

## Dragonflies from West Tien-Mu-Shan, Central China.

By

Syoziro Asahina.

Totsuka, III-123, Shinjuku-ku, Tokyo.

---

In the Zoological Museum, University of Copenhagen, there is a fine series of Chinese Odonata from West Tien-Mu-Shan, Chekiang Province, collected by Mr. E. Suenson during his excursion in the year of 1937. These are referable to twenty-seven species, of which one seems to be new to science.

Through the courtesy of Dr. S. L. Tuxen I had the privilege of studying this most interesting material, and a part of it were brought with me to compare with the type specimens preserved in several museums of the United States.

Before going further I should like to express my cordial gratitude to Dr. Tuxen and Mr. Suenson for their kind helps in completing this report. My thanks are also due to Dr. Erich Schmidt, Bonn a. Rh. who has given me valuable suggestions on the genus *Rhipidolestes*. Further, I must acknowledge my indebtedness to the authorities of the British Museum (N. H.), of the Cornell University, and of the California Academy of Sciences.

For a detailed explanation of the locality of Tien-Mu-Shan the reader should refer to Mr. Suenson's statement in the Lingnan Science Journal, 19, pp. 105—106, 1940. Mr. Suenson arrived at the foot of Tien-Mu-Shan on May 14, and collected until June 21 around the monastery there. From June 22 to July 3 he stayed at a temple up the mountain, 1050 m above sea-level. During this period he climbed up the summit which has an elevation of 1500 m.

### I. *Calopterygidae*.

#### 1. *Mnais tenuis* Oguma.

15 ♂♂ 14 ♀♀ 7. V.—9. VI. 1937.

Fourteen males have hyaline wings, while only one male has brownish orange ones. Among the females two are hyaline winged, the rest pale brown.

#### 2. *Matrona basilaris* Selys.

1 ♂ 1. VI; 1 ♀ 4. VI; 1 ♂ 19. VI. 1937.

3. *Caliphaea consimilis* MacLachlan (plate p. 227, fig. 1; textfigs. 1, 2).

*Caliphaea consimilis* MacLachlan, Ann. Mag. Nat. Hist. (6) 13 p. 434, 1894. "Two adult males" [Ta-chen-lu].

*Caliphaea consimilis* MacLachlan, Ann. Mag. Nat. Hist. (6) 17 p. 371, 1896. "Four females, two from Siao-Lou and two from Moupin".

*Caliphaea consimilis* Needham, Zool. Sinica 11 (1) p. 211, pl. 16, fig. 4, 1930. "Kwangsi and Western China" [in *Epalaginae*].

9 ♂♂ 4 ♀♀ 19. VI. 1937. \*)

Fraser has erroneously synonymized this species with *C. confusa* Selys from Nepal and Assam (J. Bomb. Nat. Hist. Soc. 33 (3) p. 595, 1929; Fauna Brit. India, Odonata, 2, p. 149, 1934).

The wings of *C. confusa* given by Laidlaw (Rec. Ind. Mus. 13 pl. 2, fig. 1, 1917) and Fraser (1929, 1934) seem excessively narrow. I shall give here a venation photograph of *C. consimilis* (p. 227, fig. 1). Fraser (1934 p. 148) mentioned that in the *Caliphaeinae* "mesothoracic triangle absent", but it is not the case so far at least *C. consimilis* is concerned.

The immature stage of *C. confusa* was described by Dr. Fraser (1943). His notes on the habits of this latter species are cited below.

"It breeds in small brooks meandering through march-

---

\*) Navás described a new species *C. nitens* from "Tien-mou-chan, Chekiang" (Navás, L.: Musée Heude, Nat. Ent. Chin. 2 fasc. 1 p. 2, 1934).

es on steep, heavily wooded hill-sides. . .". He later said "the imago occurs in marshes where it has been seen to oviposit; it is the only species of the Agrioidea, I know of, which breeds in stagnant waters".

## II. *Epallagidae*.

4. *Bayadera melanopteryx* Ris (plate p. 227, fig. 2; text-fig. 3).

*Bayadera melanopteryx* Ris, Suppl. Ent. 1 p. 49, 1912. "2 ♂♂ 3 ♀♀, Tsa-Yiu-San, 3., 15., 16., 25. VII. 1910, leg. Mell, Mus. Königsberg (Typen) und coll. Ris (Cotyphen)." [Text-fig. 2, a b ♂ appendages].

*Bayadera melanopteryx* Fraser, J. Bomb. Nat. Hist. Soc. 33 (1) pl. 1, fig. 1, 1928.

*Bayadera melanopteryx* Needham, Zool. Sinica 11 (1) p. 216, 1930. "Szechuen and Kwangtung". "Two males from the U. S. Nat. Mus. collected by D. C. Graham in July near Washan, and a pair from Hsi San Lang(?)".

*Bayadera melanopteryx* Schmidt, Konowia 10 (3) p. 177, 1931. "1 ♂ West-Tien-Mo-Gebirge (Tsche-kiang), 7. VII. 1930 (T.)" [leg. Suenson].

4 ♂♂ 2 ♀♀ 21. VI. 1937\*).

This is a remarkable species with the distal half of the wings coloured with dark brown, of which the extent seems considerably variable. Ris' original specimen taken from Tsa-Yiu-San, Kwangtung Province, has a dark area beginning at 2-3 cells distal from the nodus (♂) or at the middle between the wing base and nodus (♀). Needham (1930 p. 216) stated "... a brown band covering their apices and extending basalward beyond the level of the stigma, paler in the female." "Another pair (female from Yachow and a male from Behluhring near Chengtu, collected by D. C. Graham from the U. S. Nat. Mus.) having apparently identical genital characters, has a different distribution of the brown of the wings. A dif-

---

\*) Navás described a new species *B. melania* collected from "Tien-mou-chan, Chekiang" (Musée Heude, Not. Ent. Chin. 2 fasc. 1, p. 3, 1934).

fuse wash of this color covers the base as far out as the end of quadrangle, extends out along the front beyond the nodus and covers the extreme tip beyond the stigma. Is it a different species?"

The same band of our male specimen is shown in the accompanying figure. The female has a quite similar band.

It seems worth noting to call attention in regard to the wings of this species which are considerably broad at their distal half with the broadly rounded wing apices (pl., fig. 2).

