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 REPORT ON CERTAIN GROUPS OF NEUROPTEROID
INSECTS FROM SZECHWAN, CHINA

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For more than 15 years Dr. D. C. Graham has been sending neuropteroid insects from Szechwan Province, China, to the United States National Museum. In 1928 the late Dr. A. B. Martynov, stopping at Washington, borrowed some of the Trichoptera and in 1931 published a paper on them.¹ Later some of the Plecoptera were lent to Dr. P. W. Claassen and Dr. C. F. Wu. They described some species in 1934.² The great bulk of the material, however, remained unstudied. In 1937 most of that on hand was lent to me, and in 1938 the remainder and some more that had recently arrived. I induced Dr. F. M. Carpenter to work on the family Panorpididae, and his report has recently been issued.³ The present paper deals with all specimens in the collection not considered by these authors. The main part of the collection (including holotypes) is in the National Museum; duplicates, when present, have been retained for the Museum of Comparative Zoology.

Szechwan is extremely rich in many of the groups of neuropteroid insects. Dr. Martynov noted that this fauna resembled that of Tibet more than that of more eastern China. This was due partly to the lack of material from China. In recent years Dr. G. Ulmer has published on large collections of Trichoptera from eastern China; Father

¹ Proc. U. S. Nat. Mus., vol. 79, art. 25, 20 pp., 4 pls., 1931.

² Pekin Nat. Hist. Bull., vol. 9, pp. 112-125, 1934.

³ Proc. Ent. Soc. Washington, vol. 40, No. 9, pp. 267-281, 2 pls., 1938.

Longinos Navás has published on material in the Heude Museum at Shanghai, and the Museum of Comparative Zoology has acquired a large collection from southeastern China and Hainan. With this material it is seen that many of the peculiar genera of western China also occur in the east, although not so abundantly, and in the east there is more infusion of the Malaysian fauna. The species, however, of western China are usually different from those of the eastern, less mountainous part.

It has been extremely interesting to me to discover that there is a true Himalayan fauna, utterly different from the European, from the Mediterranean, and from the American, either North or South, a fauna that spreads south into at least upper India (not to Ceylon), down the Malay Peninsula, and often to some of the Sunda Islands, eastward over China, Burma, Siam, Indochina, and even to Japan and Formosa.

Characteristic genera are *Neopanorpa*, *Limnocentropus*, *Eubasilissa*, *Pseudostenophylax*, *Nothopsyche*, *Stenopsyche*, *Himalopsyche*, *Kamimuria*, *Nogiperla*, *Claszenia*, *Neochauiodes*, *Neuromus*, *Protohermes*, *Neuronema*, and *Epicanthaclisis*. No insect fauna is entirely endemic as to genera, so here there are representatives of insect faunas characteristic of other regions. The weakness of the Holarctic fauna in Szechwan is greater than one expects from its location, and few of the genera present are represented by more than two or three species. Of the Holarctic genera *Panorpa*, *Rhyacophila*, *Glossosoma*, *Arctopsyche*, *Philopotamus*, *Limnephilus*, *Glyphotaelius*, *Platyphylax*, and *Sialis* occur in both North America and Europe. Of European genera in Szechwan there are *Euroleon*, *Deutoleon*, *Osmylus*, and *Marthamea*, each of few species.

Of American genera in Szechwan (not at present in Europe) there are *Peltoperla*, *Togoperla*, *Potamyia*, *Psilotreta*, *Acroneuria*, and *Halesinus* (near *Neophylax*).

Of Holarctic genera, but practically world wide, there are *Chrysopa*, *Hemerobius*, *Hydropsyche*, and *Goera*.

One European species of *Chrysopa* occurs also in Szechwan, but most of the species are not closely related to European; one is common in Japan. Several of the American genera occur also in Japan. So there is little evidence whether these Holarctic elements in Szechwan came from America or from Europe.

Of typical Mediterranean genera there is no evidence (so far) in Szechwan, although many occur in Turkestan, southern Siberia, northern China, and Japan; such are *Ascalaphus*, *Lopezus*, *Myrmecaelurus*, *Dilar*, and *Raphidia*; the last two genera are doubtless older than the Mediterranean fauna, although now chiefly represented there; both, however, occur in America and elsewhere.

Various genera now typically tropical are present in Szechwan; these, however, are commoner in eastern China. These genera are *Nothochrysa*, *Ankylopteryx*, *Neoperla*, *Spilosmylus*, *Dipseudopsis*, *Notanatolica*, *Indophanes*, *Polymorphanisus*, and *Hydromanicus*, represented by only one or two species each.

In spite of the infusion of elements from other regions, the Himalayan element is dominant in specimens and species. Although there are here recorded 107 species, and a few others have been described from Szechwan, this is probably less than half of the number that will eventually be found in this rich province. Thirty-six species are described as new.

Family PERLIDAE

Genus CLAASSENIA Wu

CLAASSENIA SEMIBRACHYPTERA Wu and Claassen

Several from between Kinting and Suifu, June 26 to July 1, 1,500 feet; Shin Kai Si, Mount Omei, July 17-30, 4,400 feet; and Kaiting, 1,500 feet.

Genus ACRONEURIA Pictet

ACRONEURIA GRAHAMI Wu and Claassen

Three females: One from Kuanshien, September 12, 3,000 feet; one from Yellow Dragon Temple near Songpan, July 25-28, 11,000 to 14,000 feet; and one from near Tsao Ting, July 12, Yunnan.

The ventral plate is produced slightly, almost angularly in the middle.

ACRONEURIA YIUI Wu

One male from Mount Omei has the papillae on the ninth tergite in a continuous area, those on the tenth in two groups; the button on last sternite is moderately small and transverse, but the pointed processes are directed upward, not toward each other as Wu states.

Genus KAMIMURIA Klapálek

KAMIMURIA TAOI Wu

From Chengtu, May 1, 1,700 feet, Shin Kai Si, Mount Omei, 4,000 feet, and also Pei Bay, June (G. Liu).

KAMIMURIA SIMPLEX Chu

From Mount Omei, in July, described from Szechwan.

KAMIMURIA FULVESCENS Klapálek

One from Yachow to Muping, June 23-25, 2,000 to 5,000 feet; one from O-Er, 26 miles north of Li Fan; and one (crushed) from 9 miles southwest of Tatsienlu, June 25-27. The processes are very small and poorly developed. Wu⁴ misspells it *flavescens*.

⁴ Pekin Nat. Hist. Bull., vol. 11, p. 183, 1936.

KAMIMURIA JEANNELI Wu

Two females of this large species from near Suifu, May-June. Described from Hangchow.

KAMIMURIA TIENMUSHANENSIS Wu

From Kuanshien; described from Tienmushan.

Genus TYLOPYGE Klapálek

TYLOPYGE KLAPALEKI Wu and Claassen

One from O-Er, near Li Fan, August 6-16, 9,000 feet, and one from Lin Ngai Si, near Kuanshien, September 20-30, 3,500 feet.

Genus TOGOPERLA Klapálek

TOGOPERLA GRAHAMI, new species

PLATE 27, FIGURES 2, 5

Head mostly black, the lateral tubercles and raised lines in front of anterior ocellus yellowish, and some pale back of eyes and ocelli; antennae and palpi dark brown; pronotum dull black, mesonotum dark in front, rest and abdomen pale yellowish, but latter somewhat darker at tip; venter wholly pale; legs pale on basal half or two-thirds of femora, rest black, a yellowish streak under the hind tibiae.

Wings brown, subcostal area scarcely darker, costal area yellowish. Venation much as in *T. perpicta* and *T. limbata*, the cross vein in hindwing as usual; in forewings, however, the radial sector arises more basally than usual, very much before end of the first anal vein.

The male genitalia somewhat like *T. valvulata*, but the inner pad of processes not nearly so prominent, and the sixth and seventh segments show no group of spinules, the sixth and eighth with some rather short hair (not nearly so long as in *T. perpicta*).

Length of forewing, 22 mm.

One from Lin Ngai Si, near Kuanshien, Sept. 20, 3,500 feet (holotype); and one from Kuanshien, August 13, 1937 (through Parish). The leg marks are similar to *T. bifoveolata* from Tonkin, but the genitalia are different. Holotype, U.S.N.M. No. 53139. Paratype in M.C.Z.

Genus MARTHAMEA Klapálek

MARTHAMEA ARMATA, new species

PLATE 27, FIGURES 4, 6

Head largely dull black, but a broad yellow stripe each side from base of antenna up between eyes and ocelli; basal joint of antennae dark, beyond pale for some distance then gradually becoming darker;

palpi black; pronotum wholly black; mesonotum mostly black, but some pale each side on scutellum; metanotum black in front and middle, elsewhere pale; abdomen pale tawny above and below, also cerci; sternum pale; legs largely pale, but hindlegs dark toward tips of femora and above on the tibiae; wings pale gray, veins brown, costal veins yellow. Head moderately broad, eyes large, ocelli form an isosceles triangle, hind ocelli plainly nearer each other than to eyes; pronotum much broader than long, somewhat narrowed behind, a rather broad median furrow with the two ridges, lateral rugae fairly large.

Wings moderately slender; usually two branches to the radial sector beyond anastomosis, about five costal cross veins beyond end of subcosta, first anal without curve, second only slightly curved, first anal ends before origin of radial sector, latter rather far out, and about as near to anastomosis as to first median cross vein. Male genitalia very prominent; the fifth segment much produced behind in a forked lobe, each lobe with spinules, the upper branch of the process is very long, horizontal, with a large hook at inner base, the inner edge toward tip has several spinelike teeth, the first two rather large; this process has many long, fine, erect hairs on inner side, the lower branch of the process is slender and smooth and reaches fully to the forked lobe of seventh segment.

Length of forewing, 14 mm.; width, 4 mm.

One male from Chengtu, May 10-11, 1,700 ft. In general appearance it is similar to *M. vitripennis*. Holotype, U.S.N.M. No. 53140. *Paragnetina multispinosa*, lately described by Wu,⁵ is very similar, but the process is differently armed.

Genus NOGIPERLA Okamoto

NOGIPERLA CHIANGI, new species

PLATE 27, FIGURES 3, 8, 9

Pale brownish yellow; abdomen rather more yellow; wings pale gray, veins brownish; apical half of cercal spine black; legs pale yellowish, unmarked. The ocelli large and widely separated, the eyes rather large, larger than in *fraterna*; pronotum broader behind than in front, the corners broadly rounded, posterior margin concave; forewings long and slender, about 15 costal cross veins, four or five beyond end of subcosta, about five median and five to seven cubital cross veins, radial sector forked once, the pedicel nearly or fully as long as fork, median is also forked once beyond the anastomosis, branches from anal cell wide apart at base. In hindwings five to eight costals and four or five beyond; radial sector and medius

⁵ Peking Nat. Hist. Bull., vol. 13, p. 65. 1938.

forked as in forewing; in both wings the cross veins from radius to medius are almost in line.

In the male the uplifted penultimate ventral segment shows at base a rounded lobe.

The female resembles the male, but the cerci are normal, basal joint not elongated nor with spine; the ventral plate of female is extremely large and covers the next segment, the tip entire.

Length of forewing, 10 mm.; width, 3 mm.

From Liu Ngai Si, near Kuanshien, September 20-30, 3,500 feet (holotype); Beh Luh Din, August 7-25, 6,000 feet; and Mu Sang Tsai, 10 miles northwest of Weichow, July 2-6, 8,000 to 10,000 feet. Holotype, U.S.N.M. No. 53141. Paratypes in U.S.N.M. and M.C.Z.

In the wholly pale body and legs it is like *N. fraterna*; from *fraterna* it differs in the elongate cercal joint longer, the black cercal spine, in the small rounded piece at base of penultimate ventral segment, etc.

The three known species are from Japan, Formosa, and Malacca.

Genus NEOPERLA Needham

NEOPERLA MINOR Chu

Several from Mount Omei in July and August. Described from Hangchow.

NEOPERLA TINGWASHANENSIS Wu

One from Kuanshien, July 18-20, 5,200 feet.

Genus PARAGNETINA Klapálek

PARAGNETINA INDENTATA Wu

Two specimens, rather small, appear to belong to this species, one from Kuanshien and one from Si Gi Pin, August 5-9, 6,000 to 7,000 feet. Also from Pei Bay, June (G. Liu).

Genus PELTOPERLA Needham

PELTOPERLA SINENSIS Wu and Claassen

One from 9 miles southwest of Tatsienlu, June 25-27, 8,500 feet.

