and the river Hi-tshu, sources of the river Yang-tse-kiang, VIII 1900, 1 ♀ (KOZLOV). — North China: Province Tshili, 1871, 8 ♂♂ (PRŽEVALSKIJ and PYLCOV). First record.

**Bryodema luctuosum indum SAUSS.**

1884. *Br[yodema] inda* SAUSSURE. Prodr. Oedipod., pp. 181—182. [♂, ♀; „India“ (in error, probably Himalayas)].—1902. *B[ryodema] indum* JACOBSON in JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., p. 267.—1910. *B[ryodema] Inda* KIRBY. Syn. Cat. Orthopt., vol. III, p. 262.—1914. *Bryodema inda* KIRBY. Fauna British India. Acrididae, pp. 151—152, fig. 107 [♂, Dakar in Tibet; (first definite record of this subspecies)].

This subspecies differs from the typical *Br. luctuosum* only by the bright-red coloration of hind tibiae; the latter in typical *Br. luctuosum* are always dark-blue or dirty-violet.

	♂	♀
	(SAUSSURE)	(SAUSSURE)
Length of body . . . . .	27 mm	35 mm
" " pronotum . . . . .	— "	8 "
" " elytra . . . . .	38 "	30 "
" " hind femora . . . . .	— "	16 "

Geographical distribution. This subspecies has been described by its author from „India“ but this record is in all probability not correct, because the genus *Bryodema* is Mongolo-Siberian in its origin and its occurrence in India is quite impossible; JACOBSON (loc. cit., p. 267) has rightly observed that SAUSSURE's specimens are probably Himalayan; KIRBY in his „Fauna of British India, Acrididae“ (loc. cit.) has recorded this subspecies from Dakar, Tibet and this is, at the present time, the only exact record for this insect.

Dr. R. EBNER, Wien, was kind enough to compare specimens of *Br. luctuosum luctuosum*, which I sent to him, with SAUSSURE's type of *Br. indum* and he also was inclined to think that *Br. indum* is distinct from *Br. luctuosum*, but not more than subspecifically.

This subspecies, as well as *Br. tuberculatum dilutum*, reaches the most southern limit of the area of distribution of the genus *Bryodema*, and their southern limit coincides with the southern boundary of the Palearctic region in Central Asia.

Specimens examined—1 male. Tibet: Dakar, 1 ♂ (LONGSTAFF) (Brit. Mus. coll.).

### ***Bryodema brunnerianum* SAUSS.**

1884. [*Bryodema*] *brunneriana* SAUSSURE. Prodr. Oedipod., pp. 180—181. [♀; Hong-Kong (in error)]. — 1902. *B* [*ryodema*] *brunnerianum* JACOBSON in JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., p. 265. — 1910. *B* [*ryodema*] *Brunneriana* KIRBY. Syn. Cat. Orthopt., vol. III, p. 261.

♀. Size medium for the genus, form very robust. Head with distinct foveolae of the vertex; frontal ridge with a distinct sulcus, strongly constricted below middle ocellum; antennae as long as the head and pronotum taken together. Pronotum strongly constricted in prozona; metazona almost two times as long as prozona, a little shorter than its maximum width. Elytra narrow, not reaching the apex of hind femora, with distinct intercalate vein in discoidal area. Wings almost half the length of elytra, triangular. General coloration brownish-grey. Elytra with small dark spots. Wings not brightly coloured at the base, with not very distinct dark band.

Hind femora black on inner and lower surfaces, except light (yellow?) apical third; hind tibiae yellow (probably red in life).

Length: of body 28 mm, pronotum 7.9 mm, elytra 15 mm, hind femora 14 mm.

Geographical distribution. This species has been described by SAUSSURE from Hong-Kong, South China, but it is evident that occurrence of the representative of the genus *Bryodema* in maritime and not-mountainous part of South China is impossible and I am inclined to think that SAUSSURE's specimens originate from adjacent mountainous part of South China, for instance from Yunnan, the alpine fauna of which includes many Palaearctic elements.<sup>1</sup> *Br. brunnerianum* is very probably related to *Br. luctuosum*, specially to its subspecies *indum*. From these two subspecies it is easily separated by form of frontal ridge which in *Br. brunnerianum* is strongly constricted below the middle ocellum and in *Br. luctuosum* and *Br. luctuosum indum* with parallel sides.

Specimens examined — 1 female. China: „Hong-Kong“ (in error), 1 ♀ (HIGGINS) (SAUSSURE's type, coll. BRUNNER v. WATTENWYL, № 6605).

### Genus *Angaracris*<sup>2</sup> nov.

1773. *Gryllus Locusta* PALLAS. Reise Russ. Reich., Bd. II, S. 728 (partim). — 1836. *Oedipoda*. FISCHER DE WALDHEIM. Bull. Soc. Nat. Moscou, vol. IX, p. 346 (partim). — 1846. *Oedipoda* FISCHER DE WALDHEIM. Orthopt. Imp. Ross., pp. 285—286, 295—296, 298—299 (partim). — 1873. *Cyphippus* STÅL. Recensio Orthopt., vol. I, p. 184 (partim). — 1882. *Bryodema* BRUNNER VON WATTENWYL. Prodr. Europ. Orthopt., p. 167 (partim). — 1884. *Bryodema* SAUSSURE. Prodr. Oedipod., pp. 178—181 (partim). — 1902. *Bryodema* JACOBSON in JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., pp. 260, 266 (partim). — 1910. *Bryodema* KIRBY. Syn. Cat. Orthopt., vol. III, pp. 260—262 (partim).