The male caudal appendages (text-fig. 3) are somewhat different from that of the figure of Ris or of Fraser (1928). There is a small process in addition to the basal one, which feature somewhat resembles that of *B. bidentata* listed below.

5. **Bayadera bidentata** Needham (text-fig. 4).

*Bayadera bidentata* Needham, Zool. Sinica 11 (1) p. 218, pl. 16, fig. 7, 1930. "A pair from Kwangsi by the National Research Institute, and a single male from Zakow, Chekiang, collected by Y. T. Chu. C. U. Type No. 959".

1 ♂ 19. VI. 1937.

Only a single specimen missing the head was studied. The caudal appendages are shown here (text-fig. 4), the wings are hyaline, with only the costal and the subcostal spaces tinged with palest yellow, the wings are of usual width.

### III. *Megapodagrionidae*.

6. **Mesopodagrion tibetanum** MacLachlan.

1 ♂ 1. VII. 1937; 1 ♀ 3. VII. 1937, 1050 m.

For this species compare my paper on the Odonata from South Shensi.

7. **Rhipidolestes nectans** Needham? (plate p. 227, fig. 3; textfigs. 5—11).

*Taolestes nectans* Needham, Bull. Peking Nat. Hist. Soc. 2 (4) p. XI, 1928. "A single female specimen from Hangchow, China, collected May 18, 1928, and now in the Cornell University collection."

*Taolestes nectans* Needham, Zool. Sinica 11 (1) p. 227, pl. 16, fig. 13 [♂ app.], 1930. "A large number of specimens of both sexes collected in Hangchow the 15th of May, and several nymphs. One male in the Bureau of Entomology at Nanking. One from the California Academy of Sciences collected by E. C. van Dyke in Hangchow, May 19. C. U. Type No. 977."

?*Rhipidolestes bidens* Schmidt, Konowia 10 (3) p. 180, 1931. "1 ♂ adult, Hsüeh-Tau-Gebirge, Ninpo (Tsche-kiang), 5. VI. 1930 (T.)."

*Taolestes nectans* Needham, Peking Nat. Hist. Bull. 16 (2) p. 155 1941/42 (1948).

*Taolestes nectans* Needham, Bull. Mus. Comp. Zool. Harvard Coll. 94 (3) p. 162, 1944.

41 ♂♂ 13 ♀♀ 20. V., 7., 9., 19. VI., 3. VII. 1937.

#### Description:

♂ abd. 41—46 +1.5 H.W. 33—39, pt. (subcostal) 2.4—2.8.

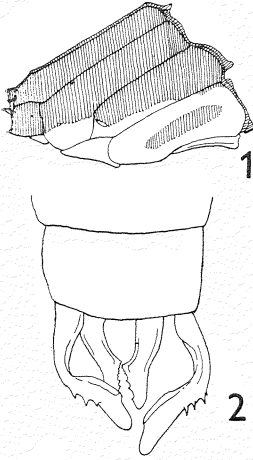
♀ abd. 36—38 H.W. 33—34, pt. 2.3—2.4.

Male: Body chocolate black with yellow stripes; in an aged insect front of head and sides of pterothorax heavily, dorsal side of 8—10 abdominal segments slightly pruinosed.

Head brownish black, labrum with bronze lustre (this cannot be designated as "greenish"); there is a broad yellowish band between the eyes covering postclypeus

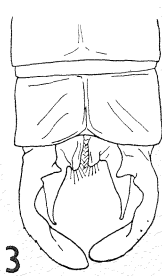
#### Explanation of text-figures

1. *Caliphaea consimilis*, ♂ Pterothorax, lateral view.
2. " " , Caudal appendages, dorsal view.
3. *Bayadera melanopteryx*, ♂ Caudal appendages, dorsal view.
4. *Bayadera bidentata*, ♂ Caudal appendages, dorsal view.
5. *Rhipidolestes nectans*(?), ♂ Pro- and pterothorax, lateral view.
6. " " , Caudal appendages, dorsal view.
7. " " , The same, lateral view.
8. " " , Superior appendage, oblique inner view.
9. " " , Dorsal process of the ninth abdominal tergite, lateral view.
10. " " , Penis, ventral view.
11. " " , The same, lateral view.

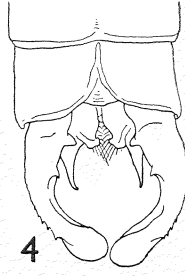


1

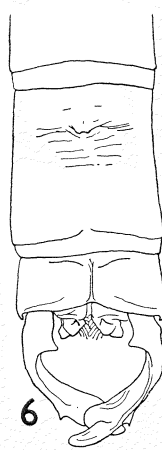
2



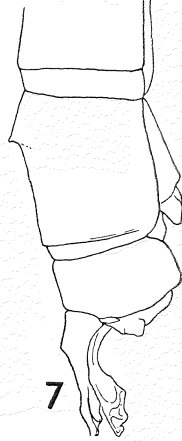
3



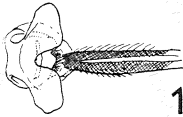
4



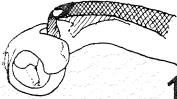
6



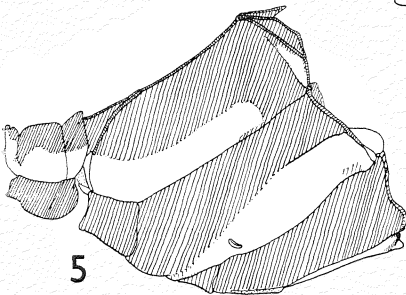
7



10



11



5



8



9

and ventral half of the antefrons; antenna entirely dark; postocular lobe moderately protruded backward; posterior side of the head (= occiput) black.

Prothorax flat above, the posterior lobe rounded as a flat arc; a broad yellow lateral stripe covering the lateral margin of the tergite continues with the broad antehumeral stripe of the pterothorax.

Pterothorax short and rather globulous, the lower part of the mesepisternum expanded laterad; the broad antehumeral stripe interrupted at the dorsal  $\frac{3}{4}$ , leaving a yellow trace at the extreme top of the stripe just below the antealar ridge; the metepisternum almost entirely, the metapostepimeron, and the central portion of the metapoststernum yellow.

Legs brownish, all the trochanters and the extreme base of the femora yellow.