Family SIALIDAE

The genera of Sialidae known to occur in China, or some from nearby, can be separated as follows:

1. No ocelli; pronotum twice as broad as long; fourth tarsal joint with plainly bilobed tip (subfamily Sialinae)----- 2
- With ocelli; pronotum about as long as broad; fourth tarsal joint scarcely, if at all, bilobed (subfamily Corydalinae)----- 3

2. Radial sector toward tip with several branches from upper side to margin----- *Sialis*
 Radial sector without such branches, simply cross veins to radius----- *Indosialis*
3. First anal vein of forewings forks twice; more than three radial cross veins (tribe *Hermesini*)----- 4
 First anal forks but once----- 5
4. Ocelli small, round; anterior ocellus not transverse; wings heavily marked or all dark----- *Hermes*
 Ocelli large, elongate; anterior ocellus plainly transverse; wings wholly pale----- *Protohermes*
5. A distinct tooth on margin of head back of eyes; usually at least four radial cross veins (tribe *Corydalini*)----- 6
 No such tooth on head; usually but three radial cross veins (tribe *Chauliodini*)----- 7
6. A spine or tooth on upper side of head each side; clypeus very deeply indented in middle; mandibles very large; some costals crossed----- *Acanthacorydalis*
 No such spines on head; clypeus only slightly, if at all, emarginate; mandibles not so elongate; costals usually not connected-- *Neuromus*
7. Ocelli very small, laterals more than four diameters apart; antennae in both sexes pectinate; wings without prominent marks----- *Ctenochauliodes*
 Ocelli large, laterals not over three diameters apart----- 8
8. Antennae of male pectinate, of female not at all; wings with spots, at least one in costal area before stigma----- *Neochauliodes*
 Antennae of neither sex pectinate, in male a little serrate; wings without definite marks----- *Parachauliodes*

Genus *SIALIS* Latreille

SIALIS SINENSIS, new species

PLATE 29, FIGURE 52

Body black, legs and antennae also; wings fumose, front pair darker, almost black near base; head with the usual two submedian stripes behind, not narrowed posteriorly, each side with two rows of three rounded spots, and outside of these seven more or less elongate spots. Surface of head not evenly punctate or granulose but covered with many short, irregular ridges. The transverse suture above antennae very distinct, in middle projecting angularly behind but no impressed line or groove from this to the submedian elongate spots. Pronotum a little more than twice as broad as long, a little broader behind than in front, surface densely punctate.

Forewings have the costal area but little swollen, less than in many species, 10 or 11 costal cross veins; the cross vein from subcosta to radius but little more than its length from origin of radial sector (usually much farther); the three radial cross veins at about equal distances apart and from base of radial sector, the latter arises plainly beyond the oblique cross vein between medius and cubitus.

Tip of male abdomen projecting above, and below with a large central opening; below this is a broad, oblique area.

Length of forewing, female, 12 mm.; male, 10 mm.

From Kuanshien, Szechwan.

Holotype male, U. S. N. M. No. 53142. Paratypes in U. S. N. M. and M. C. Z.

Genus ACANTHACORYDALIS Weele

ACANTHACORYDALIS ORIENTALIS McLachlan

Two specimens from Kuanshien, Szechwan, 1,800 to 3,500 feet. I have one from Ichang, Hupei. In all three the median pale stripe of pronotum is nearly of the same width throughout, only a trifle wider in anterior part, but not so much as in Van der Weele's figure of *A. kolbei* from Omei Shan, or so wide as his diagram of *A. orientalis* from McLachlan's photograph; and the photograph does not show it so wide. On the sides of these specimens are several elongate pale stripes, very similar to Van der Weele's figure of *A. kolbei*; moreover McLachlan says "somewhat irregular longitudinal lines, forming ill-defined bands on either side." Therefore I consider that *A. kolbei* is a synonym of *A. orientalis*. McLachlan's type was from Chia-ting-Fu, western China.

Genus NEUROMUS Rambur

NEUROMUS IGNOBILIS Navás

Several from Shin Kai Si, Mount Omei, July; near Mount Wei, July 24 to August 4, 2,000 to 8,000 feet. Described from Kuanshien. Very little different from *N. latratus* McLachlan, wings more fulvous than *latratus*, and latter is often darker toward tip.

NEUROMUS MCLACHLANI Weele

One from Long Tsi Shien, Mount Omei, about 3,000 feet. Mount Omei is the type locality.

Genus PROTOHERMES Weele

PROTOHERMES DAVIDI Weele

Three from Szechwan, August 1928. It is the largest species in the genus; *P. horni* Navás is evidently the same form.

PROTOHERMES FLAVIPENNIS Navás

One from Pei Bay, June (Gaines Liu), Szechwan.

PROTOHERMES COSTALIS Walker

One from between Mount Omei and Mount Wa, July 24 to August 4, 2,000 to 8,000 feet. Described from North China, also known from Formosa.

PROTOHERMES XANTHODES Navás

Many from Chengtu, May 17-22, 1,700 feet, and near Suifu, May to June. May be the same as *P. rubidus* Stitz, which has the head and pronotum greatly darkened.

Genus NEOCHAULIODES Weele

NEOCHAULIODES SINENSIS Walker

Three from Suifu, May 10, 1,000 feet, also Peking. Widely distributed in China.

NEOCHAULIODES OCCIDENTALIS Weele

One from Suifu, August 1928; a large and more maculate form of *N. sinensis*.

NEOCHAULIODES FRATERNUS McLachlan

One near Tsaotong, July 12, Yunnan, and one Szechwan, August 1928.

Genus CTENOCHAULIODES Weele

CTENOCHAULIODES FRIEDRICH Navás

From Szechwan (no definite locality), and from Mount Omei, 11,000 feet, July. I have it from Kuanshien, May.

Family MICROMIIDAE (Hemerobiidae)

The genera of Micromiidae known to me from China and adjoining areas can be tabulated as follows:

- | | |
|---|--------------------|
| 1. Forewings with a recurrent vein at base, costal area broadened near base..... | 6 |
| Forewings without recurrent vein, costal area more narrow at base..... | 2 |
| 2. Medius and cubitus in basal part well separated; but one series of gradates beyond middle of wing; but two radial sectors; wings very slender..... | Lachobiella |
| Medius and cubitus running close together in basal part; two series of gradates; three or more radial sectors..... | 3 |
| 3. Medius not forked before the cross vein to cubitus; wings very slender; nearly all gradates well separated..... | Nenus |
| Medius forked before the cross vein to cubitus; wing less slender, often many gradates more close to each other..... | 4 |
| 4. Some of costal cross veins near base connected to each other.... | Phlebiomus |
| Rarely any of costal cross veins connected..... | 5 |
| 5. But four radial sectors; gradates much separated..... | Micromus |
| More than four radial sectors; gradates nearer each other.... | Eumicromus |
| 6. Forewing with but one, a median, series of gradates..... | 7 |
| Forewing with an outer series also..... | 8 |

7. Subcosta and radius as far separated as the veins behind them, and a connecting cross vein----- *Annandalia*
 Subcosta and radius close to each other, almost touching in basal part----- *Notiobiella*
8. No outer gradates in hindwing----- *Symphorobius*
 An outer gradate series in hindwing----- 9
9. First anal vein forked near middle, and the fork running parallel to vein----- 10
 First anal vein with only short branches to margin or if forked, then the fork diverges----- 12
10. Tip of wing plainly falcate; at least five radial sectors; costal area very broad and some of the cross veins connected----- *Drepanacra*
 Tip of wing not falcate----- 11
11. Four or five radial sectors, last with four or more branches; cubitus runs far out, ending near outer margin; besides the usual two there is a subbasal series of gradates----- *Neuronema*
 More than five radial sectors, last with but three branches; cubitus ends on hind margin; but two series of gradates----- *Megalomus*
12. Tip of wings falcate; but three radial sectors; first anal with divergent fork----- *Allemerobius*
 Tip of wing not at all falcate----- 13
13. In hindwing origin of first radial sector and fork of medius are opposite; in forewing the cross vein from medius to cubitus is as long as the cross vein behind it----- *Boriomyia*
 In hindwing fork of medius is plainly beyond origin of first radial sector; in forewing the cross vein from medius to cubitus is plainly shorter than the cross vein behind it.
Hemerobius (or *Mucropalpus*)

Several subgenera may be recognized, as *Indomicromus* for those species of *Nenus* with a broader wing, and gradates less separated; *Schneiderobius* for those *Hemerobius* with the cross vein between radius and medius out near or even a little on the first radial sector.

Genus NEURONEMA McLachlan

NEURONEMA LAMINATA Tjeder

PLATE 28, FIGURES 26, 28

Several from Beh Luh Dun, July 30 to August 25; Mu Sang Tsai, 10 miles northwest of Weichow, July 2; O-Er, 26 miles north of Li Fan, August 6, 9,000 feet; Tsi Kong, August 11, 13,000 feet; Hai Tsi Ping, near Tatsienlu, August 5, 13,000 feet; and 9 miles southwest of Tatsienlu, June 2-7, 8,500 to 13,000 feet. Described from Kansu. The male genitalia, from side, show the superior lobe not nearly so greatly swollen as in *N. deltoides*, but much higher than long, and with the wart about its width from the upper margin. The slender piece below is inwardly curved and its tip has stout black spines; in one specimen there projects from above base of this piece two slender upcurved blades.

NEURONEMA SIMILIS, new species

PLATE 28, FIGURES 27, 30

In general similar to *N. sinensis* Tjeder, but the dark basal part of wing is not so dark, and the pale apical part is more broken by marks, the outer gradates are brown, except lower three, in both sexes; male genitalia very different.

Face pale, with a few faint dark marks, a dark brown spot over base of each antenna; antenna pale, but inner side of basal joint brown; pronotum brown, with a pale stripe through the middle, mesonotum and metanotum largely brown; abdomen above and below paler brown; legs pale, front femora dark above, front and mid tibiae with the usual dark streaks.

Forewings marked much as the photograph of *N. sinensis*; gradates mostly brown, but a few in each row usually pale; in hindwings outer gradates dark, inner row hyaline, longitudinal veins mostly brownish, a faint brown cloud on hind margin beyond end of anal vein.

In forewings four radial sectors, the fourth with six or seven branches; at inner gradates only two veins between the hyaline line and the medius, about 6 inner gradates, 10 in middle series, and 14 in outer row.

In the male the superior plate is much longer and less high than in other species, the wart is near the lower edge, and beyond it and above it are two slightly swollen areas (dotted lines in figure), the lower piece is not so long as in *laminata* and has a black tooth at end; the inferior piece (ninth sternite) is much slenderer than in *laminata*.

Length of forewing, male, 12 mm.; female, 13 mm.

Several from Yellow Dragon Temple, near Songpan, July 20, 12,000 to 14,000 feet.

Holotype, U. S. N. M. No. 53143. Paratypes in U. S. N. M. and M. C. Z.

ALLEMEROBIUS, new genus

In appearance like *Hemerobius*, with recurrent vein, but rather narrow costal area; the fork of median vein is scarcely bent down, so that the cross vein to cubitus is nearly as long as the one behind it; it differs from both *Boriomyia* and *Hemerobius* in having the tip of wing falcate, the outer margin being broadly, evenly concave, three radial sectors (in genotype), two series of gradates, the first anal vein with long fork.

ALLEMERBIUS FLAVEOLUS, new species

PLATE 28, FIGURE 32

Body, legs, antennae, and wings distinctly pale yellowish, forewing with a brown shade along hind margin, most prominent along the concave outer border; some of the gradates faintly, but rather broadly margined with pale brown; and near tip some veins have faint shadings of brown on each side (as usual in *Hemerobius*); along hind and outer margin there is a brown dot at end of each veinlet, and one between; hindwing faintly yellowish, veins yellow, unmarked.

Almost all costal cross veins are forked for fully one-third way out; six inner and seven outer gradates, fairly evenly spaced except that in outer row the one next to the top is much beyond the others, and in the inner row the lower one is beyond the next. The lower branch of the second fork of the third radial sector ends in the acute tip of wing; a cross vein well before the first radial sector and just before the forking of medius; the first anal forks a little beyond middle. In hindwing four gradates in inner row, and six in outer row, next to top much beyond the others.

Length of forewing, 10 mm.; width, 4.5 mm.

Two females, one from Gieh Yin Temple, Mount Omei, August 10-11, 9,500 feet (holotype), and one from O-Er, 26 miles north of Li Fan, August 16-21, 10,000 feet; also from Weichow, 65 miles north of Chengtu, August 15; and Shin Kai Si, Mount Omei, August 20, 4,000 to 6,000 feet. Holotype, U. S. N. M. No. 53144. Paratypes in U.S.N.M. and M.C.Z.

Genus HEMEROBIUS Linnaeus

HEMEROBIUS CHIANGI, new species

PLATE 28, FIGURE 33

Face pale yellowish, shining, cheeks brown; vertex brownish on sides, pale in middle; antennae dark brown, gradually fading to pale at tip, inner and lower sides of basal joint pale; pronotum brown on sides, broadly pale in middle, rest of thorax above pale, slightly darker on sides; abdomen mostly brown; legs pale, hind tibiae not swollen.

Forewings with mostly pale venation, most of cross veins dark, three more prominent brown spots along the cubitus, stigma scarcely marked; in hindwings the veins mostly pale, but radius and sector toward tip are brown.

Wings moderately slender, tips hardly acute. Forewings with three radial sectors, the third with four branches; fork of medius

is just behind origin of first radial sector, the first branch of cubitus arises much beyond forking of medius; the cross vein from medius to radius is a short distance out on the first radial sector, and is hyaline; the medius at the cross vein to cubitus is scarcely bent, so that the cross vein is almost as long as that from cubitus to anal vein; about six inner gradates, and seven or eight outer ones, the most posterior of inner series is plainly beyond the next.

Male appendages slender, inner edge with an erect, slender spine beyond middle, but about twice its length before the tip.

Length of forewing, 9 mm.; width, 3 mm.

From Tsi King 13,000 feet, August 11, one male, holotype, U. S. N. M. No. 53145. A female from near Washan, 6,000 feet, July 26, probably belongs here, venation about the same, but the antennae are wholly pale. This species is related to *H. poppei* Petersen, which Tjeder records from Kansu. *H. poppei* is said to have pale antennae, darker at tip. Their figures show the spine heavier and nearer to the tip. Petersen speaks of the cylindrical hindtibiae. There are, however, differences in their figures, and there may be two species. The basal venation is much as in *H. pini* and *H. nitidulus* for which Krüger makes *Reuterobius* and *Schneiderobius*, and it may be these form a subgenus.

