The *Silvicola* Burgeff Group of the genus *Zygaena* Fabricius (Lep., Zygaenidae)

By W. Gerald Tremewan

Department of Entomology, British Museum (Natural History)
and Hugo Reiss, Stuttgart

The recent separation by Alberti (1958: 314) of *Zygaena romeo* Duponchel and *osterodensis* Reiss (=*scabiosae auctorum*) has made a study of the genitalia of the various subspecies necessary. In the following paper, the subspecies are now grouped under two species according to their genital characters and the remaining species of the group have also been studied The terminology of the genitalia follows that of Alberti (*loc. cit.*).

In addition to difficulties in separating the species, a considerable amount of confusion has existed in the nomenclature. The name *osterodensis* Reiss is here considered to be the name of the species formerly known as *scabiosae* Scheven while the latter is placed as a subspecies of *purpuralis* Brünnich. This was first suggested by Reiss (1933: 252) who considered that the specimens figured by Schäffer (1766: pl. 16, figs. 4, 5), and named *scabiosae* by Scheven (1777: 97), were true *purpuralis*. The latter species is still found in the neighbourhood of Regensburg but the species *osterodensis* (=*scabiosae auctorum*) does not occur there and, even if it were found there in the time of Schäffer, it must have been so rare that it could not have predominated. Therefore, it is reasonable to assume that, if both species occurred at Regensburg, Schäffer took the commoner species (*purpuralis*) for his illustrations. On the basis of this argument, Reiss (*loc. cit.*) considered *romeo* Duponchel to be the species name. However, as stated above, *romeo* has recently been separated by Alberti (*loc. cit.*) as a species distinct from *scabiosae auct.* and, the next available name for the latter is *osterodensis* Reiss. This has already been suggested by Bernardi & Viette (1960: 245). The name *minos* Denis & Schiffermüller, which was considered by Dujardin (1952: 246) to be the species name of *osterodensis*, should, in our opinion, be used to represent the subspecies of *purpuralis* which occurs in the Vienna district of Austria. This opinion is also held by Bernardi & Viette (*loc. cit.*).

The examination of a *Zygaena* specimen, which was accepted as the type of *dalmatina* Boisduval, led to a further change in the name of the species (Tremewan, 1961b: 283). The name *romeo* was then returned to subspecific rank and *dalmatina* was taken as the species name. The study of the genitalia of this group has revealed that the species *romeo* probably does not occur in Dalmatia. It was originally thought that the subspecies *goriziana* Koch from Görz, Istria and *koricnensis* Reiss from Korićna, Bosnia, were conspecific with *romeo*. An examination of the genitalia of the type of *koricnensis* and of genitalia drawings of two paratypes (♂, ♀) of *goriziana* showed these to be subspecies of *osterodensis* (=*scabiosae auct.*). The distribution (fig. 1) suggests that *romeo* does not occur in Dalmatia. After the publication of the *Zygaena* type catalogue (Tremewan, 1961b), Holik (1961: 51) published an article on the problem and maintained his earlier opinion (Holik, 1935: 60) that *dalmatina* is a subspecies of *punctum* Ochsenheimer, and that the specimen in the Bois-

duval collection was not the true type. In reply to Holik's paper, an article was published by Reiss & Tremewan (1962: 39) when an attempt was made to confirm the validity of the type.

In the original description of *dalmatina*, Boisduval (1834: 45) stated that the specimen was found in Dalmatia, in the nieghbourhood of Ragusa (Dubrovnik). Boisduval compared the specimen with examples of "*scabiosae*" (*romeo* Duponchel) from Italy and the Alps and stated that many of the Italian and Alpine specimens were referable to *dalmatina*. The specimen which was illustrated as the type (Tremewan, 1961b: 283, pl. 54, fig. 18) is conspecific with *romeo* Duponchel and is, in fact, probably one of the Italian or Alpine specimens mentioned by Boisduval. Holik, who has examined a photograph of the specimen, stated (*in lit.*) that it is an example of *romeo orion* Herrich-Schäffer. The additional evidence shows that it can no longer be regarded as the genuine type of *dalmatina*. Neither the species *romeo* nor *osterodensis* are known to occur at Ragusa while *punctum* is found abundantly in this locality (Holik, *in lit.*). It is therefore logical to follow Holik's opinion that the true *dalmatina* is the subspecies of *punctum* occurring in the Ragusa district of Dalmatia.