Head with distinct foveolae of the vertex; fastigium broad, width at least as great as length. Pronotum strongly constricted in cylindrical prozona; median keel very distinct, cut by two deep transverse sulci; metazona flat, in ♂ twice or a little more, in ♀ almost two times as long as prozona, with more or less distinct and sharp lateral keels on shoulder angles; hind margin with more or less rounded apex; lateral lobes vertical, with somewhat sloping hind margin; dorsal length of lateral lobes not or a little greater than vertical depth of same. Elytra and wings fully developed in both sexes; the former broad, loosely reticulate, extending at least to the middle of hind tibiae; intercalate vein distinct, very strong, straight and not thinner than first ulnar one; discoidal area narrow; interulnar area at

---

<sup>1</sup> UVAROV, B. P. Orthoptera collected by Prof. GREGORY's expedition to Yunnan. Journ. and Proc. Asiat. Soc. Bengal, 1924, vol. XX, № 6 (1925), pp. 313—335.

<sup>2</sup> From the very ancient continent of Angara, and ἀνγρίξ — a grasshopper. In allusion to the Angarian origin of this genus.



the middle not less than one and half times as broad as the adjacent portion of discoidal area; on the apex, near the bending of first ulnar vein, not less than twice as broad as the widest part of discoidal area; first ulnar vein near the apex beyond the bending abbreviated, not extending and not united apically with the hind ulnar vein. Wing equal to elytra in length; its anterior margin distinctly S-shapedly incurved; radiate veins spindle-shapedly incrassate in ♂, in ♀ normal; second lobe in the apical part one half again, or a little more, as broad as the interspace between hind margin of same and incrassate radiate vein deposited behind; first ulnar vein parallel to second one; interulnar area relatively broad, in the middle not less than one and half times narrower in widest part of basal third than the adjacent portion of median area; anterior axillary vein incrassate; posterior vein distinct, normal and parallel to anterior one. Hind tibiae with not more than 13 straight or feebly incurved spines on inner side; basal incrassate part of hind tibiae from above not shining, with not strong but distinct and very regular transverse rugosities. Genotype — *Bryodema barabense* (PALLAS).

This new genus includes only two species: *A. barabensis* (PALL.) and *A. rhodopa* (F.-W.) and shows some affinity with the most primitive *Tuberculatum*-group of the genus *Bryodema*, especially with *B. holdereri* and its races (very feeble sexual dimorphism, the absence of dark transverse band on the wings and others).

### Key to species

1 (2). Wings yellowish or greenish at the base; radial incrassate vein partly yellowish-green or only yellowish, partly darkened, especially in the apical part. Eastern portion of West Siberia, Akmolinsk, Kustanay and Semipalatinsk provinces, Altai Mountains, East Siberia to Transbaikalia, North-West, North and Central Mongolia, North China, Manchuria and North China. . . . . *A. barabensis* (PALL.).

2 (1). Wings bright rose, or rose, at the base; radial incrassate veins red in basal part. Altai Mountains, Minusinsk district, Irkutsk, North-West, North, Central and South Mongolia, Manchuria and North-West China. . . . . *A. rhodopa* (F.-W.).

### 1. *Angaracris barabensis* (PALLAS)

(Pl. XVIII, fig. 6, pl. XIX, fig. 3)

1773. *Gryllus Locusta barabensis* PALLAS. Reise Russ. Reich., Bd. II, p. 728 [♂, ♀; Barabinskaya steppe (West Siberia)].—1846. *Oedipoda hospes* FISCHER DE WALDHEIM. Orthopt. Imp. Ross., pp. 295—296, pl. XXIV, figs. 1—2 [Baikal (East Siberia)].—1846. *Oedipoda barabensis* FISCHER DE WALDHEIM. Loc. cit., p. 296, pl. XIV, fig. 2 [Irkutsk; Baikal].—1846. *Oedipoda lugubris* FISCHER DE WALDHEIM. Loc. cit., pp. 298—299, pl. XXXII, fig. 4—5 (not 4—3 as indicated in the text) [Dauria].—1860. *Oedipoda thunbergii* STÅL,

Fregat. Eugen. Resa. Orthoptera, p. 345 [Brasilia (in error)].—1873. *Ctyphippus thunbergii* STÅL. Recensio Orthopt., p. 134 [Brasilia (in error)].—1882. *B[ryodema] barabensis* BRUNNER VON WATTENWYL. Prodr. Europ. Orthopt., p. 167.—1884. *B[ryodema] barabensis* SAUSSURE. Prodr. Oedipod., p. 181.—1898. *Bryodema barabensis* ZUBOWSKI. Ann. Mus. Zool. Acad. Sc. St.-Petersb., vol. III, p. 98 [Different localities in Akmolinsk and Semipalatinsk provinces (Kirghiz steppes)].—1900. *Bryodema barabensis* ZUBOWSKI. Horae Soc. Entom. Ross., vol. XXXIV, p. 17 [Kara-su and Ongudai, Altai Mountains; lake Shira, lake Orlinoe, lake Itkul, Inek and Uibat, Minusinsk district; Meret, Barnaul district].—1901. *Bryodema barabensis* BOLIVAR. ZICHY. Dritte Asiat. Forschungsreise, Bd. II, S. 233 [Minusinsk, Monastyrsk and Ust-Kiachta, (East) Siberia; Urga, (North) Mongolia; Khalgan, (North China)].—1902. *B[ryodema] barabense* JACOBSON in: JACOBSON and BIANCHI. Orthopt. Pseudoneuropt. Imp. Ross., p. 266 (syn. incl.).—1906. *Bryodema barabense* ADELUNG. Ann. Mus. Tobolsk, vol. XV, p. 12 (of separate copy) [Krasnoyarskoye (near Omsk) and Omsk (South-Western Siberia)].—1907. *B[ryodema] barabense* MIRAM. Öfv. Finska Vetensk. Soc. Förh., Bd. XLIX, № 6, p. 8 [(North-West) Mongolia].—1910. *B[ryodema] barabensis* KIRBY. Syn. Cat. Orthopt., vol. III, pp. 261—262.—1925. *B[ryodema] barabensis* TARBINSKI. Défense de Plantes, vol. II, № 3, p. 159 [Kustanay (Kustanay province, Kirghiz steppes)].—1929. *B[ryodema] barabensis* BEY-BIENKO. Kono-wia, Bd. VIII, p. 103 [Mandube, Manchuria].