Wings (p. 227, fig. 3) hyaline; the extreme tip palely smoked, faintly in a teneral insect (probably hyaline just after the emergence!), becoming darker in aged ones, but the dark area varies to cover from twenty to fifty or more cells. The petiolation of the wing is situated well distal to  $A_c$ , which lies decidedly distal to the middle between the two primary antenodals; the starting point of  $R_{4+5}$  is situated well proximal to the middle between the arculus and nodus; there are usually three (often four for a short distance) cell rows posterior to 1A. Pterostigma long and broad, costal side conspicuously shorter than the radial side, pale brownish when teneral, deep chocolate brown in mature insects; the most of the costal cells distal to pterostigma duplicated.

Abdomen cylindrical, only slightly expanded at the second and the eighth and ninth segments. The dorsal process at the base of the ninth segment inconspicuous, slightly notched (text-fig. 9). Superior caudal appendages divided at the apex, with basal internal and distal external spines. The inferior appendages short, provided

with an acute spine directed upwards (text-figs. 6—8).

Penis as shown by the text-figs. 10, 11.

Female: Body characters as that of the male, but never pruinose. Wing apices always hyaline, pterostigma pale yellowish brown or pale brown excepting the bordering vein. Legs also pale brown. The lateral valvules of the ovipositor extend well beyond the apex of the cercus. (The stylus extends far distal to it).

Remarks: Of this East Asiatic genus the following eight\*) species have been described:

*R. aculeata* Ris, 1912, Formosa, Japan (Kyusyu, Siko-ku); Fukien\*\*).

*R. aculeata yakushimensis* Asahina, 1951, Japan (Yakushima).

*R. okinawana* Asahina, 1951, Okinawa Island.

*R. nectans* Needham, 1928, Chekiang (Hangchow) (as *Taolestes*).

*R. bidens* Schmidt, 1931, Chekiang (Ningpo).

*R. truncatidens* Schmidt, 1931, Kwangtung (Canton et Tsa-Yiu-San).

*R. malaisei* Lieftinck, 1948, N.E. Burma.

*R. jucundus* Lieftinck, 1948, Fukien.

*R. flavostigma* May, 1933, Kwangtung (Wen-tu-Wei) (as *Lestomima*).

The first two insular species may be eliminated here. Among the other six, *R. malaisei* from Burma is rather widely separated from the others in the body coloration and the habitat, the remaining five are recorded from a limited area of coastal China, viz., Chekiang, Fukien and Kwangtung.

\*) Navás described two new species, "*Rhipidolestes apicatus*" from "Tien-mou-chan, Chekiang" (Musée Heude, Not. Ent. Chin. 2 fasc. 1 p. 4, 1934) and "*Taolestes rubripes*" from "Kuling, 9—26. VII. 1935" (ibid. 3 fasc. 4 p. 44, 1936).

\*\*\*) Recorded by Needham (Peking Nat. Hist. Bull. 5 (4) p. 7, 1931).



*R. jucundus* is closely related to the present species in the structure of the male caudal appendages, but differs by its smaller size and strongly orange tinted coloration and venational characters. Also *R. truncatidens*\*) differs by its narrower wings and squarely cut dorsal process of the abdomen. As Dr. Schmidt has suggested (in litt.) *R. flavostigma* should be nearest (or synonymized) to *R. truncatidens*, but it differs so far as the shape of the penile organ is concerned.

*R. bidens* and *R. nectans* and our present material are all from Chekiang Province, the first coincides with ours in every described characteristics except the non-bifid tip of the superior appendages of the former. "*Taolestes nectans*" was first described by a single female specimen, the male was later made known with figures of the caudal appendages (Needham 1930 p. 227, pl. 16, figs. 13 & 13a).

Though Needham's descriptions and figures are rather inadequate to decide the identity, it seems highly probable that our specimens will belong to *nectans*. Dr. Schmidt is also of the opinion that his *bidens* will be the same as *nectans*.

Dr. Needham noted neither the dark area of the male wing tips, nor the pruinosity of the body, but as his material was collected in an early season, it may not be unreasonable to surmise that his specimens are teneral ones which has not yet become pruinosed on the body and not tinted with brown on the wing apices.

In the collection of the California Academy of Sciences there is one rather teneral female specimen, labeled "Hangchow, China, May 19, 1923, presented by E. C. Van Dyke collector". Doubtless this is the specimen Needham (1930 p. 228) mentioned at the end of his description. This specimen has an abdominal length of 38.5 mm,

---

\*) Through the kindness of Dr. E. Schmidt I could study a male specimen from his collection.

and the hind wing 34 mm, its coloration and body markings are quite similar to our female specimens.

Here I should tentatively make our material belong to Needham's "*nectans*" and give the figures of the important body structures.

#### IV. *Synlestidae*.

##### 8. *Megalestes suenisoni* n. sp. (text-figs. 12—14).

1 ♀ 1. VI. 1937.

Description: ♀, rather teneral specimen (holotype)\*).

Abd. 50, hind wing 42.5, pt. 2,7 (f. w.) 3.0 (h. w.).

Ground colour yellow with ordinary Lestine metallic green patterns. Dorsal side of the head including the labrum metallic green, anteclypeus dull yellow with two blackish spots; lateral side of mandible, basimandibular sclerite, labium and postocciptut pale yellow.

Prothorax mostly yellow, a lateral dark band covers the lateral part of the tergite and the centre of the pleurite. The posterior lobe raised as an arc of which the centre depressed backward (text-fig. 13). The acrotergite of the pterothorax transversely narrow with the pit of the tergal apophysis 2.

Pterothorax mainly yellow, a broad greenish band covers the posterior half of the mesepisternum and a greater part of the mesepimeron. Thus a broad central yellow stripe runs throughout the prothorax and the mesothorax including the antealar triangles. Metathoracic pleurites yellow except a greenish area of metepisternum above and a dark streak at the top of metepimeron. Venter of thorax, coxae, a greater part of trochanters yellow, other part of the legs pale brown.

Wings narrow, petiolated well proximal to Ac, which is situated well distal to the middle of the two primary antenodals. 1 R<sub>3</sub> originates well proximal to the middle between arculus and subnodus. Postnodals 24—26 in

---

\*) Preserved in the Zoological Museum, Copenhagen.

the fore wings, 10—22 in the hind wings. Pterostigma pale brown.

Abdomen cylindrical, distal three segments considerably dilated; dorsal side pale greenish, extreme bases of 3—7 very narrowly yellow. Last segment and the cercus entirely yellow, the latter is short, nearly half as long as the length of the former.