The distribution (fig. 1) of *romeo* and *osterodensis* overlaps in Istria, the west Alps through southern France to the East Pyrenees. It is possible that, in these localities, hybridization occurs as many specimens from these areas have what appear to be intermediate characters in the genitalia. Such intermediate characters have been noted in *romeo parvorion* Holik, *romeo freyeri* Lederer, *romeo orionides* Burgeff, *romeo lozerica* Holik, *romeo urania* Marten and *osterodensis eupyrenaea* Burgeff.

Acknowledgment is due to Dr. P. Viette, Muséum national d'Histoire naturelle, Paris, for the loan of material from the Le Charles collection. We also thank Mr. M. Koch, Dresden, for supplying drawings of the genitalia of male and female paratypes of *osterodensis goriziana* Koch in his collection. Also to Mr. G. Pardo Gonzalez for the loan of a paratype of *nevadensis picos* Agenjo, and to Lt.-Col. W. B. L. Manley for making the loan possible.

Z. gallica Oberthür

♂ genitalia. Horns of uncus short, broad and flat, variable. In the aedeagus, the lamina dorsalis is triangular in shape, shorter and broader than that in *nevadensis* Rambur, laterally edged with strong spines. Near the base a transverse row of strong and fairly well developed spines, rather variable in length but usually longer than those in *nevadensis*. Central part of lamina dorsalis spiculate, anterior to basal spines, scobinate. Lamina ventralis rather narrow but broader at the base, comprised of a field of short, strong spines, latter stronger and larger at the base and towards the centre. A portion of the vesica spiculate, cornuti hardly evident. Vesical pad or "Blase" present.

♀ genitalia. "Schildchen" very broad, triangular in shape. A slight development of the lamella postvaginalis, lamella antevaginalis ovoid, elongate. Ductus bursae weakly sclerotized on one side, anteriorly. Bursa copulatrix spherical, signum vestigial or absent.

First pair of tibial spurs present or absent.

Superficially, *gallica* may be distinguished from *giesekingiana* Reiss by the narrower forewings and rather denser scaling. The middle forewing streak is rarely broken in *gallica* and, when this does occur, is found only in aberrant specimens.