♂. Size small to medium for the group, form robust. Frontal ridge near and below the middle ocellum with distinct but not deep sulcus, without puncturations; lateral keel parallel near the ocellum, and somewhat dilated toward the clypeus; surface of frontal ridge distinctly punctured in lower part; antennae as long or a little longer than the head and pronotum taken together. Pronotum with distinct, but not strong, elongated tubercles, especially in metazonal disc; lateral sides of anterior portion of prozonal disc, from the anterior margin to median keel near first transverse sulcus, almost always with distinct, bow-shapedly incurved keels. Elytra extending to the apex of hind tibiae; anal field in apical third or half with regular, somewhat sloping transversal veins. Wings a little narrower than their length. Hind femora more or less slender; hind tibiae with 10—12 spines on inner and with 8—9 on outer sides.

♀. As the male but more clumsy. Antennae shorter than head and pronotum together. Elytra reaching to beyond the middle of hind tibiae. General coloration in both sexes grayish-green, brownish-green, or grayish-brown with distinct dark spots. Pronotum often with whitish or whitish-yellow hind margin. Wings yellowish or greenish in basal part; radial incrassate veins yellowish-green or only yellowish in basal part and more or less darkened in apical part; peripheral portion hyaline, not darkened or with dark spots in apical third of first and second lobes; first axillary incrassate vein darkened almost on its whole length. Hind femora with black basal half on inner and lower sides, and with black band on the middle of apical half; apical part near the knee black inside and beneath; external surface with indistinct transversal band; hind tibiae red or yellow, with black-tipped spines.

Length: of ♂ — body 22—31 mm, pronotum 5.5—7.2 mm, elytra 24—30 mm, hind femora 11—13.5 mm; of ♀ — body 29—35 mm, pronotum 6.5—8.2 mm, elytra 23.5—29.5 mm, hind femora 13—16 mm.

Geographical distribution. Eastern portion of West Siberia, Kustanay, Akmolinsk and Semipalatinsk provinces, Altai Mountains, Eastern Siberia to Transbaikalia, North-West, North and Central Mongolia, Manchuria, North China.

Material examined — 254 specimens: 151 males and 103 females. — West Siberia: Omsk, VII—VIII 1923—1926, 19 ♂♂, 14 ♀♀ (BEY-BIENKO); the lake Tshany, Barabinskaya steppe, 2 VII 1868, 3 ♂♂ (MIDDENDORFF); Slavgorod, 9 VII 1926, 2 ♀♀. — Kazakstan: Kustanay province, 1 ♂; Borovoye, Koktshetav district, Akmolinsk province, VIII 1926, 8 ♂♂, 6 ♀♀ (BEY-BIENKO); Pavlodar, Semipalatinsk province, VII 1927, 1 ♂; Semipalatinsk, VIII 1926, 1 ♀ (DEJEV). — Russian Altai: Ongudai, 30 VI—6 VII 1908, 40 ♂♂, 9 ♀♀ (A. JACOBSON); Ongudai, 1 VII—15 VIII 1908, 18 ♂♂, 36 ♀♀ (BEREZOVSKIY and STEINFELD); river Topolevka, system of the river Argut, formerly Biysk district, 22 VII 1897, 10 ♂♂, 12 ♀♀ (SILANTJEV); Tshibit, 23 VII 1925, 2 ♂♂ (BEY-BIENKO); Kor-Ketshu near Katun, 29 VII 1912, 1 ♂ (SUŠKIN). — East Siberia: Monok, Minusinsk district, Yenisei province, VIII 1920, 1 ♂; Minusinsk, Minusinsk district, Yenisei province, VII—VIII 1926, 10 ♂♂, 1 ♀ (V. IVANOVA); island Olhon in Baikal lake, 15 VII 1915, 4 ♂♂ (TICHOMIROV); North Baikal, 2 ♂♂ (RADDE); Dauria, 3 ♂♂, 3 ♀♀ (RADDE); Aginskaya steppe, river Aga, system of the river Onon, Transbaikalia, 30 VI 1908, 10 ♂♂, 3 ♀♀ (MICHNO). — North-West Mongolia: Mongolian Altai, northern slopes, VIII 1899, 1 ♂ (KOZLOV). — North Mongolia: Gatzhahuduk. East from Urga, 5 VIII 1897, 5 ♂♂, 4 ♀♀ (KLEMENTZ); lake Buruldzhi, East from Urga, 8 ♂♂, 7 ♀♀ (KLEMENTZ); Tsolotay-buluk, 8 VIII 1897, 2 ♂♂, 2 ♀♀ (KLEMENTZ). — Central Mongolia: Isarhol-hair-han, Halha, 28 VII 1909, 2 ♂♂, 2 ♀♀ (KOZLOV). First record for Central Mongolia.