Remarks: I feel a little hesitation to describe a new species based upon a single teneral female specimen. From the Chinese area five species\*) of *Megalestes* has been described, some of them are only briefly described upon rather insufficient material.

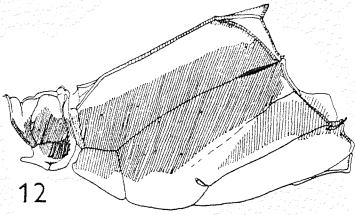
The present new species is most closely allied to *M. heros* Needham which was described on two rather incomplete specimens collected in Fukien and Szechuen (Needham, Zool. Sinica 11 (1) p. 229, 1930). Later, for this species, Dr. Chao supplemented the description by mature males and gave the description of allotype female.

---

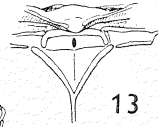
\*) Navás described *M. ricci* from "Kuling (Kiangsi) ♀ 11. IX. 1934, ♂ 14. IX. 34" (Musée Heude, Not. Ins. Chin. 2 fasc. 5, p. 90, 1935).

#### Explanation of text-figures

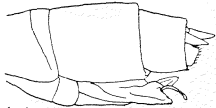
12. *Megalestes suenisoni*, ♀ Thorax, lateral view.
13. " " , Posterior lobe of prothorax and mesothoracic acrotergite, dorsal view.
14. " " , Abdominal end, lateral view.
15. *Megalestes maai*, ♀ (Formosa) Posterior lobe of prothorax and mesothoracic acrotergite, dorsal view.
16. *Sinolestes edita*, ♀ Head, dorsal view.
17. " " , Thorax, lateral view.
18. " " , Abdomen, lateral view.
19. " " , Abdominal end, lateral view.
20. *Coeliccia cyanomelas*, ♂ Penis, lateral view.
21. *Ceylonolestes gracilis extraneus*, ♀ Thorax and basal three abdominal segments, oblique lateral view.
22. *Cercion v-nigrum*, ♀ Anterior part of the body, oblique lateral view.
23. " " , Posterior lobe of prothorax, dorsal view.
24. " " , Abdominal end, lateral view.



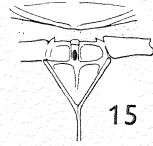
12



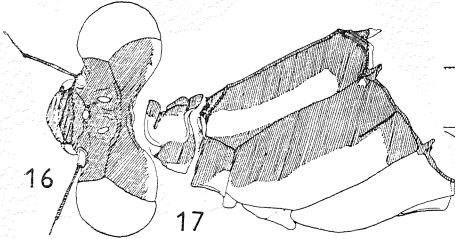
13



14

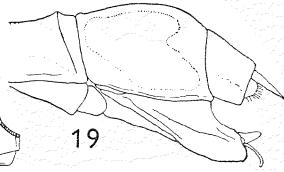


15

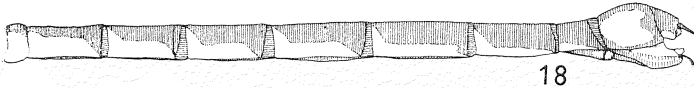


16

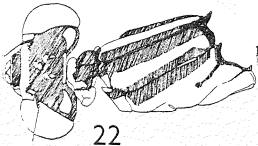
17



19



18



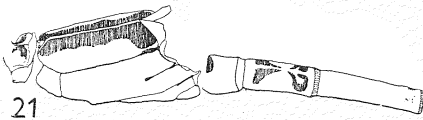
22



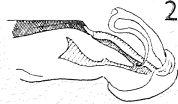
23



24



21



20

His female specimen stated as teneral differs from ours: 1. "occiput with an obscure yellow band extending from eye to eye"; 2. "abdomen reddish, segments VIII-X with metallic lustre". I regret he did not give any description of the prothoracic tergite and the acrotergite of the mesothorax. Dr. Chao's figure of the abdominal end appears to be a simple sketch, but the short cercus resembles that of *suensoni*.

*M. chengi* Chao (1947) described from Fukien differs from *suensoni* by the smaller size ("hind wing 32"), the longer ovipositor and the fewer postnodal cross veins.

Another two Chinese species *M. micans* Needham and *M. distans* Needham have been described, the former on a male insect from Szechuen, the latter on several males and females from Szechuen and Kwangsi. Both are smaller in size (hind wing 35, 36—38 mm, respectively), and there are some differences in colour patterns, though these are described on mature males. (The description of the female *distans* is quite inadequate.)

*M. suensoni* is also clearly differentiated from Formosan *M. maai* Chen (Biol. Bull. Fukien Christ. Univ. 6, p. 27, 1947) by the structure of the prothorax and the cercus. The latter species was described on the male insect only, so I give here the description of the allotype female.

[*Megalestes maai* Chen.

Allotype female: 1 ♀ (ad.) Abd. 49, hind wing 36.5, pt. 2 (f. w.) 2.4 (h. w.).

Ground colour of the body yellow with bronze green markings.

Head metallic dark green, only the anterior border of labrum, lateral side of mandible excepting an anterior spot, perimandibular sclerite, labium, base of maxilla and postocciput yellow.

Prothorax bronze green, the anterior lobe, the median part of posterior lobe and a greater part of the pleurites

citron yellow. The posterior lobe is more or less raised, its ridge is interrupted at the centre. Acrotergite of the mesothorax transverse, three times as broad as long (four times in *suensoni*) (text-fig. 15).

Pterothorax yellow covered with bronze to the level of the first lateral suture. The second lateral suture is covered by a broad black stripe, broadened above and confluent with the bronze of the front.

Legs pale brown, coxae, trochanters and the extreme base of the femora yellowish.

Wings hyaline, venation and pterostigma dark brown, postnodals 19—23 in fore wings, 16—18 in the hind wings.

Abdomen bronze above, with terminal black ring on 1—7, which is becoming broader on 3—7; 8 very short, 9 swollen, almost bronze brown, 10 cylindrical and entirely yellow, half as long as 9. Cercus brownish, slender, longer than the half of 10. Ovipositor blackish, not reaching the end of abdomen.

The type specimen is deposited in my collection in Tokyo.]

9. *Sinolestes edita* Needham (plate p. 227, fig. 4; text-figs. 17—19).

*Sinolestes edita* Needham, Zool. Sinica 11 (1) p. 234, 1930.

♀ "Tien Tai, Chekiang".