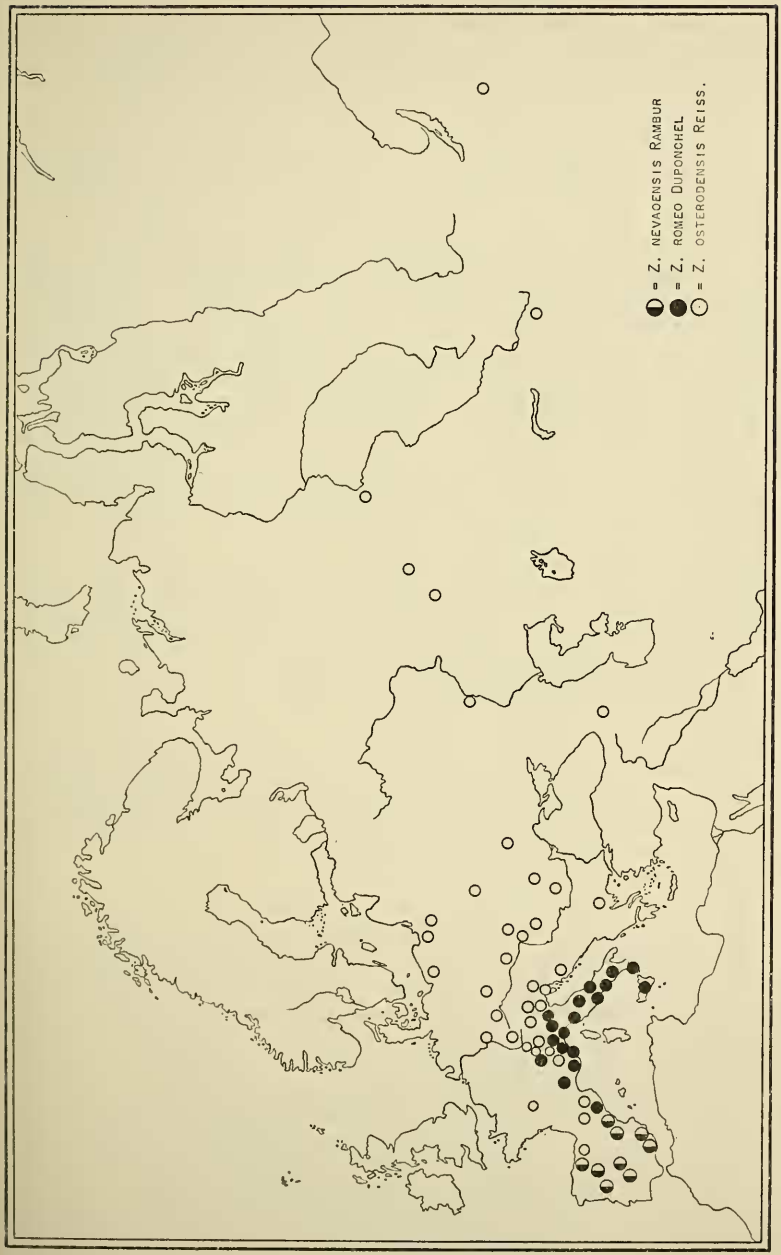

Fig. 1.—Distribution of *Zygaena nevadensis* Rambur, *Z. romeo* Duponchel, and *Z. osterodensis* Reiss.

Z. gallica gallica Oberthür

Z. gallica Oberthür, 1898, *Bull. Soc. ent. Fr.*, p. 21.

Type locality: Neighbourhood of Digne, Basses-Alpes, France, 1000 m.
Material examined: Lectotype ♂, 25 ♂♂, 3♀♀, Digne, Basses-Alpes.

♂ genitalia. As above. The differences in the genitalia of *gallica* and *giesekingiana* are slight and possibly do not justify their separation into two distinct species. The two lateral spines at the base of the lamina dorsalis are more strongly developed in *giesekingiana*.

♀ genitalia. Ductus bursae weakly sclerotized compared with that in *giesekingiana*, signum vestigial or absent in *gallica*, vestigial in *giesekingiana*.

The genitalia of *gallica* are figured by Le Charles (1935:15) and Alberti (1958: 314). The latter author has placed *gallica* as a subspecies of *nevadensis* Rambur but we see no justification for this. The genital differences, although small, remain constant. The lamina dorsalis of *gallica* is longer, while the lateral spines are longer and more strongly developed. In the females, the lamella antevaginalis in *gallica* is broader than that in *nevadensis* and the ductus bursae is broader and more heavily sclerotized. In *nevadensis* the signum is well developed but is vestigial or absent in *gallica*.

Reiss (1953: 141, pl. 9, figs. 10, 11) illustrates the nominate subspecies in colour.

Z. gallica frigidagallica Dujardin

Z. gallica frigidagallica Dujardin, 1956, *Bull. mens. Soc. linn. Lyon*, **25**: 254.

Type locality: Céuze, environs de Gap, Hautes-Alpes, France, 1500 m.
Material examined: 1♂, Céuze (coll. H. Reiss).

♂ genitalia. As in *gallica gallica*.

Z. gallica ssp.

A series of 60 ♂ and 4 ♀ from Mt. Ventoux, Perrache, Vaucluse, represents a new subspecies. The specimens differ from those of the nominate subspecies in having less rounded forewings. The red coloration is brighter and the hindwing border is narrower.