## 2. *Angaracris rhodopa* (F.-W.)

1836. *Oedipoda rhodopa* FISCHER DE WALDHEIM. Bull. Soc. I. Natur. Moscou, vol. IX, p. 348 [Katun Mountains (Russian Altai)].—1836. *Oedipoda rhodoptera* FISCHER DE WALDHEIM. Loc. cit., vol. IX, pl. IV, fig. 2.—1846. *Oedipoda rhodopa* FISCHER DE WALDHEIM. Orthopt. Imp. Ross., pp. 285—286, pl. XXI (not XXIII as indicated in the text), fig. 4 [Katun Mountains; Irkutsk (East Siberia)].—1901. *Bryodema barabense* var. *roseipennis* KRAUSS. Zool. Anz., Bd. XXIV, S. 237 [♂, ♀; Taotain-ho, South Kuku-nor Mountains; Hoang-ho (or Huan-he) river, between Kuku-nor and Semenow Mountains].—1902. *B[ryodema] barabense* var. *rhodopus* JACOBSON in: JACOBSON and BIANCHI, Orthopt. Pseudoneuropt. Imp. Ross., p. 266.—1907. *B[ryodema] barabense* var. *rhodopus* MIRAM. Öfv. Finska Vetensk.-Soc. Förh., Bd. XLIX, N° 6, p. 8 [Osnatshennaya, Minusinsk district, East Siberia; North-West Mongolia].—1908. *Bryodema barabensis* var. *rhodoptila* KARNY. FILCHNER's Exped. China—Tibet. Orthoptera, S. 49 [Lantshou, Gan-su province, North-West China; (Urga, North Mongolia)].—1910. *Bryodema Rhodopa* KIRBY. Syn. Cat.

Orthopt., vol. III, p. 262.—1911. *Bryodema barabense* var. *rhodopa* IKONNIKOV. Ann. Mus. Zool. Acad. Sc. St.-Petersb., vol. XVI, p. 256 [Minusinsk (East Siberia); Yenisei-Soldan (North-West Mongolia near Russian boundary); Tsitsikar (Manchuria)].—1925. *Bryodema barabensis* var. *rhodopa* UVAROV. Ann. Mag. Nat. Hist., vol. XVI, p. 172, footnote.

Very like in general habitus, morphological features and in general coloration to *A. barabensis*, but strongly differing from it by coloration of wings, which are always bright-rose, or rose, at the base; radial incassate veins red, with darkened apical parts in anterior three or four of them.

Length: of ♂—body 25—30 mm, pronotum 6—7.2 mm, elytra 27.5—33 mm, hind femora 11.5—14 mm; of ♀—body 30—35 mm, pronotum 6.3—8.5 mm, elytra 28—32 mm, hind femora 14.5—18 mm.

Geographical distribution. More southern than precedent species; its area covers Altai Mountains, Minusinsk district, Irkutsk, North-West, North, Central and South Mongolia, Manchuria and North-West China (Gan-su province).

All ancient authors, except FISCHER DE WALDHEIM and KIRBY, treated this insect as „var.“ of *Angaracris barabensis*, but it has a distinct and quite independent area of distribution, occupying more southern and mountainous dry regions of Central Asia and it is evident that it may be treated as a distinct subspecies or species of *A. barabensis*, recently separated (probably in Glacial time) from this more northern and more ancient species. Northern limits of the area of *A. rhodopa* cover southern limits of the area of *A. barabensis* and therefore I am inclined to think that *A. rhodopa* is a young but distinct species.

Material examined—153 specimens: 78 males and 75 females. East Siberia: Kazantzevo, Minusinsk district, Yenisei province, VII—VIII 1910, 10 ♂♂, 2 ♀♀ (P. and Ph. POPOV); Monok, Minusinsk district, Yenisei province, VIII 1920, 1 ♂; Osnatshennaya, Minusinsk district, Yenisei province, 1 ♀ (HAMMARSTROEM).—North-West Mongolia: Hangay, near Uliasutai, 1880, 2 ♂♂, 1 ♀ (POTANIN); river Eder. Hangai, 21 VIII 1877, 1 ♂, 1 ♀ (POTANIN).—North Mongolia: Gatzha-huduk, East from Urga, 5 VIII 1897, 15 ♂♂, 18 ♀♀ (KLEMENTZ); lake Buruldzh, East from Urga, 15 ♂♂, 17 ♀♀ (KLEMENTZ); Tzegan-tsholotai, East from Urga, 4 VIII 1897, 10 ♂♂, 2 ♀♀ (KLEMENTZ); Tsholotai-buluk, 8 VIII 1897, 2 ♂♂, 7 ♀♀ (KLEMENTZ); Nalaiha, East from Urga, 2 VIII 1897, 5 ♂♂, 6 ♀♀ (KLEMENTZ).—Central Mongolia: Holt, North Gobi, 20 VII 1926, 1 ♂, 1 ♀ (KOZLOV); Noin-bogdo, Gobi, 23 IX 1926, 2 ♂♂ (KOZLOV); Izarhol-hair-han, Halha, 23 VII 1909, 2 ♂♂, 1 ♀ (KOZLOV); Lamyn-gegen, South-Eastern Hangai, 21 VII 1926, 1 ♀ (KIRICHENKO). First record for Central Mongolia.—South Mongolia: lake Kuku-nor, 16—22 V 1908, 1 ♂, 1 ♀ (KOZLOV); south-eastern coast of the lake Kuku-nor, 3,200 m, VIII 1901, 2 ♂♂, 1 ♀ (KLEMENTZ); Danger-tin. Nan-Shan, 3,048 m, VIII 1901, 1 ♂ (KOZLOV); valley of the river Tanho, 16 VII 1908, 1 ♂ (KOZLOV).—South-East Mon-



golia: Ordos, 1871, 1 ♂ (PRŽEVALSKIJ and PYLCOV). — North-West China (Gan-su province): Tsheibsen, VIII 1873, 3 ♂♂, 2 ♀♀ (PRŽEVALSKIJ and PYLCOV); valley of the river Sinin-he, Eastern Nan-Shan, VIII—IX 1908, 8 ♂♂, 6 ♀♀ (KOZLOV); Gan-su, 4 ♂♂, 7 ♀♀ (PRŽEVALSKIJ and PYLCOV).

Genus **Uvaroviola**<sup>1</sup> nov.