HEMEROBIUS GRAHAMI, new species

Face shining, very dark brown, cheeks also, vertex very dark, last joint of palpi dark, antennae brown on outer side and above of basal joint, below pale, other joints pale, with broad rings or brown at tips; pronotum very dark brown, a pale median line, a little widened behind, rest of thorax above also dark brown, no pale spots, except faintly in middle front of mesonotum, hair on thorax very long; abdomen also dark brown above and below. Forewings rather heavily marked with brown; cross veins brown, longitudinal veins mostly brown, with short hyaline spots, the brown extended each side on membrane, larger brown spots along median and cubitus, over the first and last connecting veins, and halfway along over the second and third branches of the cubitus; margin of wing faintly, but broadly, infuscate, a few hyaline spots along outer and hind margin, but much separated, stigma not especially marked; in hindwings veins mostly brown, stigma more prominent.

Wings rather long, apex rounded, cross vein from radius to median is near base, three radial sectors, equally separated, third forked three times; first cross vein back to radius farther than usual beyond second fork; seven inner gradates, last two close together, but last is a little beyond the other; seven outer gradates, rather widely separate; in hindwing five gradates in outer and two in inner row.

Forewing, 9.2 mm. long; 3.6 mm. wide.

One female from Suifu, April. Holotype, U.S.N.M. No. 53146.

HEMEROBIUS BISPINUS, new species

PLATE 28, FIGURES 25, 29

Face pale yellowish, a brown spot each side under eye and continued down on clypeus; antennae pale; pronotum pale in middle, with broad brown stripe each side, rest of notum pale, with dark at base of wings; abdomen pale brownish above, paler below; legs pale, unspotted, hind tibiae swollen.

Forewings pale, veins mostly pale, sparsely marked with brown, gradates brown, a small brown mark over cross vein from medius to cubitus and at bases of radial sectors, margin dark with a few pale spots; hindwings with pale veins and brownish gradates, a faint dark mark at end of anal.

Wings of moderate breadth, venation much as in *humuli*, lower gradate of inner series plainly beyond next; six inner, seven outer gradates. The male genitalia are more like *H. ferox* and *H. spinigerus*, but the tip of the superior branch is pointed beneath, and the two spinelike processes above are slenderer than in *H. ferox*, the lower part is longer and slenderer than in *H. ferox*.

Length of forewing, male, 7.5 mm.; female, 10 mm.

Holotype, U. S. N. M. No. 53147, from Szechwan, March 11-21, 1933, altitude 2,000 feet; paratypes from Beh Luh Din, 30 miles north of Chengtu, April 1-15. The larger female from Beh Luh Din does not seem to differ.

The three species from Szechwan are separable as follows:

- | | |
|---|----------|
| 1. In forewings the cross vein from medius to radius is close to or out a bit on the first radial sector..... | chiangi |
| In forewings this cross vein is near the base of wing, far from base of radial sector..... | 2 |
| 2. Face pale, dark under eyes..... | bispinus |
| Face almost wholly dark..... | grahami |

Family PSYCHOPSIDAE

Genus BARMES Navás

BARMES TERISSINUS Navás

Many specimens south of Suifu, Yunnan border, April, and from Chengtu, May.

Family CHRYSOPIDAE (Nothochrysidæ)

The genera of Chrysopidae known from China and nearby areas can be separated by the following table:

1. Costal area extremely broad from the very base----- *Ankylopteryx*
Costal area at first very narrow, then gradually widening----- 2
2. Hind tibia not more than three times as long as hind tarsus;
third cubital cell divided longitudinally----- *Nothochrysa*
Hind tibia more than three times as long as hind tarsus----- 3
3. Cubitus of forewing running out to apical fifth of wing; cubital
area broader than the postcubital area----- *Prochrysopa*
Cubitus bends down to hind margin before apical third of wing----- 4
4. Third cubital cell longitudinally divided----- *Leucochrysa*
Third cubital cell obliquely divided, the vein ending on upper
margin of cell----- 5
5. But two rows of gradate veinlets----- *Chrysopa*
More than two rows, or irregular----- 6
6. Cross veins many, and not in rows----- *Tumeochrysa*
Cross veins in three rows----- *Chrysopidia*

Chrysoplecta Navás, 1910, is the same as *Tumeochrysa* Needham, 1909.

Cintameva Navás was made for species having cross veins in the costal area of stigma; this character is somewhat variable; but the group includes *C. perla* Linnaeus, which is the type of *Chrysopa*, so falls.

Nineta Navás was made for *Chrysopa vittata*, on account of the rather more prominent cerci in the male; this is also a variable character. The type species in the hindwing has the radial sector separate from the median near base, tho very close; other species placed in *Nineta* have them partly united; at best it is a subgenus.

Genus NOTHOCHRYSA McLachlan

NOTHOCHRYSA AEQUALIS Walker

Three from Suifu, 1,000 to 2,000 feet.

Genus ANKYLOPTERYX Brauer

ANKYLOPTERYX 8-PUNCTATA Fabricius

One from Beh Luh Din, September 20-28, 6,000 feet.

Genus CHRYSOPIDIA Navás

CHRYSOPIDIA REGULATA Navás

PLATE 27, FIGURE 17

Two from near Washan, July 26, 6,000 feet, and Shih Men Kan, Kweichow, July 28.

The discoidal cell is small, but the vein ends plainly beyond the cross vein, eight or nine cubitals beyond; stigma with cross veins in costal area; post cubital space scarcely broader than costal, but about twice as wide as the cubital area; costals and gradates, and a few other cross veins more or less plainly black; inner gradates extended basally; only three or four free intermediates. Navás described it from Yunnan.

CHRYSOPIDIA FUSCATA Navás

PLATE 27, FIGURE 10

Very similar to *regulata*, but the pronotum is slenderer and narrowed in front; the inner gradates are not extended basally and not parallel to other rows; there may be six gradates in the middle row; the divisory cell small; the costal area broader than in *regulata*; on the outer side of the basal joint of the antennae is a more or less distinct reddish mark; eight or nine cubitals beyond the divisory cell; stigmal area with many cross veins in the costal space, five or six in the subcostal; palpi partly dark; six or seven free intermediates.

One from Chengtu, December 21, 1,700 feet; one from Beh Luh Din, July 23, 6,000 feet; and one from Mount Omei, July 10-15, 4,000-6,000 feet. The last specimen has a reddish mark across each side of face, the divisory ends at the cross vein.

Genus CHRYSOPA Leach

The species of *Chrysopa* from western China known to me are separable as follows:

- | | |
|---|--------------------|
| 1. A dark spot under each antenna..... | 2 |
| No dark spot under each antenna..... | 6 |
| 2. These spots connected up to those on vertex to form an X..... | <i>furcifera</i> |
| These spots not so connected..... | 3 |
| 3. Two spots on vertex and one between antennae..... | 4 |
| No spots on vertex..... | 5 |
| 4. Most costal cross veins dark; stigmal costal area not cross-veined..... | <i>bicristata</i> |
| Only a few costals near base dark; stigmal costal area with cross veins..... | <i>kreyembergi</i> |
| 5. A spot below outer side of each antenna, one on each cheek, and one each side on clypeus, thus three spots close together on each side of face; palpi partly dark..... | <i>illota</i> |
| A spot below each antenna, and one on each side of the clypeus, none on cheeks; palpi pale; stigma veined..... | <i>cognata</i> |
| 6. In forewing a dark spot covering the end branches of anal vein; palpi pale, no marks on head; stigmal costal area veined..... | 7 |
| No such spot on forewing..... | 8 |
| 7. Some costal cross veins near base are partly black; few costal cells three times as long as broad; hairs on veins moderately long..... | <i>chione</i> |
| Costal cross veins wholly green, very numerous, and many cells fully four times as long as broad; hairs on veins very long..... | <i>grahami</i> |
| 8. Branches of anal vein partly dark; divisory veinlet ends beyond cross vein; a dark spot on cheek..... | 9 |
| Branches of anals pale, divisory rarely ends beyond cross vein..... | 10 |
| 9. Palpi pale; stigmal costal area not veined; sides of pronotum without reddish..... | <i>kiansuensis</i> |
| Palpi dark; stigmal costal area with many cross veins; sides of pronotum reddish..... | <i>althes</i> |

10. No spots on face; veins wholly pale, palpi pale----- carnea
 A dark spot on each cheek, and often on sides of clypens----- 11
11. Divisory ends at or before cross vein; gradates in each row
 widely separated; palpi partly dark----- sinica
 Divisory ends much beyond cross vein; gradates less separated
 from each other----- fratercula

CHRYSOPA GRAHAMI, new species

PLATE 27, FIGURES 7, 13

Head and body pale, unmarked, antennae and palpi pale; wings with greenish venation; stigma rather dark, long, the costal part broad and with many cross veins, subcostal part with two or three cross veins; inner gradates dark; a black spot over the ends of the first anal vein and its connection to the cubitus; in hindwings all veins pale, but the inner gradates may be a little darker.

Wings broad, apex of hind pair acute, hairs on veins very long. Forewing with the divisory veinlet ending beyond the cross vein, eight or nine cubitals beyond it; inner gradates point toward the stigma, not extended basally, outer gradates parallel to outer margin, about 10 in each row, and in the row rather close to each other; radial sector moderately curved; costal space at widest almost equal to the postcubital area, latter from two and a half to three times as broad as the cubital area; the costals are very numerous, fully 30 before the stigma, and many of the cells are more than four times as long as broad; about 16 radial cross veins. In hindwing the gradates are about eight in each row, not parallel; the triangle between radial sector and median vein near base is larger than usual.

Forewing, 19 to 20 mm. long; 7 to 7.5 mm. wide.

Three specimens from near Washan, Szechwan, July 26, 6,000 feet. Holotype, U. S. N. M. No. 53148. Paratypes in U. S. N. M. and M. C. Z.

CHRYSOPA CHIONE, new species

PLATE 27, FIGURE 12

Similar to *C. grahami*, not quite so large, but with the same black spot over the anals as in that species, also there are no marks on head or body, and antennae and palpi are pale; the stigma is also like that species, and the divisory veinlet, and eight or nine cubitals beyond as in *grahami*.

The forewings have the costal area much less broad and the costals fewer, so that no costal cell is over three times as broad as long, and 6 to 10 of the costals toward base of the wing are partly black on outer half; the inner gradates are dark, also sometimes the base of the radial sector, otherwise the veins are pale.

In hindwing all the veins are pale, except sometimes the costals are partly dark. In the forewing the post cubital area is about two to two and a half times as broad as the cubital area.

Forewings, 15 to 17 mm. long; 5.5 to 6.3 mm. wide.

From Beh Luh Din, July 27-31, 6,000 feet (holotype), and Mount Omei, July, 11,000 feet, both Szechwan. Probably similar to *C. dasyphlebia* McLachlan, but that species has no black spots. Holotype, U. S. N. M. No. 53149. Paratype in M. C. Z.

CHRYSOPA FRATERCULA, new species

Head pale, a dark mark under each eye, and one on lateral edge of clypeus; palpi lightly marked with dark lines; antennae pale; thorax, legs, and abdomen pale. Forewings with pale greenish venation, the gradates dark, many other cross veins dark at one end, the costals at the subcosta, the radials at each end, the branches of radial sector at the sector, and a few other cross veins toward base are partly or wholly dark; stigma not very distinct. In hindwings some of the costals and radials dark at one end, and the gradates partly or wholly dark.

Wings of moderate width, acute at tip of hind pair, hairs rather short.

In forewing the divisory ends beyond the cross vein, six cubitals beyond it; postcubital area not twice as broad as the cubital, but about as broad as the costal area; stigmal costal area without cross veins, about four in subcostal part; gradates about seven in inner and eight in outer row, parallel, in each row each veinlet is well separated from the next (but not nearly so much so as in *C. sinica*.) In hindwing five gradates in inner row and seven in outer, rows parallel; the triangle between the radial sector and the median is of moderate size.

Length of forewing, 13 mm.; width, 4.5 mm.

One from Shin Kai Si, Mount Omei, July 1-17. Holotype, U. S. N. M. No. 53150.

Probably related to *C. sinica*, but in that species the gradates are fewer and more separated from one another, the divisory ends before the cross vein, the palpi more dark, the pronotum less long, and often reddish marks on head and thorax.

CHRYSOPA KIANSUENSIS Navás

Specimens from Chengtu, 1,700 feet, May 1, May 25, July 13; Shin Kai Si, Mount Omei 6,000 feet and 11,000 feet; Hong Chuen Pin, Mount Omei, August 27, 5,500 feet. One from Chengtu is the size of type and has five gradates in each row, but most of the others are somewhat larger and have one or two more veinlets in each gradate series. There are seven cubitals beyond the divisory veinlet, the postcubital area is hardly one fourth broader than the cubital area; the stigmal costal area is without cross vein, but with two to four in the subcostal part.

CHRYSOPA ALETHES, new species

PLATE 27, FIGURE 15

Head pale yellowish, a dark mark on cheek, and lateral edge of clypeus dark; antennae pale; palpi largely black. Thorax pale, pronotum with a reddish stripe on each lateral margin; legs pale. Forewings with partly pale venation, but about ten or more costals wholly black, the radials partly dark, gradates and the anal branches dark, and also several cross veins in basal part of wing. In hindwings the costals on basal half of wing are dark, the gradates more or less dark, a few radials are partly darkened.

Wings of moderate width, tips subacute; hairs of moderate length.

In forewings the divisory veinlet ends beyond the cross vein, seven cubitals beyond it; the postcubital space not twice as broad as the cubital, but a little broader than the costal area, no costal cell three times as long as broad; about 12 radials; gradates about seven in each row, rows nearly parallel, the inner row extended basally for one or two cells. In the costal area of the stigma are a few cross veins, and in the subcostal part about four cross veins.