♂♀ genitalia. As in *gallica gallica*.

Z. giesekingiana Reiss

♂ genitalia. Horns of uncus short, broad and flat, variable. In the aedeagus, the lamina dorsalis is broad, triangular, laterally edged with strong spines, a larger and stronger spine on each side at the base, between these two large spines a transverse row of spines decreasing in length towards the middle. Central part of lamina dorsalis spiculate. Anterior to basal spines the lamina dorsalis is scobinate. Lamina ventralis broad at the base, narrowing anteriorly, comprised of a field of short, strong spines, latter thicker and shorter at base and towards the middle. Part of vesica spiculate, cornuti hardly evident, vesical pad or "Blase" present.

♀ genitalia. "Schildchen" very broad, triangular in shape. Lamella postvaginalis moderately developed, lamella antevaginalis curved but narrower than that in *gallica*. Ductus bursae moderately sclerotized on one side, bursa copulatrix spherical, signum vestigial.

First pair of tibial spurs present or absent.

Z. giesekingiana Reiss

Z. giesekingiana Reiss, 1930, in Seitz, Die Gross-schmetterlinge der Erde, Supplement, **2**: 9, pl. 1h.

Z. gallica f. *interrupta* Boursin, 1923, *Bull. Soc. ent. Fr.*, p. 68, fig. 1 (infraspecific).

Type locality: St. Barnabé (Vence to Coursegoules), Alpes-Maritimes, France, 1000 m.

Material examined: 11 ♂♂, 2 ♀♀, St. Barnabé; Grasse, Alpes-Maritimes.

♂♀ genitalia. As above, see also under *gallica gallica*.

The genitalia are figured by Le Charles (1953: 13) and Alberti (1958: 314). This species was originally described as a form of *gallica* by Boursin. It was later raised to specific rank by Reiss who renamed it *giesekingiana*. The name *interrupta* Boursin is infraspecific and, having no status in nomenclature, is not available. The name *giesekingiana* is therefore valid. Verity (1953: 51) incorrectly gave priority to the name *interrupta* Boursin. Le Charles (1953: 14) was of the same opinion and, in addition, considered *giesekingiana* and *gallica* to be conspecific. Alberti (*loc. cit.*) considered *giesekingiana* to be conspecific with *nevadensis* but we see no justification for this conclusion. The genital differences between *nevadensis* and *giesekingiana* remain constant. It is, however, difficult to decide whether *giesekingiana* and *gallica* are specifically distinct as the genital differences are small. It is interesting to note that they fall into two groups: (1) *gallica*, which has a wider distribution than *giesekingiana* and which at present can be separated into three geographical races or subspecies as follows: (a) *gallica gallica* from Digne, Basses-Alpes; (b) *gallica frigidagallica* from Céuze, Hautes-Alpes; (c) *gallica* ssp. from Mt. Ventoux, Vaucluse; (2) *giesekingiana* which is known from four localities, all closely situated in the Alpes-Maritimes, and which cannot be separated into various subspecies. The localities are St. Barnabé (type locality), Grasse, Coursegoules and Thorenc. The larvae of *giesekingiana* feed on *Lathyrus filiformis* Gay which is also the foodplant of *gallica* (Reiss, 1953: 135).

Reiss (1953: 141, pl. 9, figs. 1-8) illustrates *giesekingiana* in colour.

Z. nevadensis Rambur

♂ genitalia. Horns of uncus short, broad and flat, rather variable. In the aedeagus, the lamina dorsalis is rather long, triangular in shape, laterally edged with strong spines, a longer and more strongly developed spine on each side at the base. Between these two basal spines a transverse row of spines which vary in length and which become shorter towards the centre. Central part of lamina dorsalis spiculate, basal part anterior to large spines, scobinate. Lamina ventralis narrow, comprised of a field of short, strong spines which become smaller posteriorly. Part of the vesica spiculate, a single group of cornuti composed of a field of minute spines. Vesical pad or "Blase" present.