*Sinolestes ornata* Needham, Zool. Sinica 11 (1) p. 244, 1930.

♂ "Pinglan, Shan-fang, Lo-chen-hsien, Aug. 26"; "Kwangsi".

*Sinolestes ornata* May, Senckenbergiana 15 (3/4) p. 259, 1933.

"2 ♂ 1 ♀ Sui-Yün-San (Kanton); 1 ♂ Wen-Tung-Wei (Kanton); 1 ♂ Yan-San-Ta-Kan (Kanton)."

*Sinolestes edita* Chao. Biol. Bull. Fukien Christ. Univ. 6 p. 21,

1947. (Nymph) "Ta-Chu-Lan, Shauwo Hsien (Fukien)".

3 ♀♀ 16. V. 1937.

This is a bulky bodied and broad winged remarkable insect allied to the South African *Chlorolestes*, but much larger in size. Three species, *edita*, *truncata* and *ornata* were described by Needham, Chao synonymized the last to the first.

There is a possibility to synonymize even the second species, if considered from distribution and the only stated difference in the width of the brownish wing band. Such a band is very variable in the African akin, *Chlorolestes* spp.

A mature female insect has the abdomen 47, the hind wing 39, the pterostigma (costal) 3.5 mm. The posterior lobe of the prothoracic tergite is broad and flat, somewhat visor-like. The cercus black and spine-like.

### V. *Lestidae*.

10. ***Ceylonolestes gracilis extraneus*** Needham (text-fig. 21).

*Lestes extranea* Needham, Zool. Sinica 11 (1) p. 233, 1930.  
"Kiangsu(?)" [1 ♂].

*Lestes gracilis extraneus* Schmidt, Konowia 10 (3) p. 178, 1931. "1 ♀ Tien-Tun-Gebirge, Ninpo (Tsche-kiang), 30. V. 30. (T.)".

1 ♀ 24. V. 1937.

In this female specimen the dark markings of the thorax is conspicuously reduced, the middorsal stripe has no median lateral widening and there is only a single dark spot on the mesepimeron (text-fig. 21).

I have a male specimen taken by Mr. K. Shirahata in Hupeh Province, which has the median lateral widening and one more dark spot along the humeral suture. In this latter specimen, however, the width of the middorsal dark stripe is considerably narrower than that of the Japanese race, *C. gracilis peregrinus* Ris, therefore I hope to retain *extraneus* for continental Chinese race after Schmidt.

### VI. *Platycnemididae*.

11. ***Coelliccia cyanomelas*** Ris (text-fig. 20).

17 ♂♂ 7 ♀♀ 1., 4., 9., 19., 20. VI. 1937.

In the body pattern, the structure of the caudal appendages and the penile organ, these agree quite well

with Formosan specimens. I did not attempt to compare them with *C. didyma* Selys, to which *cyanomelas* appears to be greatly allied.

### VII. *Agrionidae*.

12. ***Ceriagrion fallax*** Ris.

6 ♂♂ 20. VI. 1937.

13. ***Cercion v-nigrum*** Needham (text-figs. 22—24).

*Coenagrion v-nigrum* Needham, Zool. Sinica 11 (1) p. 269, 1930. "1 ♂, Chungking, Szechuen".

*Coenagrion barbatum* Needham, Zool. Sinica 11 (1) p. 270. "2 ♂ 1 ♀ Chengtu, 1 ♂ Chungking, Szechuen; ♂♂♀♀ at the foot of Washan, Hopei". *Syn. nov.*

I have a long series of specimens of this species taken in Manchuria, which confirmed that *v-nigrum* and *barbatum* are conspecific. The former is a very pale form of the latter.

Here I shall give the figures of the body (text-figs. 22, 24) and the posterior prothoracic lobe (text-fig. 23).

14. ***Mortonagrion selenion*** Ris.

10 ♂♂ 18 ♀♀ 19. VI. 1937.

### VIII. *Gomphidae*.

15. ***Sinogomphus peleus*** Lieftinck.

*Gomphus peleus* Lieftinck, Temminckia 4 p. 285, 391, 1939.

"2 ♂ (ad.) E. China, Fukien, near Kwa Tun, 2300 m alt., 31. V. & 1. VI. 1938 Klapperich leg."

*Sinogomphus peleus* Chao, Acta Ent. Sinica 4 (1) p. 48, 1954.

"♀ Allotype Ta-Chu-Lan, Fukien, 10. VI. 1942 leg. Maa; ♂ Ta-Chu-Lan, 3. VIII. 1940."

1 ♂ 20. VI; 9 ♂♂ 21. VI; 4 ♂♂ 1 ♀ 3. VIII. 1937.

Agree exactly with the description by both authors.

16. ***Stylogomphus tantulus*** Chao (text-figs. 25—28).

*Stylogomphus tantulus* Chao, Acta Ent. Sinica 4 (1) p. 62,

1954. "♀ (holotype) Shaowu, Fukien, 2. V. 1943, Chao leg. in coll. Acad. Sin.; ♀ (paratype) Shaowu, Fukien, 7590 foot,

13. VII. 1938, Klapperich leg. in coll. König. Mus. Bonn."

1 ♂ 3. VII. 1937, 400 m.



## Description of the allotype male.

Mature ♂ abd. 30+1.4 mm, hind wing 23, pt. 2.5 (f. w.), 2.7 (h. w.).

Head black, labium except the anterior border yellow; lateral side of the mandible and perimandibular sclerite pale yellow; labrum yellow with the narrow anterior margin and a broad triangular basal area black; anteclypeus dull yellow; postclypeus shining black with lateral yellow spot; antefrons black, with an ordinary anterodorsal yellow band, postfrons and antennae black, there is a short transverse ridge posterior to the lateral ocelli; the dorsal part of the occiput small, fringed with long black hairs, posterior side of the occiput entirely black, there is no peculiar structure on the postocciput, but its dorsal part is gently produced to make a short tongue.

Prothorax almost black; the apex of cervical sclerite 2, the anterior border of the anterior lobe finely so, and the lower part of the pleural sclerites yellow.

Front of the pterothorax black, the yellow collar stripe is very slightly interrupted by the dorsal carina; the oblique episternal yellow stripes short, divergent downwards; there is no pale antehumeral stripe. Sides of the pterothorax yellow, both the first and the second lateral stripes complete, running parallel. Ventral side of the pterothorax almost yellowish.