In hindwings are four inner gradates and six in outer row, the rows about parallel; the triangle between radial sector and median vein is rather small.

Pronotum broader than long, obliquely narrowed each side in front.

Length of forewing, 12 mm., width, 4.5 mm.

From Taichow, May 15 (holotype), and Chengtu, May 1. By the numerous black cross veins it resembles *C. kiansuensis*, but the palpi in that species are wholly pale. Holotype, U.S.N.M. No. 53151. Paratype in M.C.Z.

CHRYSOPA ILLOTA Navás

PLATE 29, FIGURE 48

Head pale, face with three subequal dark spots each side, one below outer edge of the antenna, one below eye, and one at end of the clypeus; palpi dark, antennae pale, pronotum with anterior corner somewhat reddish. Forewing with costals wholly, the gradates faintly, anal branches, base of radial sector, first intermediate, and the divisory black; radials dark at upper end.

About 12 inner gradates and 7 or 8 outer, in each row they are rather widely separated, the two rows subparallel, except the basal extension of inner row.

Divisory ends beyond the cross vein, eight cubitals beyond; radial sector but little curved; post cubital area once and a half as broad as the cubital area.

In hindwings the costals mostly dark, and also the upper ends of the radials. It was described from eastern China.

Two specimens from Suifu, 2,000 feet, and Songpan, July 11, 8,000 to 9,500 feet.

CHRYSOPA SINICA Tjeder

PLATE 27, FIGURE 11

Extremely common; Suifu, February, March; Beh Luh Din, April; Kuanshien, April, November; Chengtu, March, April, May; O-er, near Li Fan, August, and Doug Men Wai, all in Szechwan.

I think this is probably the same as *C. hoffmanni* Petersen.

The postcubital area is about twice as broad as the cubital area; six cubitals beyond the divisory; stigmal costal area without veins, and behind in the subcostal area two to four cross veins.

Some specimens are much marked with reddish like the American *C. interrupta*, and since many specimens were taken early in spring I presume that it hibernates as adult, as does *C. interrupta*.

CHRYSOPA KREYEMBERGI Navás

One from Weichow, 65 miles north of Chengtu, August 1, 5,500 feet. The head marks are very similar to *bicristata*, but the costals are mostly pale, only a few near base are darkened, and the costal stigmal area has cross veins; the divisory cell is larger than in *bicristata*.

CHRYSOPA BICRISTATA Tjeder

PLATE 27, FIGURE 14

This is figured by Tjeder from Kansu as well as Szechwan. There are specimens from Beh Luh Din, July 28, 6,000 feet; near Yen Tong Shien, August 2, 1,300 to 1,600 feet; Ma Si Geo, August 17, 5,000 feet; Wen Chuan Shien, 30 miles northwest of Kuanshien, August 26, 5,000 feet; Doug Men Wai, August 18 (all Szechwan); and Yin Kuan Tsai, Tibet, July 22, 13,000 feet.

The costal stigmal area is not veined; six cubitals beyond divisory. It also occurs in Shantung and has been identified by Petersen as *bipunctata* Burmeister, described from Japan, but Burmeister mentions only the dark spots below antennae, none on vertex or cheeks.

CHRYSOPA COGNATA McLachlan

PLATE 27, FIGURE 16

There are about 20 specimens of this widespread species: Suifu, April 24; Shin Kai Si, Mount Omei, August 17-25, 4,500 feet; La Ka

Pin, Mount Omei, August, 6,000 feet; Mount Omei, September 24; Chengtu, September 1 (all Szechwan); and Kiating, China. *C. ricciana* Navás is a synonym.

There are seven and sometimes eight cubitals beyond the divisory; the stigma has cross veins in the costal area; postcubital area not twice as broad as cubital; inner gradates usually extended basally, the rows parallel and parallel to hind margin. In one specimen the third cubital cell is divided longitudinally as in *Nothochrysa*.

Family OSMYLIDAE

Genus OSMYLUS Latreille

OSMYLUS PUNCTIPENNIS Walker

One from between Fu Yao Lin Pass and Da Siang Pass, Szechwan, 600 feet.

This agrees well with a specimen from northeast India taken by Thorey in 1865 but is a little larger (forewing 28 mm. long), but venation and the small dark dots are the same. It was described from North India; *Dictyosmylus lunatus* Navás, from the Himalayas, is the same.

Genus SPILOSMYLUS Kolbe

SPILOSMYLUS OBERTHURINUS Navás

Three females, one from Chin Chi Shien, west of Yachow, July 10, 5,500 feet; one from Shin Kai Si, Mount Omei, July, 4,400 feet; and one from Beh Luh Din, 30 miles north of Chengtu, July 25, 6,000 feet. Described from Yunnan.

SPILOSMYLUS EPIPHANES Navás

One from Szechwan (no definite locality).

Family MYRMELEONIDAE

Genus DENDROLEON Brauer

DENDROLEON INSOLITA, new species

Head pale, a broad black interantennal band from eye to eye, vertex in front with transverse dark bands each side, not reaching eyes, and above on each side two dark transverse areas widest near middle, and bordered with pale, the posterior one connected to a short longitudinal dark spot, also bordered with pale; pronotum pale, three narrow black stripes, the lateral ones halfway to margin; meso- and metanotum broadly dark through middle and each side with two dark lines; pleura pale, with a black stripe. Abdomen pale above, dark on sides and at ends of joints; venter pale, darker at tips of

joints; legs pale, first femora mostly black above, tibia also with dark stripe above, apical half of tarsus dark; hind femora mostly dark, but a pale stripe each side.

Wings pale, no large marks, nor any distinct stripes as in *D. floridus*; veins mostly dark, subcosta with numerous short pale spots, radius with much fewer but longer pale streaks, other longitudinal veins pale in streaks, many cross veins partly or wholly dark, but some, especially toward tip, are white; in forewings a dark dot at end of anal, one on hind margin two-thirds way out to anal dot, another at rhexma, and one over last radial cross vein before stigma, latter indistinct; many of outer forkings are more or less dark; the fork of medius is jet black. Hindwings without these dark spots, but the veins more or less marked with dark.

Wings a little slenderer than in *D. floridus*, the tips slightly falcate; the costal area not so broad as in *D. floridus*, more like *D. pantherinus*. Three cross veins before radial sector in forewing, eleven branches to radial sector, the cubital fork runs down nearer to margin than usual, the outcurving vein from end of cubital fork is not so long as in *floridus*, only three connections to the cubitus and these not crossed, the first branch of cubitus beyond the cubital fork is much farther from the next than in *floridus*, about nine cubital cross veins before cubital fork and none of them crossed.

In hindwing but one cross vein before radial sector 11 branches to radial sector, the first farther basad than in *floridus*. Pronotum moderately slender; tibial spurs longer than the long basal joint of tarsus; hair on pronotum, legs, and most of that on abdomen black.

Length of forewing, 35 mm.; width, 9.5 mm.

One from Doug Men Wai, 10 miles west of Weichow, July 21, 5,600 to 8,500 feet, Szechwan. Holotype, U. S. N. M. No. 53152.

This looks like a narrow-winged, unmarked *D. floridus*, but besides the head and pronotal marks there are various differences in venation near cubital fork.

DENDROLEON FLORIDUS Navás

From Shin Kai Si, Mount Omei, August, 3,000–5,000 feet, Szechwan. *D. parabolicus* Navás is a synonym. *D. floridus* was described as a *Glenurus*.

Genus EPICANTHACLISIS Okamoto

EPICANTHACLISIS CONTINENTALIS Petersen

From O-Er, 26 miles north of Li Fan, 9,000 feet; and Beh Luh Din, August 24, 6,000 feet, Szechwan.

Genus EUROLEON Navás

EUROLEON ALIENUS Navás

From Doug Men Wei, 10 miles west of Weichow, August 18-22, July 29, 5,600 feet; and O-Er, 26 miles north of Li Fan, 9,000 feet; both Szechwan.

INDOPHANES, new genus

Belongs to the Glenurini; wings much as in *Paraglenurus* (*Glenuroides*). In forewings the second anal vein runs up close to first, then bends down at an angle to unite to the third; radial sector arises much beyond the cubital fork, about 8 to 10 cross veins before the radial sector; costal cross veins simple, a few beyond middle forked. In hindwings the radial sector arises much before cubital fork, one cross vein before it. Pronotum moderately long; antennae not especially long; legs long and slender, tarsus with basal and apical joints about equally long, spurs long, but equal to only two joints, last tarsal joint not recurved, with many spines below, claws but little more than one half of last joint.

Type, *Myrmeleon barbarus* Walker.

Includes also *M. infestus* Walker and *M. audax* Walker, and the new species below.

The genus is separated from the other Oriental Glenurini as indicated in the following table:

- | | |
|--|--------------|
| 1. Last tarsal joint recurved, densely clothed below with spreading spines; claws nearly as long as the last tarsal joint----- | Paraglenurus |
| Last tarsal joint nearly straight, not so densely spined, claws shorter----- | 2 |
| 2. More than 12 branches to radius beyond union with subcosta; many costal cells four or five times as long as broad; bristles on hind femora but little longer than width of joint----- | 3 |
| Less than 12 branches to radius beyond union with subcosta; few costal cells (except near stigma) more than three times as long as broad----- | 4 |
| 3. Outer fourth of costal area before stigma with two rows of cells; forewings not falcate at tip----- | Delgadus |
| Only a few costals, if any, before stigma divided; forewings plainly falcate at tip----- | Indoleon |
| 4. Spurs equal to four tarsal joints; hind femora and tibiae heavily spined, lower inner and outer rows of spines----- | Eophanes |
| Spurs equal only about two joints; mid and hind femora only weakly spined----- | Indophanes |

Negrokus Navás, 1930, apparently goes in this tribe; it is said to lack spurs.

INDOPHANES SINENSIS, new species

Head with a black interantennal mark, vertex with dark patch each side; antennae not reaching end of thorax, brown, tips of joints narrowly pale, and a broad pale area over several joints at the beginning of the clavate tip. Pronotum with four black stripes, middle pair well separated and complete, laterals ending at the furrow; rest of thorax above mostly black, some pale on anterior lobe, a short, pale stripe each side on mesonotum, and the hind margins of scutelli pale; pleura mostly dark. Abdomen dark; tip of first segment pale, second and third segments with a median pale spot before the middle, and the tips narrowly pale; other segments narrowly pale at tip; hair short and black, except in pale areas.

Legs slender, pale, femora and tibiae rather minutely dotted, and with black bands at tips, tibiae also with a dark mark near base, and hind tibiae with two dark lines, one on anterior side, other on outer side; tarsal joints dark at tips.

Wings hyaline; veins mostly dark, and the longitudinal veins interrupted with pale; stigma pale, rhexma with an oblique dark streak, and before it are some wholly white cross veins; an oblique dark line up from end of cubital fork; in hind wings stigma pale, and a dark spot at rhexma; in both wings a few outer cross veins are margined with dark, and beyond rhexma the outer marginal veins dark, but no distinct cloud.

Pronotum a trifle longer than broad, not so slender as in *barbara* but fully as long as in *audax*. Forewings slightly more acute than *barbara*; hindwings no longer than forewings, and acute at tip; in forewings about eight cross veins before radial sector, none crossed, nine or ten branches of radial sector; before the cubital fork no cross veins connected; one cross vein from second anal back to first at the union of second and third, third anal forked, or so united the fork may appear from second anal.

Forewing length, 32 mm.; width, 9 mm.

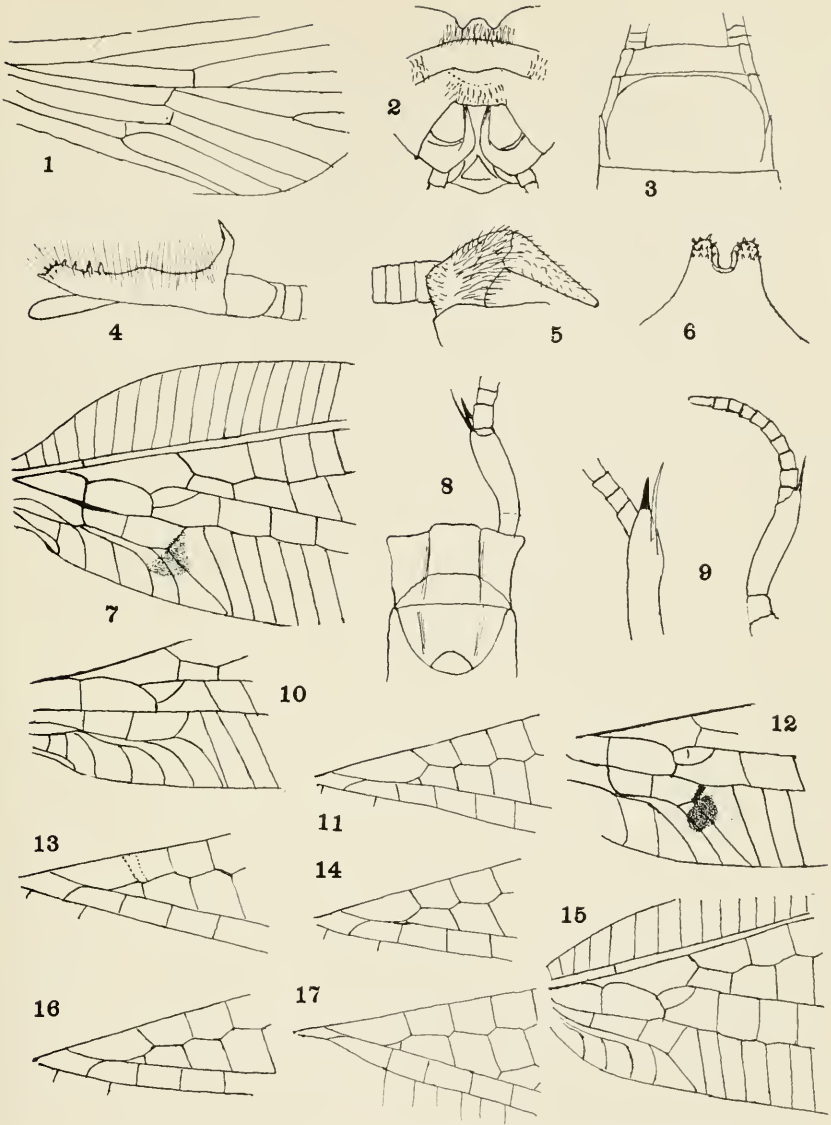
From Szechwan (no definite locality). China (Graham). Holotype, U.S.N.M. No. 53153. Paratypes in U.S.N.M. and M.C.Z.