♀ genitalia. "Schildchen" broadly triangular but variable in shape. Lamella postvaginalis moderately developed, unsclerotized, lamella antevaginalis rather broad, elongate. Ductus bursae moderately sclerotized, especially on one side. Bursa copulatrix spherical, signum present, fairly strong, comprised of approximately 18-34 spines.

First pair of tibial spurs present or absent.

Z. nevadensis nevadensis Rambur

Z. nevadensis Rambur, 1866, Catalogue systématique des Lépidoptères de l'Andalousie, p. 166, pl. 1, fig. 10.

Z. nevadensis atlantica Le Charles, 1957, *Rev. franç. Lépid.*, **16**: 21, pl. 5, figs. 37, 38 (*nomen nudum*).

Type locality: central parts of the Sierra Nevada, south Spain.

Material examined: A series of both sexes from the Sierra Nevada and the Sierra de Alfacar, Granada.

♂ genitalia. Spines at base of the lamina dorsalis variable in length, usually short and reduced. A single group of minute cornuti, vesical pad or "Blase" present.

♀ genitalia. Lamella postvaginalis moderately developed, lamella antevaginalis broadly elongate, ductus bursae moderately sclerotized, signum present.

Le Charles (1957: 21) applied the name *atlantica* to two specimens of *nevadensis* which are purported to have been taken at Ifrane and Douala in Morocco. As no description accompanied the publication of the name *atlantica* Le Charles, it can only be treated as a *nomen nudum* and, for convenience, is placed here under the nominate subspecies of *nevadensis*. In the text, Le Charles stated that the specimens were referable to the species *romeo* Duponchel but in the legend to plate 5 refers them to *nevadensis*! The figures 37 and 38 on plate 5 undoubtedly represent two examples of *nevadensis*. It would be of interest to verify whether *nevadensis* does actually occur in Morocco.

Z. nevadensis dumalis Marten

Z. nevadensis dumalis Marten, 1957, *Ent. Z.*, **67**: 14.

Type locality: Sierra de los Filabres, upper half of Baza, south Spain, 1400 m.

We have been unable to examine material of this subspecies.

Z. nevadensis kricheldorffi Reiss

Z. nevadensis kricheldorffi Reiss, 1933, in Seitz, Die Gross-schmetterlinge der Erde, Supplement, 2: 252; 1931, *Int. ent. Z.*, **25**: 114, figs.

Type locality: Neighbourhood of Guarda, Portugal, 800 m.

The genitalia of this subspecies have not been examined.

Z. nevadensis guadalupei Koch

Z. nevadensis guadalupei Koch, 1948, *Eos, Madr.*, **24**: 326.

Type locality: Guadalupe, Prov. Caceres, Spain, 654 m.

We have been unable to examine material of this subspecies.

Z. nevadensis schmidti Reiss

Z. scabiosae schmidti Reiss, 1931, *Int. ent. Z.*, **25**: 112, figs.

Type locality: Neighbourhood of Arenas St. Pedro, Prov. Avila (Sierra de Gredos), Spain.

Material examined: 1♂, paratype, Arenas St. Pedro; 18 ♂♂, 9 ♀♀, San Ildefonso, Segovia and La Granja, Spain.

♂ genitalia. Lateral spines of lamina dorsalis rather shorter and thicker than those in ssp. *nevadensis*. Vesical pad or "Blase" present.

♀ genitalia. A slight development of the lamella postvaginalis, lamella antevaginalis elongate, ductus bursae moderately sclerotized, signum present.

Originally described as a subspecies of *scabiosae auct.* but later transferred by Reiss (1933: 252) to *nevadensis* which was then separated as a distinct species. The paratype examined is figured by Tremewan (1961b: 308, pl. 57, fig. 25).