Head with distinct triangular foveolae of the vertex. Pronotum distinctly narrowed anteriorly, feebly constricted in cylindrical prozona; metazona flat, in ♂ twice as long as prozona and almost as long as broad, in ♀ almost two times as long as prozona and as broad as its maximum width; median keel very distinct, but somewhat obliterate between transverse sulci; three transverse sulci very indistinct, especially first and second; shoulder angles distinct. Lateral lobes vertical; their dorsal length equal to vertical depth of same. Elytra and wings in ♂ fully developed, in ♀ strongly abbreviate; intercalate vein in discoidal area of elytra distinct, but not very thick; interulnar area a little broader than discoidal area. Wings with straight anterior margin, except regularly incurved apical quarter; radiate veins in ♂ not strongly but distinctly incrassate, in ♀ feebly incrassate; interulnar area narrow; transverse dark band absent. The incrassate basal part of hind tibiae above with very strong and irregular rugosities and deeply impressed puncturation; inner side of hind tibiae with not less than 15 strongly incurved spines. Genotype — *Uvaroviola multispinosa* sp. nov.

This peculiar and very good genus is very like to the *Gebleri*-group of the genus *Bryodema*; the absence of dark transverse band brings this genus near to *Angaracris*.

**Uvaroviola multispinosa** sp. nov.

(Pl. XVIII, fig. 5, pl. XIX, fig. 3)

♂. Size medium for the group, body relatively slender. Frontal ridge with distinct puncturation, widened and flat above middle ocellum and slightly widened and sulcate below it; antennae a little longer than the head and pronotum together. Pronotum with sparse but distinct tubercles; prozona not inflated; metazona flat, twice as long as prozona and as long as it is broad at the shoulders, shoulder angles distinct; median keel in prozona distinctly elevated and not dissected by the first transverse sulcus; second transverse sulcus very feeble; third very distinct, deep and dissecting median keel; hind margin of pronotum roundedly-rectangular. Elytra extending to the apex of hind tibiae; apical part with irregular square cells.

<sup>1</sup> In honour of Mr. B. P. UVAROV the well known Russian orthopterologist and author of many interesting, both scientifically and practically, works.

Wings very broad; second lobe with two separated and parallel axillary veins, more than one and half times as broad in apical part as the interspace between hind margin of the same lobe and first incrassate vein placed behind. Hind tibiae distinctly incurved, with 10—17 strongly incurved spines on outer side and 15—18 on inner side, beginning from the base of tibiae. General coloration brownish-grey with more or less distinct admixture of green. Elytra with indistinct dark spots. Wings light-greenish-yellow, except slightly darkened first lobe and external margin; incrassate veins greenish-yellow. Hind femora red or bluish inside and beneath, and with two or three velvety-black spots on upper surface; hind tibiae red or blue.

♀. Body very robust. Antennae slightly shorter than the head and pronotum together. Pronotum with more or less strong tubercles; prozona distinctly inflated above; metazona a little shorter than prozona and as long as its maximum width; median keel in prozona distinctly prominent. Elytra abbreviate, almost reaching to the apex of hind femora; wings shorter than elytra, triangular. Hind tibiae on outer side with 12—15 strongly incurved spines, and with 16—18 on inner side. General coloration as in ♂. Pronotum often with whitish cruciform marks. Wings unicolourly light-greenish-yellow, except very feebly darkened first lobe and external margin; apex of first and second lobes with indistinct dark spot.

Length: of ♂—body 26—30 mm, pronotum 6.5—7 mm, elytra 31.5—37 mm, hind femora 12.5—13.8 mm; of ♀—body 27—36 mm, pronotum 7—8 mm, elytra 15—17 mm, hind femora 13.5—14 mm.

Patria. River Sen-tshu, 3,649 m, basin of Yang-tse-kiang, Eastern Tibet, III 1901, 7 ♂♂ (including type) and 2 ♀♀ (Kozlov); valley of the river Dzhagyn-hol, near Russian lake, North-Eastern Tibet, 4,357 m, 1—6 VII 1900, 1 ♂ (Kozlov); gorge Ihe-hol, Northern Burhan-Budda, North-Eastern Tibet, 3,962—4,267 m, 22 VII 1901, 7 ♂♂, 3 ♀♀ (Kozlov); Ui-yu, Northern Gan-su, 13 VIII 1908, 1 ♂ (Kozlov); southern coast of Kuku-nor, South Mongolia, 3,200 m, VIII 1901, 1 ♂ (Kozlov).

---

### Literature

1. ADELUNG, N. Insecta Orthoptera, a dom. P. Suschkin in regione Turgaica anno 1898 lecta. Mater. Pozn. Faun. Flor. Ross. Imp., Zool., vol. VII, 1906, pp. 85—86.
2. — Prodomus Orthopterorum gub. Tobolsk. Ann. Mus. Tobolsk, vol. XV, 1906, p. 12.
3. — Zur Orthopterenfauna von Chinesisch-Centralasien. Ann. Mus. Zool. Acad. Sc. St.-Petersb., 1908, vol. XIII, pp. LVII—LVIII.
4. БЫ-БИЕНКО, G. Contributiones ad cognitionem Orthopterorum Altaji et confinium. Trans. Siber. Acad. Agricult. Forestry, 1926, vol. V, pp. 51—52.