Family RHYACOPHILIDAE

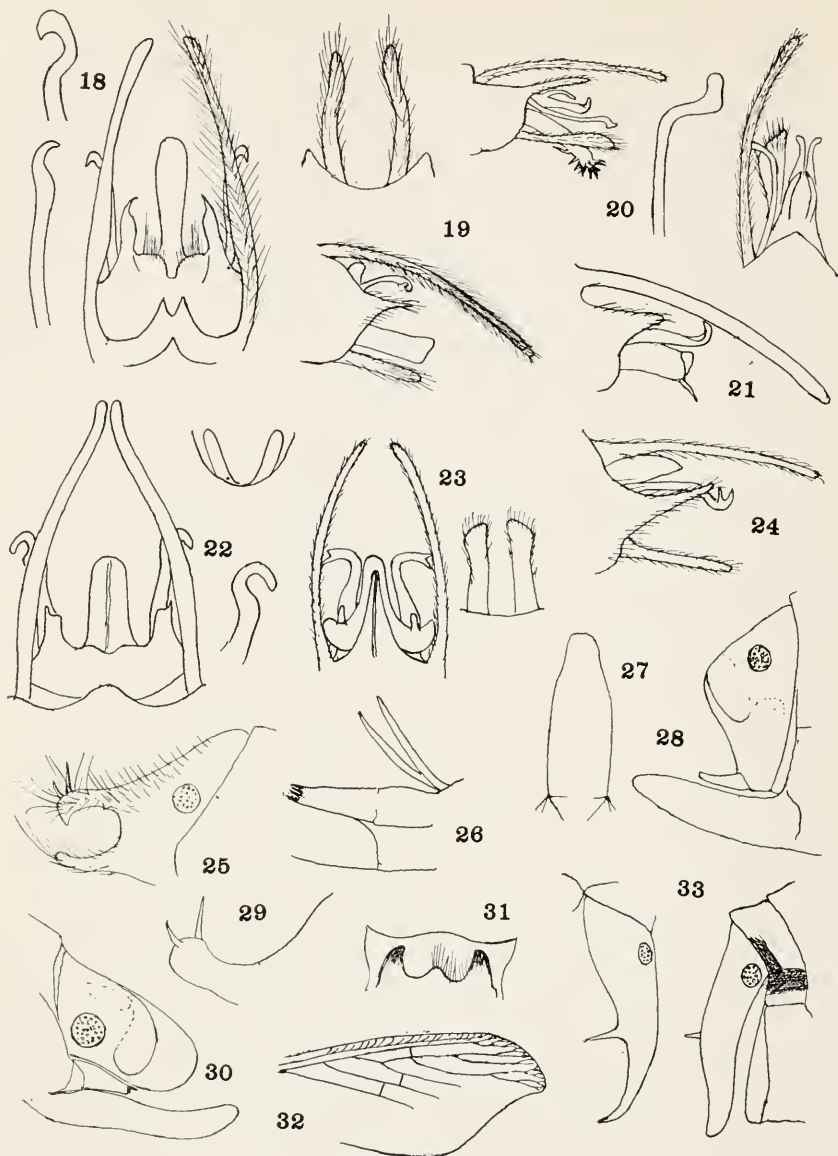
Genus RHYACOPHILA Pictet

RHYACOPHILA SINENSIS Martynov

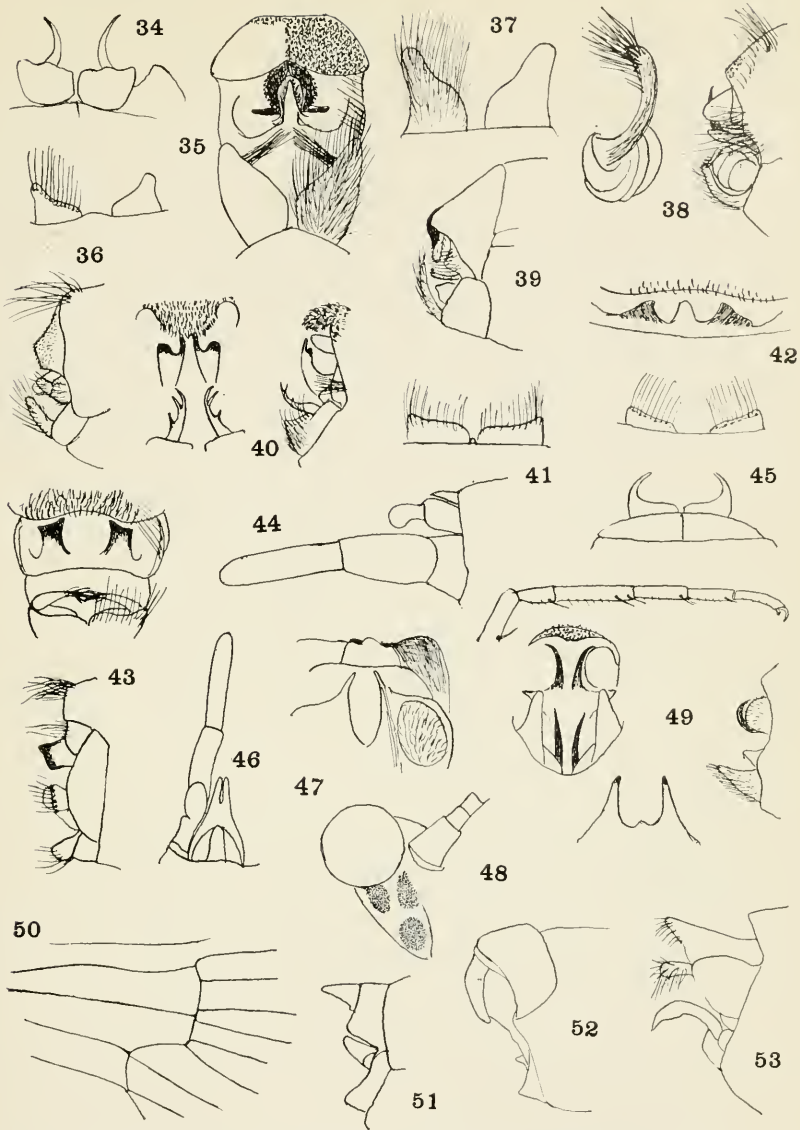
From Wei Chow, August 10, 7,000–12,500 feet, and O-Er, 6 miles north of Li Fan, August 16, 10,800 feet, both Szechwan. This species is very close to *R. hobsoni* from Tibet. In *sinensis* the second joint of the lower appendages is shorter and the lower branch no longer.



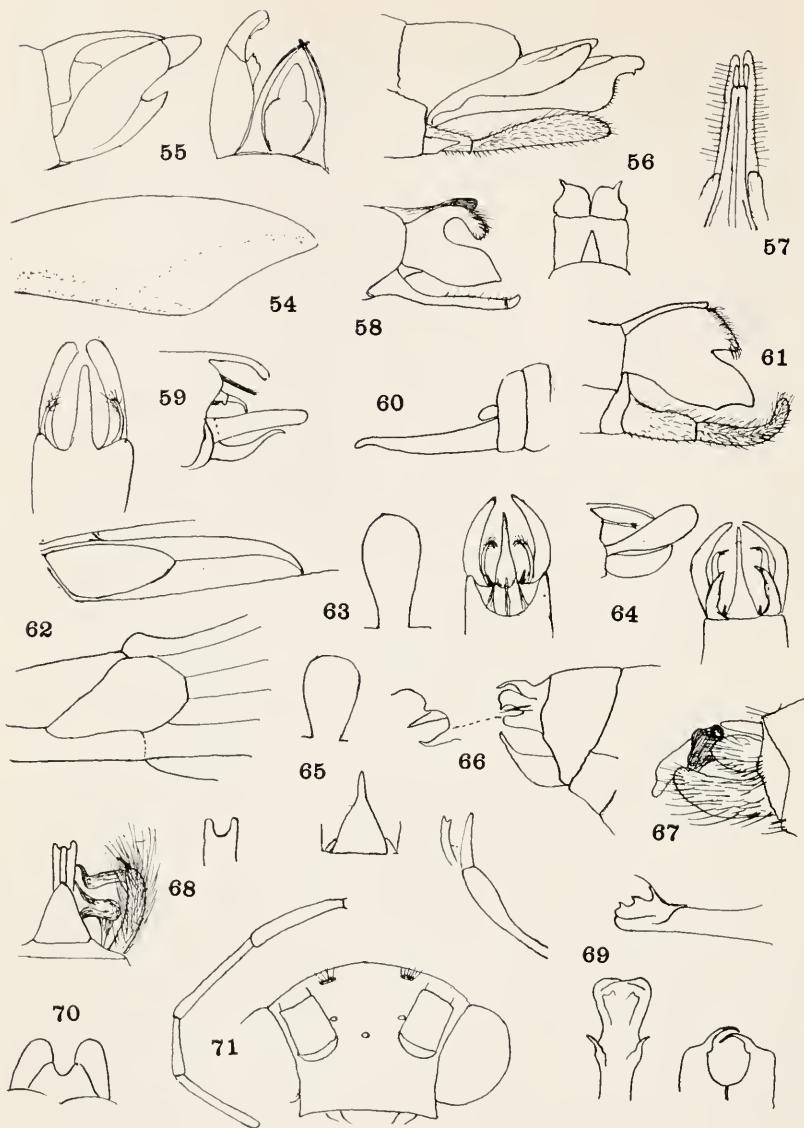
1. *Psilotreta chinensis*, new species: Forewing. (See also figs. 67, 68, 70.)
- 2, 5. *Togoperla grahami*, new species: 2, Genitalia; 5, genital process from side.
- 3, 8, 9. *Nogiperla chiangi*, new species: 3, Ventral plate; 8, male venter; 9, cercus from side and above.
- 4, 6. *Marthamea armata*, new species: 4, Genital process from side; 6, tip of fifth dorsal segment.
- 7, 13. *Chrysopa grahami*, new species: 7, Forewing; 13, part of hindwing.
10. *Chrysopidia fuscata* Navás: Forewing.
11. *Chrysopa sinica* Tjeder: Part of hindwing.
12. *Chrysopa chione*, new species: Part of forewing.
14. *Chrysopa bicristata* Tjeder: Part of hindwing.
15. *Chrysopa aethes*, new species: Part of forewing.
16. *Chrysopa cognata* McLachlan: Part of hindwing.
17. *Chrysopidia regulata* Navás: Part of hindwing.



- 18, 19. *Stenopsyche moselyi*, new species: 18, Genitalia from above, titillator from side and below; 19, genitalia from side, lower appendages from below.
20. *Stenopsyche martynovi*, new species: Genitalia, side and above; titillator, below.
- 21, 22. *Stenopsyche pjasetzkyi* Martynov: 21, Genitalia from side; 22, genitalia from above, titillator from below, lower appendages from below.
- 23, 24. *Stenopsyche navasi* Ulmer: 23, Genitalia from above, lower appendages from below; 24, genitalia from side.
- 25, 29. *Heмерobius bispinus*, new species: 25, Male appendage from side; 29, tip of upper appendage from above.
- 26, 28. *Neuronema laminata* Tjeder: 26, Inner appendage from side; 28, genitalia, side.
- 27, 30. *Neuronema similis*, new species: 27, Last ventral segment; 30, genitalia from side.
31. *Pseudostenophylax minimus*, new species: Median teeth. (See also fig. 36.)
32. *Allemerobius flaveolus*, new genus and species: Part of forewing.
33. *Heмерobius chianzi*, new species: Genitalia from side and above.



- 34, 41, 43. *Pseudostenophylax brevis*, new species: 34, Tip of female from above; 41, lower appendages; 43, median teeth and genitalia from side.
- 35, 39. *Pseudostenophylax amplus* (McLachlan): 35, Male, behind; 39, genitalia, side.
36. *Pseudostenophylax minimus*, new species: Lower appendages and genitalia from side. (See also fig. 31.)
- 37, 38, 51. *Pseudostenophylax (Trichophylax) monticola*, new species: 37, Lower appendages; 38, inner appendages and genitalia from side; 51, female from side.
40. *Platyphylax rubescens* Martynov: Male from behind and side.
- 42, 45. *Pseudostenophylax mimicus*, new species: 42, From behind; 45, tip of male, above.
- 44, 46. *Philopotamus sinensis*, new species: 44, Genitalia from side; 46, genitalia, above.
47. *Pseudostenophylax amplus* (McLachlan): Female from above.
48. *Chrysopa illota* Navás: Side of head.
- 49, 50. *Psilopterna sinensis*, new species: 49, Male from behind, from side, front tarsus, and tip of female from above; 50, part of forewing.
52. *Sialis sinensis*, new species: Tip of abdomen from side.
53. *Halesinus fenestratus*, new species: Female from side.