Z. nevadensis muda Marten

Z. nevadensis muda Marten, 1957, *Ent. Z.*, **67**: 15.

Type locality: Upper half of the Tera valley, between Laguna de Yengua and Laguna de Villachica, east of Mt. Moncalvo, Prov. Zamorra, Spain, 1300 m.

We have been unable to examine material of this subspecies.

Z. nevadensis falleriana Reiss

Z. scabiosae falleriana Reiss, 1931, *Int. ent. Z.*, **25**: 111, figs.

Type locality: Albarracin, Sierra Noguera and Sierra Alta, Aragon, Spain, 1400-1700 m.

Material examined: 17 ♂♂, 11 ♀♀, Orihuela, Aragon, 1700 m.

♂ genitalia. Spines at the base of lamina dorsalis rather short but becoming longer laterally. A single group of cornuti, vesical pad or "Blase" present.

♀ genitalia. Lamella postvaginalis moderately developed, lamella antevaginalis elongate, ductus bursae moderately sclerotized, signum present.

This subspecies was originally described under *scabiosae auct.* but was subsequently transferred to *nevadensis* by Reiss (1933: 252).

Z. nevadensis picos Agenjo

A. scabiosae picos Agenjo, 1953, *Graellsia*, **11**: 1.

Type locality: Fuente Dé, Camaleño, Santander (Picos de Europa), Spain, 1001 m.

Material examined: 1 ♂, paratype, Fuenté Dé, Camaleño (G. Pardo coll.); 3 ♂♂, 10 ♀♀, Riano, Leon (W. B. L. Manley coll.).

This was originally described as a subspecies of *scabiosae* auct. but an examination of a paratype ♂ has shown it to be a subspecies of *nevadensis*. Agenjo, in the original description, also referred to specimens recorded by Reiss (1931: 113) and Koch (1948: 322) but these specimens are *osterodensis* (*scabiosae auct.*) and are referable to ssp. *cantabrica* Marten.

In addition to the paratype, a short series of *nevadensis* (3 ♂♂, 10 ♀♀) from Riano, Leon has been examined. These specimens were previously placed as ssp. *picos* which was then transferred to *nevadensis* (Tremewan, 1961a: 6; 1963: 8).

Z. nevadensis timida Marten

Z. nevadensis timida Marten, 1956, *Ent. Z.*, **66**: 287.

Z. agenjoi Le Charles, 1957, *Rev. franç. Lépid.*, **16**: 21, pl. 6, figs. 39, 40 **(syn. nov.)**.

Type locality: Neighbourhood of Vallibona, mountains between Castellon and Tortosa, east Spain, 900 m.

Material examined: 1 ♂, Tortosa (*Z. agenjoi* Le Charles, lectotype ♂ [Paris Museum coll.]).

♂ genitalia. As in *nevadensis nevadensis.*

We have been unable to examine the type material of *timida* Marten which was described as a subspecies of *nevadensis.* An examination of the lectotype ♂ of *Z. agenjoi* Le Charles, which was described as a species, shows it to be conspecific with *nevadensis.* The lectotype of *agenjoi* originated from Tortosa (leg. Marten) and was probably captured in the same locality as the type specimens of ssp. *timida,* under which the name is now placed as a synonym.

The lectotype ♂ of *agenjoi* was selected by Le Charles (1960: 103).

Z. nevadensis ssp.

A short series of *nevadensis* (6 ♂♂) from Sta. Fe, Sre. Montseny, Catalonia, probably represent a new subspecies. The most noticeable character in these specimens is the wide hindwing border. One specimen is strongly aberrant and has the forewing spots confluent and suffused with red scaling.

♂ genitalia. Spines at the base of the lamina dorsalis short but well developed, vesical pad or "Blase" present.

Z. mana Kirby

♂ genitalia. Horns of the uncus short, flat, variable. In the aedeagus, the lamina dorsalis is elongate and triangular in shape, laterally edged with short, strong spines. Near the base, a transverse row of strong spines, variable in length, often decreasing in size towards the centre. Central portion of lamina dorsalis spiculate, anterior to basal spines, scobinate. Lamina ventralis narrow, comprised of a field of strong, short spines, latter decreasing in size posteriorly. Portion of vesica spiculate, cornuti hardly evident. "Blase" absent.