5. — The Orthopterous fauna of the northern part of the province of Akmolinsk. *Rev. Russe d'Entom.*, 1927, vol. XXI, p. 103.
- 5a. — Studies on the Dermaptera and Orthoptera of Manchuria. *Konowia*, Bd. VIII, 1929, p. 103.
- 5b. — Further studies on the Dermaptera and Orthoptera of Manchuria. *Ann. Mag. Nat. Hist.*, 1930 (in print).
6. BOLIVAR, I. Orthoptera in: Graf E. ZICHY. Dritte Asiatische Forschungsreise, Bd. II. *Zool. Ergebnisse*, SS. 233—236. Budapest, 1901.
7. BRUNNER VON WATTENWYL, C. *Prodromus der europäischen Orthopteren*, SS. 167—168. Leipzig, 1882.
8. BURMEISTER, H. *Handbuch d. Entomologie*, Bd. II, 2, S. 641. Berlin, 1838.
9. EVERSMANN, E. Orthoptera volgo-uralensia. *Bull. Soc. Nat. Moscou*, 1859, vol. XXXII, p. 140.
10. FABRICIUS, J. *Systema Entomologiae*, p. 290. Flensburgi et Lipsiae, 1775.
11. FIEBER, F. *Synopsis der europäischen Orthopteren*. Lotos, 1853, Bd. III, S. 129.
12. FISCHER DE WALDHEIM, G. Orthoptera duo e montibus Catunicis descripta et icone illustrata. *Bull. Soc. Nat. Moscou*, 1836, vol. IX, pp. 346—349, pl. IV, fig. 1—2.
13. — Orthoptera Imperii Rossici, pp. 263, 284—285, 295—299, pl. XXVI, fig. 6—7; pl. XXIII, fig. 3; pl. XXI, fig. 4; pl. XXIV, fig. 1—2; pl. XIV, fig. 2; pl. XXXII, fig. 4—5. *Moscou*, 1846.
14. JACOBSON, G. and BIANCHI, V. Orthoptera Pseudoneuroptera Imperii Rossici, pp. 264—267, pl. VI. *St.-Petersburg*, 1902—1905 (in Russian).
15. IKONNIKOV, N. Beitrag zur Kenntnis der Orthopteren-Fauna Russlands. *Rev. Russe d'Entom.*, 1911, vol. XI, p. 107.
16. — Zur Kenntnis der Acridiideen Sibiriens. *Ann. Mus. Zool. Acad. Sc. St.-Petersb.*, 1911, pp. 255—256.
17. — Orthoptères de la province de Semiretshje, Acridiidea. *Rev. Russe d'Entom.*, 1911, vol. XI, pp. 356—357.
18. — Über die von P. SCHMIDT aus Korea mitgebrachten Acridiideen, SS. 17—18. *Kusnetz*, 1913.
19. KARNY, H. *Wissenschaftliche Ergebnisse d. Expedition W. FULCHNER nach China und Tibet*. Zoologie. Orthoptera, SS. 46—49. Berlin, 1908.
20. KIRBY, W. A synonymic catalogue of Orthoptera. III, Acrididae, pp. 260—262. London, 1910.
21. — The fauna of British India, incl. Ceylon and Burma. Orthoptera, Acrididae, pp. 150—152, fig. 107. London, 1914.
22. KRAUSS, H. Orthopteren vom Kuku-nor-Gebiet in Centralasien, gesammelt von Dr. J. HOLDERER im Jahre 1898. *Zool. Anz.*, 1901, Bd. XXIV, SS. 236—238.
23. KUTHY, N. *Insecta heptapotamica a dd. ALMAZY et STUMMER-TRAUFENFELS collecta*. II. Orthoptera. *Ann. Mus. Nat. Hungar.*, 1905, vol. III, p. 217.
24. MIRAM, E. Zur Orthopteren-Fauna Russlands. *Öfv. Finska Vet.-Soc. Förh.*, 1906—1907, Bd. XLIX, № 6, S. 8.
25. PALLAS, P. *Reise durch verschiedene Provinzen des Russischen Reichs*, Bd. II, S. 728. *St.-Petersburg*, 1773.
26. PYLNOV, E. Contributions à la faune des Orthoptères de la Russie d'Asie. *Rev. Russe d'Entom.*, 1914, vol. XIV, p. 108.
27. — Contributions à la faune des Acridiidea et des Locustodea de la Mongolie boréale. *Ibid.*, 1916, vol. XVI, p. 179.
28. — Materials to the fauna of the Orthoptera of European and Asiatic Russia. *Mém. Inst. Agron. Voronezh*, 1918, vol. III, pp. 131, 133, 134—135, 137—138.

29. RAMME, W. Orthopterologische Beiträge. Arch. für Naturgeschichte, 1920 (1921), Bd. 86, A, 12 Heft, SS. 138, 144, 145.
  30. SAUSSURE, H. Prodromus Oedipodiorum. Mém. Soc. Phys. Genève, 1884, vol. XXVIII, № 9, pp. 178—182.
  31. — Additamenta ad Prodromum Oedipodiorum. Ibid., 1888, vol. XXX, № 1, p. 66.
  32. STÅL, C. Kongliga svenska fregatten Eugénies resa. Zoologi. V. Orthoptera, p. 345. Stockholm, 1860.
  33. — Recensio Orthopterorum. I. Acridiidea, p. 184. Stockholm, 1873.
  34. STOLL, C. Représentation exactement colorée d'après nature des spectres ou phasmes, des mantes, des sauterelles, des grillons, des criquêtes et des blattes, pp. 21, 24, pl. IXb, fig. 31; pl. XI, fig. 37. Amsterdam, 1813.
  35. STSELKANOVITZEV, I. (ШЕЛКАНОВИЧ, И.). Очерки по фауне Прямокрылых (Orthoptera saltatoria) России. Arb. Zool. Labor. Univ. Warschau für d. Jahr 1910, SS. 26—28, fig. 15. 1911.
  36. TARBINSKY, S. Contributions à la faune des Orthoptères du gouvernement de Kustanaj. La Défense des Plantes, 1925, vol. II, № 3, p. 159.
  37. UVAROV, B. Contribution à la faune des Orthoptères de la steppe des Kirghises. Rev. Russe d'Entom., 1911, vol. XI, pp. 426—427.
  38. — Matériaux pour l'étude de la faune des Orthoptères de l'Asie Centrale. Ibidem, 1914, vol. XIV, pp. 232—234.
  39. — Mission GUY BABAUT dans les Provinces Centrales de l'Inde et dans la région occidentale de l'Himalaya. 1914. Insectes Orthoptères, Acrididae, pp. 15—16. Paris, 1925.
  40. — Grasshoppers (Orthoptera, Acrididae) from the Mount Everest. Ann. Mag. Nat. Hist., 1925, ser. 9, vol. XVI, p. 172.
  41. — Acrididae of Central Asia, pp. 123—126. Tashkent, 1927 (in Russian).
  42. ZACHER, F. Beiträge zur Kenntnis der Geradflüglerfauna des deutschen Alpengebietes. Entom. Mitteil., 1919, Bd. VIII, № 4—6, SS. 96, 99—101, fig. 5.
  43. ZUBOWSKY, N. Zur Acridiidea-Fauna des asiatischen Russlands. Ann. Mus. Zool. Acad. Sc. St.-Petersb., 1898, vol. III, pp. 98—100.
  44. — Beitrag zur Kenntnis der sibirischen Acridiideen. Horae Soc. Entom. Ross., 1900, vol. XXXIV, pp. 17—18.
-