- 54, 55. *Himalopsyche navasi*, new genus and species: 54, Forewing; 55, genitalia from side and above.
- 56, 60. *Himalopsyche (Himalophanes) anomala*, new subgenus and species: 56, Genitalia from side, tip of female from above; 60, ovipositor.
- 57, 58. *Himalopsyche martynovi*, new species: 57, Superior plate; 58, genitalia from side.
59. *Himalopsyche hageni*, new species: Genitalia from above and side.
61. *Himalopsyche alticola*, new species: Genitalia from side.
- 62, 65, 66. *Glossosoma aequalis*, new species: 62, Anal area of forewing and discal cell; 65, ventral process and superior plate; 66, genitalia from side.
63. *Glossosoma anale* Martynov: Ventral process.
64. *Himalopsyche lachlani*, new species: Genitalia from above, side, and below.
- 67, 68, 70. *Psilotreta chinensis*, new species: 67, Genitalia from side; 68, genitalia from above and tip of penis; 70, lower appendages. (See also fig. 1.)
69. *Hydropsyche grahami*, new species: Clasper, penis from side and above, and superior plate from above.
71. *Evanophanes insignis*, new genus and species: Head from above and maxillary palpus.

RHYACOPHILA GRAHAMI, new species

Body brown to black, tip of abdomen yellowish; basal joint of antenna dark, beyond pale; legs mostly pale, but tibiae broadly dark at tips of front and mid pairs, mid and hind tarsi dark.

Forewings dark brown, with scattered small pale spots, mostly along each side of the veins, some in the costal area, from cubitus to second anal darker; the anal area mostly pale, with some brown spots, especially toward its tip; there are two large pale areas reaching forward from the anal area almost to the cubitus; the first one (before middle) is narrow and its apex sometimes a separated spot, the second one (near tip) is much broader and reaches the cubitus in two spots a little before the base of fork five. Hindwings gray, darker in stigmal area. Legs slender, spurs quite long, spurs and weak spines are yellowish.

In forewing fork one is a little before two, forking of the medius just about opposite that of radial sector, forks three and four both with long pedicel. In hindwing fork one is beyond fork two. The female has a short, tapering ovipositor.

Length of forewing, 13 mm.; width, 4.2 mm.

From Yellow Dragon Temple, Songpan, 12,000 to 14,000 feet.

The large pale spots will readily separate it. Holotype, U.S.N.M. No. 43154. Paratype in M.C.Z.

HIMALOPSYCHE, new genus

In nearly all respects like *Rhyacophila*; it is at once separated therefrom by the presence of a broad wart on the metacutellum. This wart is often more or less plainly divided, and bears long hairs. There is no ventral process to the abdomen, and the wings, both fore and hind, show a stigmal vein, a branch of the radius or of the subcosta and usually connected to both. All are large species, with more or less pointed wings.

Genotype, *Rhyacophila tibetana* Martynov.

It includes also *R. carletoni* Banks, *R. auricularis* Martynov, and doubtless *maculipennis*, *lanceolata*, *gigantea*, *japonica*, and all the very large Asian species and the several new species below.

HIMALOPSYCHE HAGENI, new species

PLATE 30, FIGURE 59

Head dark, some pale hair in front, that on vertex black; palpi dark brown; antennae dark on the basal joint, beyond pale, faintly annulate. Thorax dark brown on the sides above, more reddish through the middle, bristles from the strips pale; abdomen dark above, tips of segments pale, pale beneath. Legs pale, front femora

darker, front and mid tibiae with dark marks near the middle and before the tip. Forewing mostly brown, with many small pale spots, mostly on or near costal area before stigma, along veins, and an oblique area across the apical cells, a white spot on margin in each apical cell; behind toward base are two larger pale areas, sometimes connected, both somewhat triangular, mostly behind the anal vein, but the outer one reaching forward to the cubitus; there is much black hair along cubitus and anal veins. Hindwings faintly gray, marked with brown toward tip, especially in front.

Venation much as in other species, fork one plainly before fork two in forewing, not in hindwing; outer margin of wing hardly convex. Male genitalia similar to *R. maculipennis* Ulmer; but the intermediate appendages are much shorter, the superior median process more heavy, the inferior appendages broader, not widened before tip, and the penis shows two teeth below.

Forewings, 20 mm. long; 6 mm. wide (Ulmer gives no size to *R. maculipennis*), other specimens 15 to 22 mm.

From 9 miles southwest of Tatsienlu, June 23-27, 8,500 to 13,000 feet (Holotypes); Wenchuan, November, December; Wa Si Geo, August 18, 6,000 feet; Hai Tsi Ping, near Tatsienlu, August 5, 13,000 feet; Jedo, near Tatsienlu, August 16; Chiang Ku, July 12-15, in Szechwan.

Holotype, U.S.N.M. No. 53155. Paratypes in U.S.N.M. and M.C.Z.

The male genitalia are very similar to those of *R. maculipennis* Ulmer from Kuku-nor, but the lower appendages are evidently heavier in *H. hageni*, the superior median piece broader at base; and in the description of forewings there is no mention of the large pale spots in anal area, and the ground color is evidently pale, while in *hageni* the membrane is largely dark except for pale spots.

HIMALOPSYCHE LACHLANI, new species

PLATE 30, FIGURE 64

Head dark, hair mostly black; palpi dark, basal joint of antennae dark, beyond pale brown, tips of joints narrowly pale; thorax above dull reddish brown, sides hardly darker, bristles from strips and those above wing base black. Abdomen dull reddish brown, tip and venter paler. Legs pale, front and mid tibiae mostly dark, but a narrow pale band a little before the tip.

Forewings brown, densely and rather evenly sprinkled with pale spots, the brown with short golden hair, the pale spots with white hair; much black hair near cubitus and anal veins. The pale spots most numerous along veins, many in costal area, one on margin in each apical cell, no larger pale areas. Hindwings gray, slightly marked with brown in apical area in front, and along outer margin are a few faint pale spots.

Venation much as in others; fork one plainly before fork two in forewings, not in the hindwings; stigmal vein a branch from the radius, but in hindwings with an oblique connection from base to the subcosta.

Male genitalia rather short; above is a slender, pointed, median piece, widened and tricarinate at base, intermediate appendages slender, more than one halfway to tip of median piece, and with recurved bristles near tip; lateral appendages strongly spatulate, lower pieces broad and with an upturned tip; both from above and below is seen a little black spine each side near the base.

Forewing, 21 mm. long; 6.5 mm. wide.

From Yu Long Si, 15,600 feet, August 14, Tibet (holotype); Chung Ku, July 12-15, 11,000 feet; and Hai Tsi Ping, near Tatsienlu, August 5, 13,000 feet, Szechwan. Holotype, U.S.N.M. No. 53156. Paratype in U.S.N.M. and M.C.Z.

HIMALOPSYCHE AURICULARIS (Martynov)

Two females from U Long Kong, near Tatsienlu, July 25, 10,000 to 15,000 feet. The type (a male) was from Tatsienlu, with expanse of 52 mm. One of the females is about 53 mm., the other 50 mm. The female differs from *H. martynovi* in that the ventral piece is a long, slender horn.

HIMALOPSYCHE MARTYNOVI, new species

PLATE 30, FIGURES 57, 58

Head and palpi pale rufous, hair on front yellowish, on vertex black; antennae pale brownish yellow, basal joint darker, tips of joints beyond also dark; thorax above dull rufous, darker on sides of mesonotum, hair pale, except that above wing base which is black; abdomen dull brownish, tip and venter paler; legs pale, front and mid tibiae with broad black bands above at middle and at tip, these tarsi dark at tips of the joints.

Wings pale, nearly hyaline, densely irrorate with pale brown, spots most noticeable in costal area, and along the veins, between veins faint and minute irrorations; stigma dark; along cubitus and anal veins much black hair, and an oblique line of black hair from hind base of wing obliquely up to base of cubitus; a hyaline spot on thyridium.

Hindwings pale gray, stigma darker. In forewings forks one and two are about equal, in hindwing fork one much beyond fork two.

Male genitalia has a slender reddish median plate ending in two long lobes, and with a median groove from near base to near tip, each side the lateral appendages have erect hair; seen from side the lateral appendages are very broad, deeply divided, the upper part much the

smaller and shorter and ends in a down-curved swollen lobe, the lower part is somewhat ligulate and tapers to a sharp tip; lower appendages very long and slender, the apical part short and slightly upturned.

Forewing, 21.5 mm. long; 7 mm. wide.

From near Tan Gu, 14,000 feet, August 3-6, Tibet. Holotype, U.S.N.M. No. 53157.

A female from O-Er, 26 miles north of Li Fan, August 16, 10,800 feet, Szechwan, may be the same species; it is scarcely differently marked, but fork three in fore and hind wing reaches to the cross vein, while in the type, as in all other species seen, fork three has a pedicel at least a fifth of the length of the fork.

HIMALOPSYCHE ALTICOLA, new species

PLATE 30, FIGURE 61

This is closely related to *H. martynovi* in size, color, markings, shape, and venation of wings but differs in the male genitalia. Seen from above there is a long median projection ending in two lobes much as in *martynovi*; seen from side the broad plate is divided by a narrow incision on its outer edge, the upper part is broad, with an oblique outer edge, somewhat incurved, and very hairy, the lower part is also broad, its lower edge on the apical half is concave. The lower appendages are heavier than in *H. martynovi*, and the division is near the middle; they are also hairier than in *martynovi*.

From Chagra Pass, July 18, 13,000 to 14,000 feet (holotype); Chung Ku, July 12-15, 11,000 feet; Jedo, near Tatsienlu, August 16, 12,000 feet; Shin Kai Si, Mount Omei, August 6-7, 4,500 feet; Wenchuan, November, December; and no definite locality, July 9-12, 6,000 to 13,500 feet, all Szechwan.

Holotype, U.S.N.M. No. 53158. Paratypes in U.S.N.M. and M.C.Z.

HIMALOPSYCHE NAVASI, new species

PLATE 30, FIGURES 54, 55

Head, palpi, and antennae pale yellowish, with white hair on head, vertex with a brown stripe each side near middle; antennae unmarked; mesonotum pale in middle, brown, on sides, hairs from the strips pale, and those above wing base also pale; metanotum obscure dull brownish; abdomen dark brown above, tip and venter paler; legs very pale, front and mid tibia not marked with dark.

Forewings pale, marked with pale brown and some dark brown, a double pale-brown streak near the outer margin, a more or less definite curved dark streak from tip of wing, close by the hyaline spot of thyridium, and thence to the anal veins; from the anal veins back

to base is a broad brown streak, and most of anal area brown; in these dark areas there are streaks or spots of black hair, three such along hind margin of radius, the first at origin of radial sector, a long one over base of posterior side of fork two; on the pale areas of membrane there is very short golden hair.

Hind wings faintly yellowish, the stigma more plainly so, all clothed with fine yellow hairs, and the fringe also yellowish.

In forewings fork one is plainly a little before fork two, in hind wings scarcely before, fork three in forewing has a long pedicel, nearly one-half as long as the fork.

Male genitalia on the plan of *H. japonica* Morton, the lower appendages very large, and with a curved pointed process below, which, seen from above, has its tip toothed. From above the superior plate is broad at base, tapering to the tip, but with rounded sides, plainly indented near middle, and each side is a long slightly curved prong, not curved and sinuate as in Morton's figure 5 of *H. japonica*.

Forewings 17 mm. long; 5 mm. wide.

Male from Yim Na San, Kwantung, June 14 (Gressitt) (holotype); a female, forewing 22 mm. long, from Chengtu, Szechwan (Graham). Holotype in M.C.Z. Allotype, U.S.N.M. No. 53159.

This is the species that Ulmer treats in his "Fauna Sinica" as *Rhyacophila japonica*; the inferior appendages are very similar, but the superior parts are very different from Morton's figure and description of the type.

HIMALOPHANES, new subgenus

This I treat as a subgenus of *Himalopsyche*, with which it agrees in general structure, including the hairs on metascutellum; the female, however, has a true ovipositor, so different from the others, and so much like certain Locustidae, that I think it should be separated at least subgenerically. What I consider the male has the genitalia rather different from the style of the others, the upper parts being extended caudally.

HIMALOPSYCHE (HIMALOPHANES) ANOMALA, new species

PLATE 30, FIGURES 56, 60

Head pale dull rufous, with white hair, but black on posterior warts; palpi and antennae pale, latter on upper surface somewhat embrowned. Thorax dull rufous, darker on sides of mesonotum, bristles from the strips pale, those over wing base black; abdomen dull black above, tip and venter paler. Legs pale, front and middle tibiae above with dark mark at base, beyond middle, and at tip, tips of these tarsal joints dark. Forewings densely irrorate with brown spots, mostly near front and hind margins and along the veins, between veins spots small or faint, several of the larger brown marks

tend to form oblique bands over the cubital and anal veins, two or three pale spots on margin of each apical cell. Hair on membrane partly black, partly yellowish. Hind wings grayish, stigma more yellowish, and some faint brown marks along outer margin.

Forewings proportionally broader than in other species, venation much as in others, fork one in forewings hardly or a little before the second, in hindwings fork one beyond or almost equal to fork two, fork three of forewings with the usual short pedicel.

The ovipositor is very long, narrowed, and a little down-curved near tip; its length is about twice the height of last abdominal segment; its two internal blades have a thickened dorsal edge, and end in a spine. It is not the gradually tapering ovipositor found in various *Rhyacophila* but looks much like those of certain Orthoptera, for example *Udeopsylla*.