♀ genitalia. "Schildchen" very broad, variable, triangular in shape. Lamella postvaginalis developed, weakly sclerotized, bursa copulatrix spherical, signum absent.

In superficial characters *mana* may be separated from *osterodensis* (=*scabiosae auct.*) by its smaller size, broader forewings with rounded apex and generally broader hindwing border. Forewing streaks rather thicker than those in *osterodensis.* Antennae of *mana* shorter and rather more heavily clubbed than the antennae of *osterodensis.*

First pair of tibial spurs absent.

Z. mana mana Kirby

Z. mana Kirby, 1892, A synonymic Catalogue of Lepidoptera Heterocera (Moths), p. 64 (nomen novum for *erebus* Staudinger).

Z. erebus Staudinger, 1867, *Stettin. ent. Ztg.,* **28**: 101 (preoccupied).

Z. erebaea Burgeff, 1926, *Mitt. münch. ent. Ges.,* **16**: 15.

Type locality: Adshara region, Georgia, Transcaucasia.

Material examined: 5 ♂♂, 2 ♀♀, Achalzych, Adshara region.

♂♀ genitalia. As above.

A considerable amount of confusion has existed in the synonymy of this species which was originally described as *erebus* by Staudinger. The name *erebus* Staudinger, 1867, is a secondary homonym of *erebus* Meigen, 1830, which is a synonym of *anthyllidis* Boisduval, 1829. Kirby (1892: 64) proposed the name *mana* to replace *erebus* Staudinger. In 1926, Burgeff proposed the name *erebaea,* apparently not aware of the name *mana*

Kirby. The name *erebaea* Burgeff is therefore a synonym of *mana* Kirby. This synonymy was correctly published by Verity (1953: 50) and has been accepted by Holik & Sheljuzhko (1955: 112) and Alberti (1958: 315).

The species has been confused with *adsharica* Reiss with which, superficially, it is very similar. However, the two species may be readily separated on genital characters. *Z. adsharica*, which flies in the same region as *mana mana*, is not closely allied and belongs to the *brizae* Esper group of species (*Cirsiphaga* Holik). In superficial characters, *adsharica* may be separated from *mana* by the lower forewing streak which is broader and occupies the whole of the area between veins 1b, 1c, and the median vein. In *mana*, the lower forewing streak is narrow and constricted in the middle and does not extend in breadth to vein 1b. The first pair of tibial spurs are present in *adsharica* but are absent in *mana*.

Z. mana chaos Burgeff

Z. chaos Burgeff, 1926, *Mitt. munch. ent. Ges.*, **16**: 15.

Z. erebus ab. *interrupta* Burgeff, 1914, *Mitt. münch. ent. Ges.*, **5**: 45, pl. 5, fig. 18 (infrasubspecific).

Type locality: Bethania near Tiflis, Georgia, Transcaucasia.

Material examined: 1 ♂, paratype, Bethania, Tiflis.

♂ genitalia. As in *mana mana*.

Verity (1953: 51) placed the names *interrupta* Burgeff and *chaos* Burgeff as synonyms of *mana*. This is incorrect as *chaos* is a distinct subspecies. The name *interrupta* is infrasubspecific and, although published earlier than *chaos*, is not available. Burgeff originally described *chaos* as a distinct species but Holik & Sheljuzhko (1955: 116) have correctly placed it as a subspecies of *mana*. The paratype examined is figured by Tremewan (1961b: 308, pl. 57, fig. 25).

Z. mana tarkiensis Holik & Sheljuzhko

Z. mana tarkiensis Holik & Sheljuzhko, 1955, *Mitt. münch. ent. Ges.*, **44/45**: 115.

Type locality: Berg Tarki near Petrovsk (Machatsh-Kala), Dagestan, Ciscaucasus.