Legs black, coxae except their anterior side yellow. Metafemur short, its end reaching the distal border of the second abdominal segment.

Wings hyaline, basal half palely enfumed with yellow. Veins and pterostigma brownish black, antenodals 10—11, postnodals 7—9.

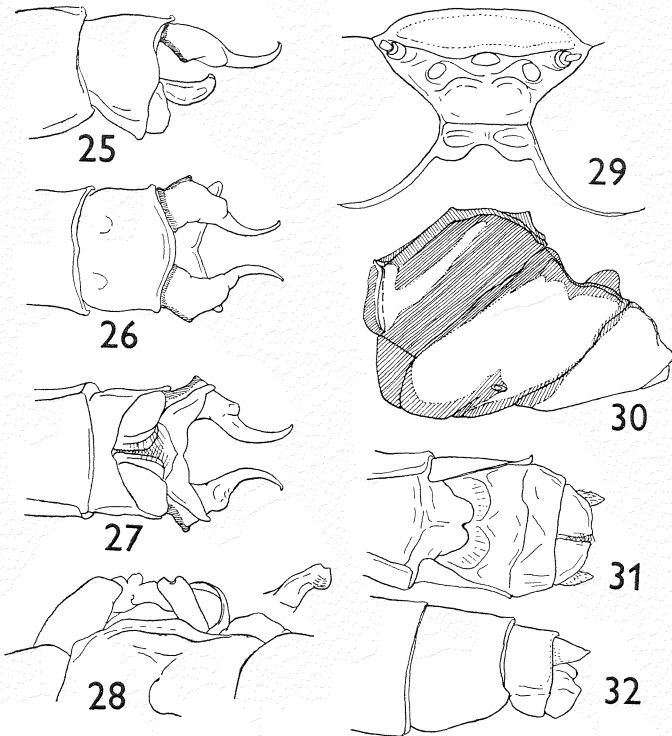
Abdomen mat black, with the lateral spots on 1 and 2, dorsal transverse line on 1, middorsal longitudinal stripe on 2, narrow basal ring on 3—7 yellow.

Accessory genitalia on 2—3 segment as the accompanying figure (text-fig. 28).

Superior appendages cream white, only the extreme base, covering the basal lateral callus, dark.

Inferior appendage black, broadly divergent.

Remarks: *Stylogomphus tantulus* was described on female insects, but it is highly probable that our specimen represents its male, which is easily separated from



25. *Stylogomphus tantulus*, ♂ Caudal appendages, lateral view.  
 26. " " , The same, dorsal view.  
 27. " " , The same, ventral view.  
 28. " " , Accessory genitalia, lateral view.  
 29. *Davidius fruhstorferi serenus*, ♀ Head, dorsal view.  
 30. " " " , Pterothorax, oblique lateral view.  
 31. " " " , Abdominal end, ventral view.  
 32. " " " , The same, lateral view.

*S. inglisi* Fraser (Darjeeling district), *ryukyuanus* Asahina (Ryukyu) and *chunliuae* Chao (Fukien) by the broadly divided inferior appendage; from *S. suzukii* by the thoracic patterns and the presence of the median tubercle of the superior appendage.

17. **Davidius fruhstorferi serenus** Needham \*) (text-figs. 29—32).

*Davidius serenus* Needham, Peking Nat. Hist. Bull. 16 (2) 154, 1941 (1948). "Single specimen [♀] collected at Kuling, China in July 1933 by Dr. Ting-Wei Lew".

*Davidius serenus* Needham, Bull. Mus. Comp. Zool. Harvard Coll. 94 (3) p. 161, 1944. "... a single specimen collected at Kuling, China in July 1933 by Dr. Ting-Wei Lew".

1 ♀ 19. V.; 1 ♀ 2. VII.; 1 ♀ 3. VII. 1937, 1050 m.

In the general body-markings these are allied to Tonkinese *fruhstorferi*, a comparison with three females in the British Museum (N. H.) confirmed this. The wings are, however, not tinted with pale brown as the Tonkinese ones.

Needham's *serenus* was described on a female insect, he said "the subgenital plate . . . about four fifth as long as the venter of the 9th segment." Two of our specimens agree with it, but another one has a very short valvula vulvae (subgenital plate) as shown in fig. 31.

As the other details of our specimens closely ally each other I shall tentatively leave all the material in a single subspecies *serenus*. For the same structure of Tonkinese *fruhstorferi* see my paper on the Odonata from Nepal (Fauna and Flora of Nepal Himalaya, vol. I, p. 297, 1955).

### IX. *Cordulegasteridae*.

18. **Chlorogomphus suzukii** Oguma (text-figs. 33—41).

*Orogomphus suzukii* Oguma, Ins. Mats. 1 (2) p. 88, 1926. ♂ "Honshu (Kioto Suzuki)".

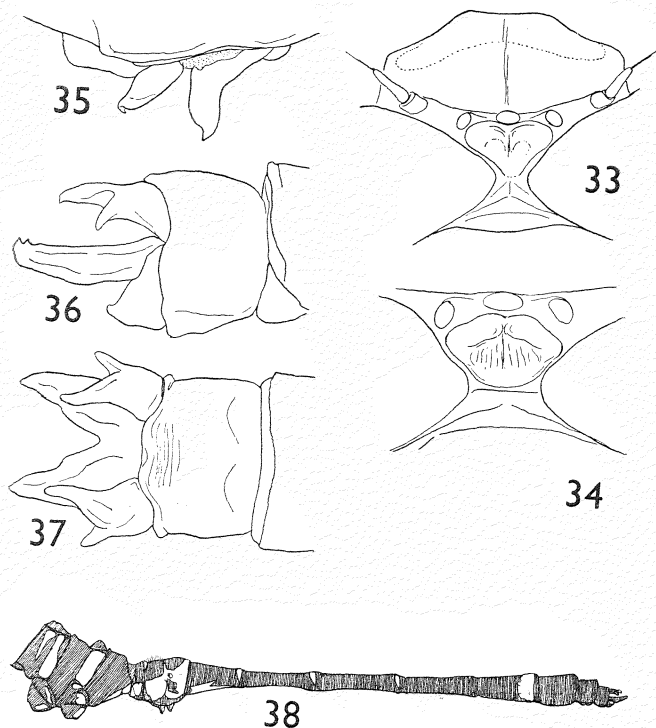
---

\*) This is somewhat allied to "*Gomphus junior* Navás" ♂♀ from Kuling, Kiangsi (Mus. Heude, Not. Ent. Chin. 3 (4) 38, 1936).