Length of forewing, 20 mm.; width, 8 mm.

From 9 miles southwest of Tatsienlu, Szechwan, July 23-27, 8,500 to 13,000 ft. (holotype); and near Washam, July, 4,000 to 6,000 feet. Holotype, U. S. N. M. No. 53160. Paratypes in U. S. N. M. and M. C. Z.

I have described these females on account of the remarkably orthopteroid ovipositor; they cannot be the females of any male of *Himalopsyche* that I have seen, and the females are described for several that I have not seen.

A male from Chengtu, 1933, is probably the male of this species; the upper parts of the genitalia are greatly elongated, the tip of the middle appendage ending (seen from above) in two lobes, each with a small tooth, the lower appendages are long, widest toward tip, the apical section more than twice as long as the basal part. The general appearance, size, coloration, and venation agree with the females.

Genus GLOSSOSOMA Curtis

GLOSSOSOMA AEQUALIS, new species

PLATE 30, FIGURES 62, 65, 66

This is very similar to *G. anale* except in the male characters of wing and genitalia; in the anal area of forewings the swollen area is much shorter, scarcely halfway to end of the second anal vein, whereas in *G. anale* it is more than two-thirds the way to end. In *G. anale* the area is densely clothed with short, yellowish, scalelike hairs all over; in *G. aequalis* there are some yellowish hairs in basal half, not so scalelike, and beyond are few yellowish hairs but many short black bristles.

Venation is much as in *G. anale*, but the discal cell has a short straight top, and there is a distinct connection back to the curve of the radius; cell two is broader at base than in *G. anale*, and the connection to

median vein is much before the base of the third cell. The male genitalia has the median ventral piece with a slender tip, from side the apical pieces are more pointed; the process of the seventh ventral segment is very broad, and shorter than in *G. anale* (fig. 63).

Length of forewing, 8 mm.

Several specimens from Beh Luh Din, 30 miles north of Chengtu, August 7–28, 6,000 feet (holotype); Wenchuan, November–December; and Kuanshien, November 20. Holotype, U.S.N.M. No. 53161. Paratype in M.C.Z.

GLOSSOSOMA CAUDATUM Martynov

One male from Beh Luh Din, August 7, 6,000 feet, and one from Wenchuan, November. The anal area is extremely similar to that of *G. malayanum* Banks, but in the latter the median ventral piece is broad and has a long, slender tip. *G. valvatum* Ulmer is also similar in anal area, but the superior pieces (seen from side) are quite different; it occurs in eastern China.

GLOSSOSOMA ANALE Martynov

PLATE 30, FIGURE 63

Two from Shin Kai Si, Mount Omei, July.

Family HYDROPSYCHIDAE

Genus STENOPSYCHE McLachlan

The species of *Stenopsyche* that are recorded below can be distinguished by the following table:

- | | |
|--|------------------|
| 1. In hindwings the little cell at end of the united subcosta and radius is incomplete; in male the titillators are forked at tip or have lateral projections; larger species..... | 2 |
| In hindwings the little cell is complete; in male the titillators are neither forked nor have lateral processes..... | 3 |
| 2. Male titillators have some lateral processes before tip; forewings rather long, rarely with large pale areas behind..... | <i>grahami</i> |
| Male titillators have the tip forked; wings broader, and usually with one or more large pale areas behind..... | <i>navasi</i> |
| 3. The processes of the superior plate are rather close together at base, and curve downward, nearly parallel..... | <i>martynovi</i> |
| These processes are wide apart at base and do not curve downward, nearly parallel..... | 4 |
| 4. These processes are rather long and curve toward each other horizontally..... | <i>stotzneri</i> |
| These processes do not curve toward each other, their tips far apart..... | 5 |

5. The slightly curved processes arise one each side near the base of the superior plate, which is very long, broad, and narrowed toward tip..... laminata
The nearly straight processes arise from outer corner of the broadly truncate superior plate..... 6
6. The processes are very short, more than twice the length apart, with very short tip, penis with two long spines below near tip... pjasetzkyi
The processes are fairly long with a long slightly curved tip..... moselyi

STENOPSYCHE NAVASI Ulmer

PLATE 28, FIGURES 23, 24

Many specimens, evidently the most common species: Beh Luh Din; Tatsienlu; Suifu; Wa-Li-Geo; near Washan; Mount Omei; near Kuanshien; Chin Chi Shien; near Moupin, July 22-24; Chung Ku, July 12-25, 11,000 feet (all Szechwan); and near Tang-Gu, Tibet.

STENOPSYCHE GRAHAMI Martynov

From Shin Kai Si, Mount Omei; Beh Luh Din; Li Ki Pin, Mount Omei; near Weichow; Kuanshien; Wen Chuan Shien; near Moupin, July 22-24.

The females resemble those of *S. navasi* but generally have longer wings.

STENOPSYCHE STOTZNERI Dohler

Quite common; from Beh Luh Din; Chengtu; Jedo Pass; Kuanshien; Yin Shien Wan; Wen Chuan Shien; Wa-Li-Geo; Shin Kai Si, Mount Omei; and near Moupin, July 22-24. Mostly in the northern part of Szechwan, described from Kuanshien.

STENOPSYCHE LAMINATA Ulmer

From Chengtu, Mount Omei; Shin Kai Si, Mount Omei, August 6; Kuanshien; and near Moupin, July 22-24.

Forewings paler and less marked than the other species.

STENOPSYCHE MARTYNOVI, new species

PLATE 28, FIGURE 20

About the size and general appearance of *S. stotzneri*; smaller and not so deeply marked as *S. navasi* or *S. grahami*. Face with yellowish-gray hair below and a small tuft of black each side by the eye; above, between antennae, and on vertex with white hair. Palpi and antennae dull yellowish, latter annulate with brown at tips of the joints; thorax dull yellowish, prothorax, mesothorax in front and meso and metathorax each side behind with rather long white hair. Abdomen dull yellowish brown, appendages paler. Legs pale, broad marks of black near base and just before tip of mid and fore tibiae, and one on these metatarsi, hindtibia of male nearly white. Fore-

wings pale brown, spotted and dotted with hyaline or whitish, hair mostly black and most noticeable near cubitus, much of anal area often pale and toward end of first anal, but the pale spots are mostly irregular and often clustered. Hindwings whitish, gray toward tip.

Forewing about as slender and pointed as *S. stotzneri*, venation as in that species, in the hindwing the end of subcosta runs into the upper branch from discal cell (not in *navasi* or in *grahami*). The male appendages are on the plan of *St. stotzneri*; but the upper appendages are longer, and the lateral appendages much longer, reaching beyond the middle of the upper appendages; the lower appendages are also much longer than in *S. stotzneri*, and widened a little before tip. The titillators are longer, the tip enlarged much like a foot and bent outward (in *stotzneri* simply with a recurved tip); on the superior plate the two curved spinelike processes are wide apart in *stotzneri* and curve toward each other, but in *martyнови* they are close together at base and nearly parallel.

Forewing 21 to 23 mm. long.

From Yin Kuan Tsai, China-Tibet border, 13,000 to 15,000 feet, July 25 (about 15 males) (holotype); also from Yachow, August 28, and Yin Shiu Wan, July 22, both in Szechwan. Various females from these localities evidently belong to this species. Holotype, U.S.N.M. No. 53162. Paratypes in U.S.N.M. and M.C.Z.

STENOPSYCHE MOSELYI, new species

PLATE 28, FIGURES 18, 19

A small species, with numerous brown bars across the cells of the forewing, much as in *S. laminata*.

Face dark; hair on vertex, pronotum, and thorax mostly snow-white, each side on pronotum and at base of forewings there is some black hair. Palpi brown; antennae pale, with an oblique dark ring at tip of each joint; legs pale, with the usual dark bands on front and mid pairs. Forewings with numerous crossbars of brown on a pale ground; in apical part mostly connected; behind are two large elongate dark spots, one just beyond the end of the anal cell, the other where the anal and cubitus approach each other (these marks not in *S. laminata*). Venation as in *S. laminata*, and in hindwing the little cell is complete where the subcosta and radius unite, just as in other small species.

Male genitalia quite different from *laminata*, and other forms; the superior appendages are very long, somewhat widened before middle; the superior plate is large, and notched in middle of apical margin, and from each side arises a process extending backward, with a curved, pointed tip and widened just before this curved part. The lower appendages are slender, not broadened at tip, and a little

curved; the penis is only a little broadened and with only small spines below tip; the titillators are fairly stout, with a sinuous curve before the swollen, pointed tip.

Length of forewing, 21 to 23 mm.; width, 5 to 7 mm.

From Suifu, Szechwan, 1,000 feet, November 5, several specimens. Holotype, U.S.N.M. No. 53163. Paratypes in U.S.N.M. and M.C.Z.

STENOPSYCHE PJASETZKYI Martynov

PLATE 28, FIGURES 21, 22

One male from near Suifu, June 15, 1,000 to 1,200 feet.

A small species, forewings of this specimen 17 mm. long; forewings generally resemble those of *S. laminata* and *S. moselyi*. The genitalia are on the plan of *moselyi*, but the lateral processes of the superior plate are very short and stubby; the titillators are very heavy toward base, and the tip is more strongly curved than in *moselyi*; the penis is fairly large, and near lower tip is a pair of rather long spines (not noticed in *moselyi*; the inferior appendages are not so long as in *moselyi*).

In the hindwings the little cell at end of subcosta and radius is complete, as in other small species. Front and mid legs heavily banded with black on tibiae and tarsi. The eyes of male are large and crowd the antennae, proportionally larger than in *moselyi*; the antennae have the dark mark at tip of each joint so extended as to give the appearance of a spiral marking. It was described from Hanjang, Hupei Province, east of Szechwan.

A female from Kuanshien is of the same size and appearance and may belong to this species.

Three other species are recorded from Szechwan or from nearby districts. These species are based on females; *S. maxima* Martynov from Szechwan is said to have an expanse of 65 mm.; the only one I have seen that is as large is *S. grahami*, and quite possibly it is that species.

S. cinerea Navás has forewings 21 mm. and *S. tibetana* Navás 25 mm. The size would fit any of the four small species; Navás gives a figure of anal area of forewing with a mark I have not seen on any of my specimens; *S. cinerea* may be *laminata*, as the other species are too dark to be called "*cinerea*."

Genus POLYMORPHANISUS Walker

POLYMORPHANISUS UNIPUNCTUS, new species

Pale greenish or yellowish, antennae black beyond base, legs pale, unmarked, fringe of midlegs blackish, abdomen dull black, mesoscutellum with a large black spot in front part. Forewings rather broad, the discal cell is short, not one-half as long as the pedicel, fork

four goes back on discal cell about halfway to the cross vein, latter beyond the middle of the cell, cross vein between median fork and cubitus oblique, and fully three times its length before the median cell; in hindwings venation similar to *P. nigricornis*.

Length of forewing, 25 mm.

Two from Suifu, Szechwan, August. Holotype, U. S. N. M. No. 53164. Paratype in M. C. Z.

Genus AMPHIPSYCHE McLachlan

AMPHIPSYCHE PROLUTA McLachlan

One from Suifu, Szechwan, August; known from Siberia.

Genus CHEUMATOPSYCHE Wallengren

CHEUMATOPSYCHE species

Two females, one from Shin Kai Si, Mount Omei, 4,400 feet, and the other from Beh Luh Din, July 28, 6,000 feet, have evenly brownish wings with yellowish hair, rather large, and may be new.

CHEUMATOPSYCHE CHINENSIS form MACULIPENNIS Martynov

One female from Suifu, August 1928, is probably this species; at least the markings of the forewings agree with the description. It was described from Tchang, Cham.

Genus HYDROPSYCHE Pictet

HYDROPSYCHE HEDENI Forsslund

A large number of specimens from Suifu, August 1928, Szechwan, and without definite locality but probably Suifu. It was described from northern Szechwan and southern Kansu.

HYDROPSYCHE PENCILATA Martynov

Several from Kuanshien, April 5 to May 8, 3,000 feet; Beh Luh Din, August 22-27, 6,000 feet; Mount Omei, July; Chengtu and Suifu, August; near Tatsienlu, June.

HYDROPSYCHE COLUMNATA Martynov

A few from Beh Luh Din August 7, 6,000 feet; also from Szechwan (no definite locality) probably Suifu; Chengtu, July 3-5, 1,700 feet; and Tseo Jia Geo, south of Suifu, September, 1,400 to 2,000 feet.

HYDROPSYCHE RHOMBOANA Martynov

Two males from 30 miles north of Tatsienlu, July 5-9, 12,000 feet and Kuanshien; described from eastern Tibet.

HYDROPSYCHE GRAHAMI, new species

PLATE 30, FIGURE 69

Head with some dark hair on face, on vertex pale yellowish, on back of vertex some black hair each side; pronotum with mostly pale hair; antennae pale, a dark ring over joinings. Forewing with short black hair, many small spots of pale yellowish hair, in apical cells two rows of these spots, one each side near the vein; apical fringes mostly black, no pale patches (in *hedeni* with pale patches). Hindwings mostly gray, with gray and black hair.

In forewings fork one is a little longer than its pedicel, fork two farther back on discal cell than in *hedeni*, fork three does not reach as far as apex of discal cell, fork four only a little before fork five.

In hindwings fork one is distinct, but small. In male genitalia the superior plate is broadly, deeply incised, and at each side is a fairly long incurved spine; the claspers are slender, the apical joint fairly long, tapering and but little curved, seen from behind the tip is forked, the penis stout, tip enlarged, and from above is an out-curved spine each side before the swollen tip, from the side the tip is seen to have three pointed projections above.