Material examined: 2 ♂♂, 1 ♀, Kurush, Dagestan.

♂ ♀ genitalia. As in *mana mana*.

Holik & Sheljuzhko (1955: 116) placed the population of *mana* from Kurush under ssp. *tarkiensis*.

Z. rjabovi Holik

♂ genitalia. Horns of uncus short, flat and variable in shape. Lamina dorsalis triangular in shape, laterally edged with strong spines, a transverse row of strong spines, variable in length, near the base, central area spiculate, anterior to basal spines, scobinate. Lamina ventralis narrow, comprised of a field of short, strong spines, larger and more strongly developed at the base. A portion of the vesica spiculate, cornuti comprised of a field of minute spines. "Blase" absent.

First pair of tibial spurs present.

Z. rjabovi Holik

Z. mana rjabovi Holik, 1939, *Ent. Rdsch.*, **56**: 115.

Type locality: Daratshitshag, Armenia, 2000 m.

Material examined: 2 ♂♂, Daratshitshag (coll. H. Reiss), prep. Nos. 24154A, 24154B, F. Dujardin.

♂ genitalia. As above.

Holik originally described *rjabovi* as a subspecies of *mana* Kirby. Koch (1939: 403; 1940: 199) placed *rjabovi* as a distinct species. Holik (1940/41: 213) referred to Koch's opinions but still maintained that *rjabovi* should be considered a subspecies of *mana*. Reiss (1953: 141, pl. 9, figs. 15-18) placed *rjabovi* as a separate species and illustrated four specimens in colour. Holik & Sheljuzhko (1955: 117) placed *rjabovi* as a distinct species following the opinions of Koch (*loc. cit.*). Alberti (1958: 316) placed *rjabovi* as a subspecies of *mana*.

Z. rjabovi is closely related to *mana* and is very similar in genitalia but may be separated by the longer and more elongate lamina dorsalis. The spines at the base are shorter although this may be a variable character. The uncus horns of *mana* are rather larger and broader than those of *rjabovi*.

Superficially, it may be distinguished from *mana* by the broken, middle streak in the forewings.

Z. teberdica Reiss

♂ genitalia. Horns of uncus short, flat. In the aedeagus, the lamina dorsalis is triangular in shape, laterally edged with short, strong spines. Near the base a transverse row of strong spines, moderate in length. Central area of lamina dorsalis spiculate, anterior to basal spines, scobinate. Lamina ventralis narrow, comprised of a field of strong, short spines, latter decreasing in size posteriorly. Cornuti of vesica hardly evident, "Blase" present, well developed.

First pair of tibial spurs absent.

Z. teberdica Reiss

Z. erebaea teberdica Reiss, 1939, *Ent. Z.*, **53**: 113.

Type locality: Teberda region, north Caucasus.

Material examined: Holotype ♂, Teberda region (coll. H. Reiss), prep. no. 29154, F. Dujardin.

♂ genitalia. As above.

Z. teberdica was originally described as a subspecies of *erebaea* Burgeff (=*mana* Kirby) by Reiss who subsequently raised it to specific status (Reiss, 1953: 141, pl. 9, fig. 14). The type is figured in colour by Reiss (*loc. cit.*). Holik & Sheljuzhko (1955: 114) placed *teberdica* as a subspecies of *mana* Kirby. Alberti (1958: 315) placed the name *teberdica* as a synonym of *mana*. However, in our opinion, *teberdica* should be considered as a distinct species and may be separated from *mana* by the shape of the lamina dorsalis which, in the latter species, is more elongate than that in the former. The lateral and basal spines are longer in *mana*. The absence of the "Blase" in *mana* may, if constant, be a further character for separating the two species.

Superficially, *teberdica* differs from *mana* in its smaller size, rather broader hindwing border and the middle streak of the forewing. In *teberdica*, the middle streak is constricted but in *mana* is usually of equal width throughout.

(To be continued.)