*Chlorogomphus suzukii* Fraser, Mem. Ind. Mus. 9 p. 254, 1932  
[citing Oguma, 1926].

*Chlorogomphus suzukii* Chen, Quart. J. Taiwan Mus. 3 (3)  
p. 143, 1950. ♂♀ "Heng-Chun, Kauhsiung Hsien, 1 ♂; 1 ♀;  
Pu-Li, Taichung Hsien 1 ♂ 1 ♀ (Allotype)." (Formosa).  
1 ♂ 3. VII. 1937. 400 m.

*Ch. suzukii* was described on a single male specimen labeled "Kyoto, Suzuki", but I feel much doubt of the habitat. Chen recorded three males and one female from



33. *Chlorogomphus suzukii*, ♂ Head, dorsal view.  
34. " " , ♀ (Formosa), Head, dorsal view.  
35. " " , ♂ Accessory genitalia, lateral view.  
36. " " , Caudal appendages, lateral view.  
37. " " , The same, dorsal view.  
38. " " , Body markings of thorax and abdomen, lateral view.

Formosa, I have studied one female from Formosa, preserved formerly in Suzuki's collection and now in the Takarazuka Insect Museum.

This is the first record of this species from the continental China. The present specimen agrees well with the male from Formosa except that there is no small yellow spot above in the black of the mesepimeron and the metepimeron.

Here will be given the figures of the caudal appendages of the type male specimen preserved in the Entomological Museum, Hokkaido University, together with the same of the type specimen of *Ch. nasutus* Needham (Kwangsi)\* (text-figs. 42—45) to which *C. suzukii* is closely allied. Another interesting Chinese species, *C. tunti* Needham (Szechuen)\* seems also allied to *suzukii*, its post-frontal region will also be illustrated here (text-fig. 46).

In the structure of the male antefrons *suzukii* will readily be differentiated from *nasutus* (see text-figs. 33 and 44).

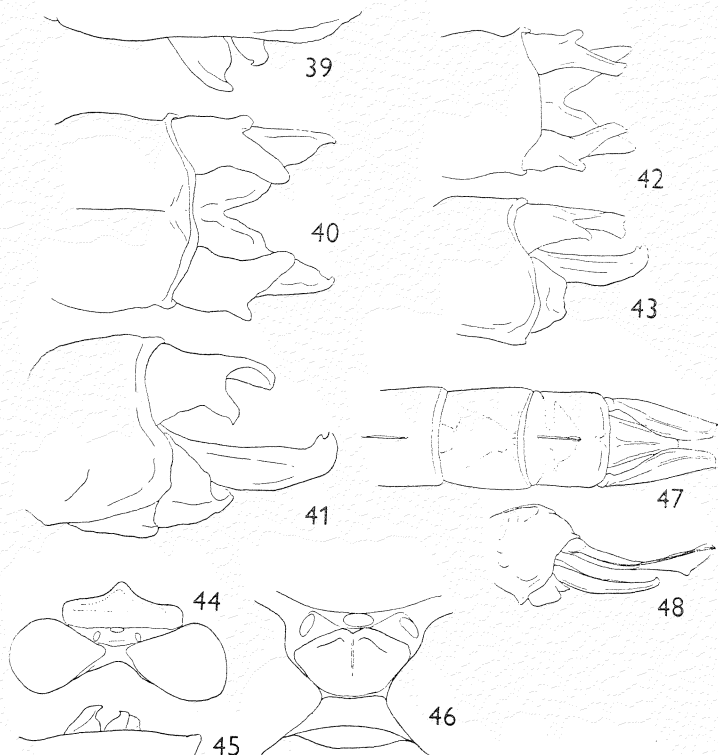
#### X. *Aeschnidae*.

19. ***Periaeschna magdalena*** Martin (text-figs. 47, 48).  
*Periaeschna magdalena* Martin, Cat. Coll. Selys, Aeschnines, fasc. XX, p. 157, 1909. "♀ Coll. R. Martin, Tonkin".  
*Periaeschna magdalena* Laidlaw, Rec. Ind. Mus. 22, p. 81, 1921. "1 ♂ 1 ♀ Tura, Garo Hills, Assam."  
*Periaeschna magdalena* Fraser, Bom. Nat. Soc. 28 p. 110, 613, 1922.  
*Periaeschna magdalena* Laidlaw, Proc. U. S. Nat. Mus. 62 p. 11, 1923.  
*Periaeschna magdalena* Needham, Rec. Ind. Mus. 34 p. 213, 1932.  
*Cephalaeschna magdalena* Needham, Zool. Sinica 11 (1) p. 80, 1930. "One male . . . collected in Lo-Chen-hsien, June 4, [Kwangsi?]"  
*Periaeschna magdalena* Fraser, Fauna Brit. India, Odonata 3, p. 82, 1936. "Bengal, Assam and Tong-king".  
*Gynacanthaeschna sikkima*(?) Asahina (nec Karsch), Kontyu 14 (1) p. 24, 1940. "1 ♂ 1 ♀ Sozan, Formosa, 7. VIII. 1936".

\*) Type specimen preserved in the Cornell University.

1 ♂ 17. VI. 1937.

This is a brownish species in the *Cephalaeschna* group, and may be characterized by the following points: 1. Body



39. *Chlorogomphus suzukii*, ♂ (Type specimen from Formosa) Accessory genitalia, lateral view.  
 40. " " , ♂ (Type specimen from Formosa) Caudal appendages, dorsal view.  
 41. " " , The same, lateral view.  
 42. *Chlorogomphus nasutus*, ♂ (Type specimen from China) Caudal appendages, dorsal view.  
 43. " " , The same, lateral view.  
 44. " " , Head, dorsal view.  
 45. " " , Accessory genitalia, lateral view.  
 46. *Chlorogomphus tunti*, ♀ Head, dorsal view.  
 47. *Periaeschna magdalena*, ♂ Abdominal end, dorsal view.  
 48. " " , Caudal appendages, lateral view.

rather large in this group (h. w. 45 mm), 2. Pterostigma medium-sized covering about three and a half cells, 3. Basal space in the fore wing crossed by 6-7, and in the hind wing by 5-6 veinlets, 4. Triangle divided into 5-6 cells, 5. Anal triangle with three-cells, 6. Eyes broadly contiguous, 7. Antefrons, seen from the front, narrow, the top considerably pointed, without distinct black marking, 8. Superior appendage broad and pointed at the end; seen from the side, with a distinct apical ventral corner (text-fig. 47), 9. Female tenth abdominal sternite protruded backwards ending in two spines, ovipositor large. 10. Female cercus short and inconspicuous, nearly as long as the tenth segment, 11. Body dark brown striped with yellow, much yellowish when teneral, becoming darker with the age. The extreme base of the wings tinted with pale brown.