## Explanation of plates

### Plate XVIII

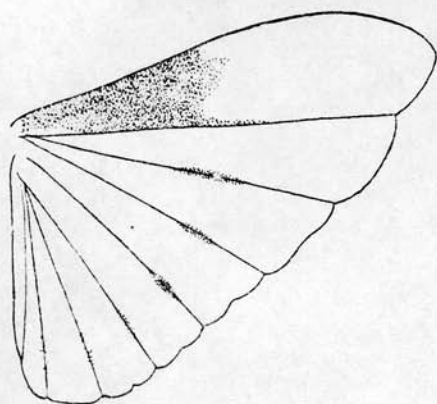
- Fig. 1. *Bryodema holdereri* KRAUSS. Disposition of dark colour on male wings.  
Fig. 2. *Bryodema tuberculatum* (FABR.). Disposition of dark colour on male wings.  
Fig. 3. *Bryodema semenovi* IKONN. Disposition of dark colour on male wings.  
Fig. 4. *Bryodema gebleri* (F.-W.). Disposition of dark colour on male wings.  
Fig. 5. *Uvaroviola multispinosa* gen. et sp. n. Hind tibia of the male (type).  
Fig. 6. *Angaracris barabensis* (PALL.). Hind tibia of the male.  
Fig. 7. *Bryodema gebleri* (F.-W.). Hind tibia of the male.

### Plate XIX

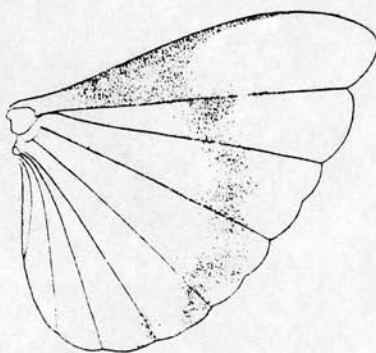
- Fig. 1. *Bryodema gebleri* (F.-W.). Venation of male elytra and wings.  
Fig. 2. *Bryodema luctuosum* (STOLL). Venation of male elytra and wings.  
Fig. 3. *Angaracris barabensis* (PALL.). Venation of male elytra and wings.  
Fig. 4. *Uvaroviola multispinosa* gen. et sp. n. Venation of male elytra and wings (type).

### Plate XX

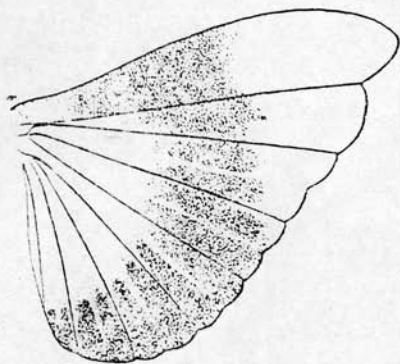
- Fig. 1. *Bryodema semenovi* IKONN. Outline and venation of female elytra and wings.  
Fig. 2. *Bryodema gebleri* (F.-W.). Outline and venation of female elytra and wings.  
Fig. 3. *Bryodema gebleri* (F.-W.). Head and pronotum of male in profile.  
Fig. 4. *Bryodema gebleri* (F.-W.). Dorsal view of male head and pronotum.  
Fig. 5. *Bryodema holdereri* KRAUSS. Venation of the second lobe of male wings.  
Fig. 6. *Bryodema tuberculatum* (FABR.) Venation of the second lobe of male wings.
-