Now the range of distribution extends to: Tonkin, Assam, Bengal, Kwangsi(?), Formosa, Chekiang.

### XI. *Libellulidae*.

#### 20. *Libellula melli* Schmidt.

*Libellula depressa* Needham, Zool. Sinica 11 (1) p. 124, 1930.

"1 ♀ from 5 kilometers north-west of Chengtu, July 5, 1924, collected by D. C. Graham and belonging to the U. S. Nat. Museum, and 1 ♀ from Kuanhsien", "Szechuan".

*Libellula melli* Schmidt, Opusc. Ent. 13 p. 120, 1948. "1 ♂ Tsha-jin-san, 6. V. 1911; 1 ♂ China-Canton, Mell leg."

3 ♂♂ 20. VI. 1937.

This is an interesting species allied to the European "broadbodied *Libellula*" (*Libellula depressa*). As Schmidt has supposed Needham's "*depressa*" from Szechuen most probably belongs to the same species.

#### 21. *Orthetrum testaceum testaceum* Burmeister.

1 ♀ 21. V. 1937.

In his monograph Needham recorded a male specimen of this species from Fukien, but he later changed the

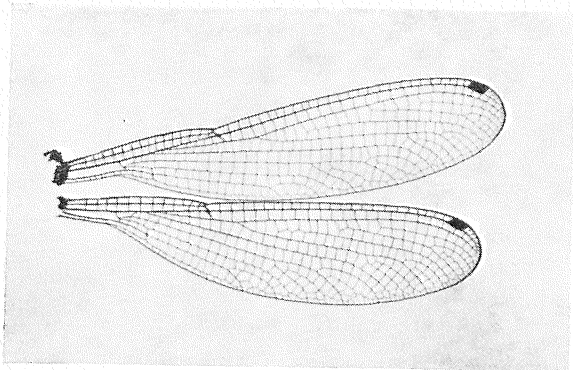


Fig. 1. *Caliphaea consimilis* ♂.

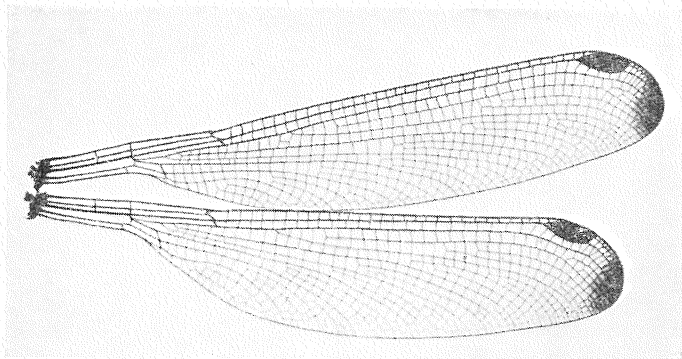


Fig. 3. *Rhipidolestes nectans*(?) ♂.

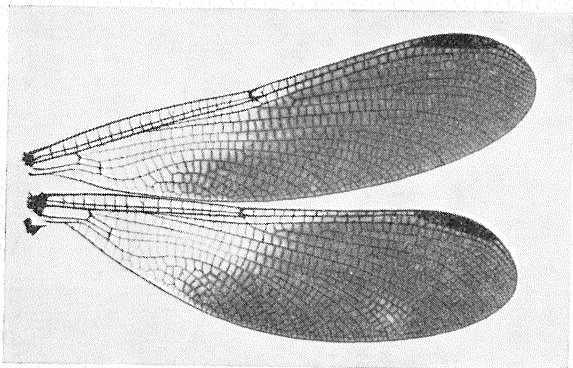


Fig. 2. *Bayadera melanopteryx* ♂.

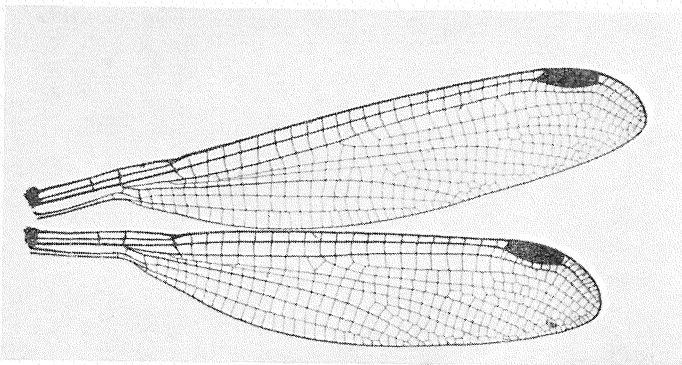


Fig. 4. *Sinolestes edita* ♀.



name to be *O. chrysis* Selys (Needham, Peking Nat. Hist. Bull. 6 (3) p. 1, 1932).

There is a "Navasian" record of "*O. testaceum*" from Yao-shan (Kwangsi) in Mus. Heude, Not. Ent. Chin. 3 fasc. 4 p. 42, 1936.

22. ***Orthetrum triangulare melania*** Selys.

5 ♂♂ 1 ♀ 10. VI.; 8 ♂♂ 3 ♀♀ 21. VI., 3. VII. 1937.

23. ***Orthetrum japonicum internum*** MacLachlan.

2 ♀♀.

24. ***Lyriothemis pachygastra*** Selys.

2 ♂♂ 7. VI. 1937.

25. ***Sympetrum infuscatum*** Selys.

1 ♂ 6. VI., 1 ♂ 9. VI., 2 ♀♀ 20. VI., 4 ♂♂ 2 ♀♀ 1., 19., 20. VI., 3. VII. 1937.

26. ***Sympetrum eroticum ardens*** MacLachlan.

6 ♂♂ 12 ♀♀ 17—21. VI. 1937.

27. ***Sympetrum risi*** Bartenef.

1 ♂ 19. VI. 1937.

This will be the first record of the species from Central China.

---