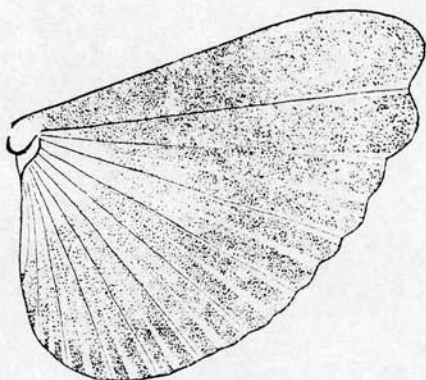
1



2



3



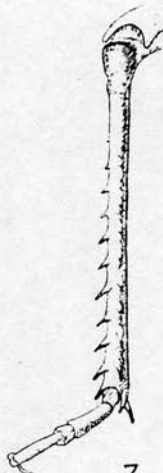
4



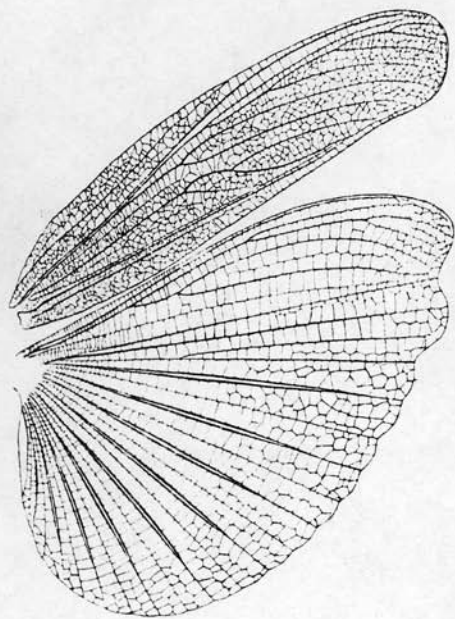
5



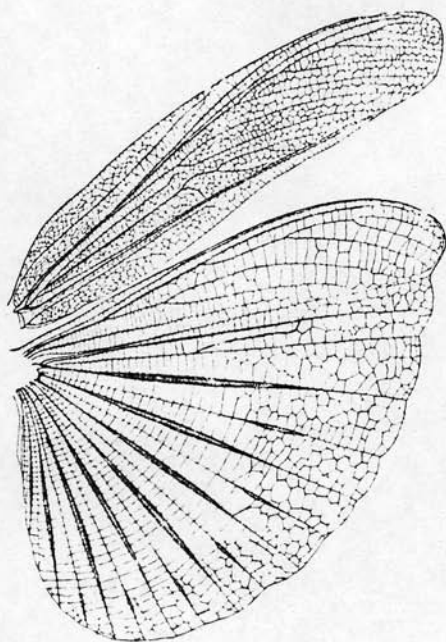
6



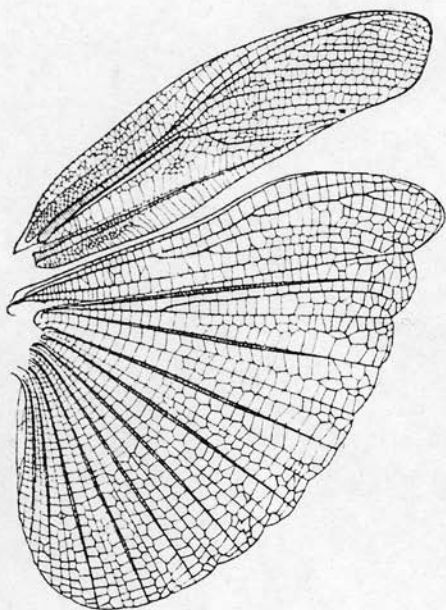
7



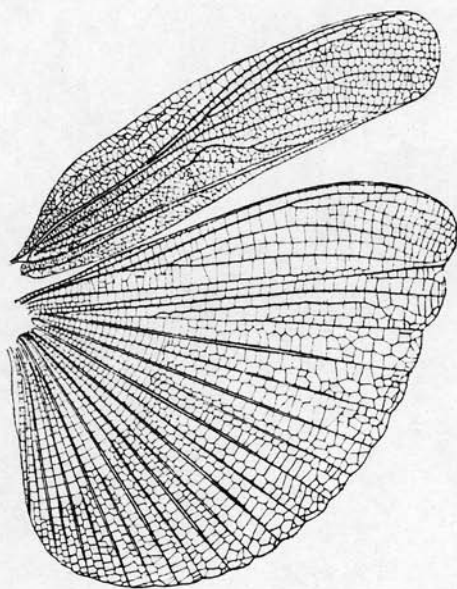
1



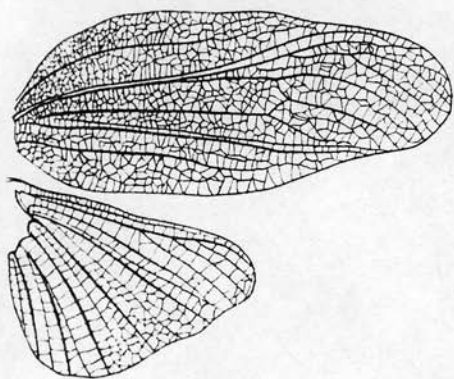
2



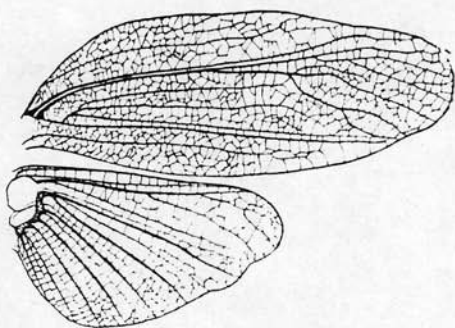
3



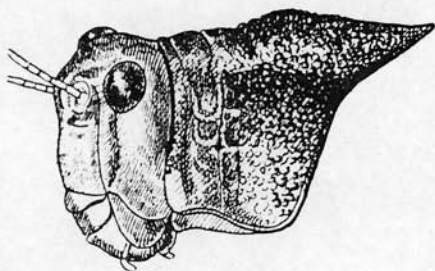
4



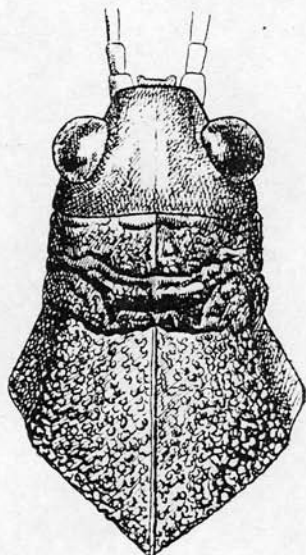
1



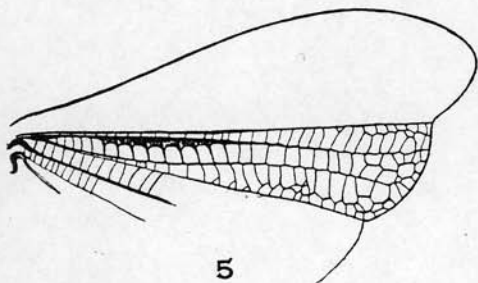
2



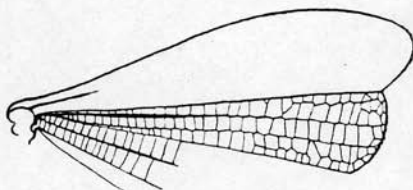
3



4



5



6