Forewing 7 mm. long.

Two from Szechwan, probably Suifu, taken with a mass of *H. hedeni*, which it resembles closely, except for the very different genitalia. Holotype, U.S.N.M. No. 53165. Paratype in M.C.Z.

H. rhomboana Martynov has a deeply incised superior plate but without the curved spines; the apical segment of the clasper is shorter and more curved.

HYDROPSYCHE PLANA Forsslund (?)

Three females from Wen Chuan Shien, 30 miles northwest of Kuanshien, August 26, 5,000 feet, and Mount Omei, July. These agree in size and are black, but a male would be necessary to be sure.

Genus HYDROMANICUS Brauer

HYDROMANICUS INTERMEDIUS Martynov

Three from near Washan, July, 4,000 to 6,000 feet, described from Szechwan.

Genus POTAMYIA Banks

POTAMYIA CHINENSIS Martynov

From Chengtu, September 1-3, Szechwan, known also from eastern China.

Genus ARCTOPSYCHE MacLachlan**ARCTOPSYCHE LOBATA Martynov**

Agrees generally with his figures, but the superior plate, which, as he figures, is divided into two long down-curved prongs, has on each side an elongate slender prong, not figured; the venation agrees. From Lu Ding Chiao, July 12-14, 4,000 to 9,000 feet; Chin Chi Shien, west of Yachow, July 10, 4,500 to 6,000 feet; near Washan, 4,000 to 6,000 feet, July, Szechwan; and Jedo Pass, China-Tibet border, July 17, 12,000 to 15,000 feet.

Genus PLECTROCNEMIA Stephens**PLECTROCNEMIA species**

A fairly large female from Mount Omei, forewing 12 mm. long; pronotum yellow-haired in middle, black on sides, and much black hair back of each eye.

PLECTROCNEMIA species

From near Washan, July, 4,000 to 6,000 feet, and Suifu, August; forewing 10 mm. long, both females; it has very little black hair on vertex and pronotum, but much yellow.

Genus PHILOPOTAMUS Curtis**PHILOPOTAMUS SINENSIS, new species****PLATE 29, FIGURES 44, 46**

Body dark brown to nearly black, head with yellow and some black hair, thorax also; antennae with a pale band at tip of most joints below; palpi with tuft of long, pale hair at lower outer end of first joint; legs pale, femora more or less darkened, spurs as usual. Forewings dark brown, clothed with short black hair, except on the numerous hyaline spots, many scattered small spots of golden hair, particularly in the anal region; hindwings gray, with short black hair.

In forewings the discal cell is not one-half of the pedicel, fork one about one-half of pedicel, fork two is back a short distance on discal, fork three a little longer than four, both short, latter nearly twice as long as pedicel, fork five back a little before discal cell; each of the four cross veins of the anastomosis separated from next.

In hindwings fork one also very short, fork two back nearly width of discal cell, fork three much longer than pedicel, fork five before base of discal cell. Male genitalia from side show a long slender apical part to the lower appendages, longer than the preceding part; above is a short median piece, and below a much longer median piece,

deeply bilobed at tip, each side is a short 2-jointed appendage, the apical part rounded and bent downward.

Forewing, length 8.5 to 11 mm.

From Wenchau, November–December; Jedo Pass, July 17–18, 12,000 feet (holotype); and O-Er, north of Li Fan, 9,000 feet. Holotype, U.S.N.M. No. 53166. Paratype in M.C.Z.

Family PHRYGANEIDAE

Genus EUBASILLISSA Martynov

EUBASILLISSA TIBETANA Martynov

One from Tang Gia, August 3–6, 14,000 feet, Tibet, agrees with a paratype.

Family LIMNEPHILIDAE

The genera of Limnephilidae known to me from China can be tabulated as below:

1. Subcosta of forewings ends in a cross vein at base of the stigma	_____	Apatania
Subcosta ends in margin	-----	2
2. No fork three in hindwings	-----	Halesinus
Fork three present	-----	3
3. Vertex, pronotum, and wings with short, appressed hair, no upright bristles	-----	4
Vertex and pronotum at least with erect hair and bristles, or else plainly on wings and veins	-----	5
4. Outer margin of forewing plainly sinuate	-----	Glyphotaelius
Outer margin not sinuate	-----	Nemotaulius
5. Head smooth, ocelli exceedingly small, as also posterior warts	_____	Evanophanes
Head with bristles, ocelli distinct	-----	6
6. No spines under last joint of hind tarsus; no ocellar macrochaetae; not four spurs to hind tibiae	-----	7
Some spines under last joint of hind tarsus; four spurs to hind tibiae	-----	9
7. Palpi extremely long in both sexes	-----	Nothopsyche
Palpi of usual length	-----	8
8. Base of fork one very broad	-----	Psilopterna
Base of fork one acute	-----	Platyphylax
9. No ocellar macrochaetae	-----	Pseudostenophylax
Ocellar macrochaetae distinct	-----	10
10. Apical margin oblique; in hindwing fourth apical cell narrowed at base	-----	Limnephilus
Apical margin rounded; in hindwing fourth apical cell broad at base	-----	Anabolia

Genus GLYPHOTAELIUS Stephens

GLYPHOTAELIUS MUTATUS McLachlan

From Beh Luh Din, 30 miles north of Chengtu, August 13, 6,000 feet, and also from Kuanshien.

Genus LIMNEPHILUS Leach

LIMNEPHILUS SUBFUSCUS Ulmer

One male from near Washan, Szechwan, July, 4,000 to 6,000 feet; another without definite locality, July 12-19, 13,000 feet. It does not differ in coloration or genitalia from Japanese specimens.

Genus NOTHOPSYCHE Banks

NOTHOPSYCHE RHOMBIFERA Martynov

One female, apparently belonging to this species, from Chengtu, Szechwan, 1,400 to 4,500 feet. It has femora of front and midlegs pale yellowish, while in the male types the legs are said to be black.

EVANOPHANES, new genus

A large, broad-winged limnephilid, in general resembling a large *Dicosmoecus*, the venation similar except that fork one goes back much farther on the discal cell; hind tarsi broken, but, judged from the tibiae, with few if any spines, none on last joint of front tarsi, front tibia with one spur, hind tibia with two spurs, midlegs off.

Palpi (of female) very much longer than in *Dicosmoecus* or *Astenophylax*; head quite different from both and all other limnephilids in that the ocelli are extremely minute, hardly to be seen; the basal joints of antennae are wide apart, and the median ocellus occupies hardly one-tenth of the space, the lateral ocelli longer transversely; the face longer than in *Dicosmoecus*, no submedian grooves, but the lower pits present, no warts nor bristles on face; the vertex broadly convex, the posterior warts present, transverse, but extremely small, each with a few very short black bristles, no other bristles on vertex; antennae much like *Dicosmoecus*. Mesothoracic strips also very short and narrow.

Type, *E. insignis*, new species.

Readily distinguished by the very small ocelli, lack of grooves and warts on face, and of bristles on the vertex. *Stenophylax magnus* has the ocelli smaller than in many limnephilids, but not comparable to these; moreover there are the usual bristles on face and vertex.

EVANOPHANES INSIGNIS, new species

PLATE 30, FIGURE 71

Body bright reddish, antennae, palpi, and pronotum black, also a square spot on the mesoscutellum is black, femora pale, rest of legs black. Forewings a uniform brown (darker than in *Dicosmoecus atripes*), a small hyaline spot on the thyridium, membrane evenly clothed with short black hair, veins with longer, erect hairs. Hindwing paler, but brownish in front and at tip. Venation of forewing much as in *Dicosmoecus* or *Astenophylax*, but fork one is back on

discal cell for more than width of the cell; fork three also back for about a cell's width. In hindwing fork one is also back on discal cell more than width of cell.

Length of forewing, 32 mm.; width, 11 mm.

One specimen of this fine large species from near Washan, Szechwan, China, 4,000 to 6,000 feet, July. Type, U. S. N. M. No. 53167.

Genus PLATYPHYLAX McLachlan

PLATYPHYLAX RUBESCENS Martynov

PLATE 29, FIGURE 40

Described from a female from Yatung, Tibet. Two females agree fairly well with the description and figure. The males have very striking genitalia. The tip of the last abdominal segment is bent down in a broad lobe, which is covered with stout black spines; below (from side) is a pale elongate superior appendage, and below this the intermediate hooklike processes, its tip (seen from side) has a slender inner prong and a rounded outer lobe; from below are two broad truncate lobes, each tip with stout hairs, and above these are two curved reddish spinelike pieces, with a long tooth near tip and another not quite so long nearer to base, seen best from behind.

In most of the males the wing membrane is slightly brownish and with many small pale spots; hair on face largely yellowish, black each side by eyes, those on vertex mostly pale, but some black each side, those on mesonotum mostly pale, a few of those over wing base are darker or nearly black.

Specimens are from 9 miles southwest of Tatsienlu, June 25-27, 8,500 to 13,000 feet; O-Er, 26 miles north of Li Fan, August 16; Yachow, August 27-30 (all Szechwan); and Jeddo Pass, 12,000 to 15,000 feet, July 17, China-Tibet border, and Yiel Long Shien, August 3-6, 13,000 to 15,000 feet, China-Tibet border. *Pseudopotamorites peniculus* Forsslund appears to be very close to this species, but Forsslund's figures show slight differences in details. I see but little resemblance to *Potamorites*, but if *Platyphylax* is to be divided, the generic name may be kept.

Genus PSILOPTERNA Martynov

PSILOPTERNA SINENSIS, new species

PLATE 29, FIGURES 49, 50

Head and body pale yellowish, abdomen darker above toward tip; palpi, antennae, and legs pale, unmarked; hair on face pale, but some black each side by eye, that on vertex pale, that on thoracic notum pale, and above the wing base but little darker.

Forewings pale yellowish, a little darker in anal area and near cubitus, the outer margin also faintly darker, no distinct irrorations;

hind wing also pale, veins and fringes pale yellowish. Forewings moderately slender, and the tip not broadly rounded; discal cell very long, widened near tip, upper margin toward tip concave; fork one not back on discal cell, but broad at base, fork two a little narrowed at base, fork three scarcely back on cell, anal cell very long, as long as width of wing at its end; all hairs very short.

Legs long and slender, with but few black spines, last joint of mid and hind tarsi with but few spurs, 0, 2, 2, front tarsus of male much longer than tibia, its basal joint only about one half as long as the second.

Male genitalia short and inconspicuous as in *Micropterna*; lower appendages shorter than in *P. pezvovi* Martynov, the upraised dark hooklike processes much less stout and with slenderer tips than in that species, the hind edge of the last dorsal segment roughened with minute teeth.

Forewing, male, 20 mm. long, 6 mm. wide.

Holotype, U.S.N.M. No. 53168. Paratype in M.C.Z.

A female differs in no important respects but is much larger, forewing 25 mm. long; the tip of abdomen shows two rather slender dark-tipped processes nearly their length apart.

From Beh Luh Din, Szechwan, August 22, 6,000 feet (holotype), and near Kuanshien, October 20. It is very similar to *Microptera indica* Mosely from Kashmir; the lower appendages are not so much narrowed toward tip, the upper lateral lobe larger, the tip of last segment has black spinules instead of the pale setae of *M. indica*, etc.

Genus PSEUDOSTENOPHYLAX Martynov

Pseudostenophylax shows traces of the bristle-bearing warts on metanotum and base of abdomen. In males of *P. grahamsi* are usually several of these warts in two rows on the metascutellum; in males of *P. (Trichophylax) monticola* there is a prominent median patch at the base of the intermediate segment, just behind the metascutellum. In *P. amplus* there are a few warts each side of the middle groove at base of the intermediate segment in both sexes. I do not find any in the other species.

The species of *Pseudostenophylax* from Szechwan known to me can be separated in the male sex as follows:

1. Abdomen with long hair above; discal cell very long; at base of intermediate segment, just behind the metascutellum is a patch of bristle-bearing warts..... *monticola*
Abdomen with only the usual short hair, except a tuft or crest at tip..... 2
2. Discal cell more than twice as long as its pedicel..... 3
Discal cell but little longer than its pedicel..... 6

3. Expanse 50 or more mm.; tip of abdomen without tuft of long hair, lower part of slope black with minute tubercles; at base of intermediate segment is a few bristle-bearing warts each side of the median groove----- *amplus*
 Expanse scarcely 40 mm----- 4
4. Hind tibiae with a row of long, curved, white hairs behind, small species; crest of black hairs near tip of abdomen, above slope----- *minimus*
 Hind tibiae without the long white hairs----- 5
5. Tuft of long rufous hair near tip of abdomen above the slope; usually some bristle-bearing warts on the metascutellum----- *grahami*
 No tuft of long hair near tip of abdomen----- *difficilis*
6. Hind tibiae with long white hairs behind; median teeth broad and low----- *mimicus*
 Hind tibiae without the long hairs behind; median teeth high and more narrow----- *brevis*

P. szechuanensis Martynov I have not seen; the figures of genitalia appear different from any I have seen.

PSEUDOSTENOPHYLAX AMPLUS (McLachlan)

PLATE 29, FIGURES 35, 39

Described as a *Halesus*; a pair from 9 miles from Tatsienlu, the type locality, and Hai Tsi Ping near Tatsienlu, August 5, 13,000 feet. The male has four spurs to hind tibia, the female but three. They agree very well with the description in size and coloration. The male has a broad black area at tip, thickly studded with minute tubercles, and below it in the middle, apparently as part of the upper piece (but I do not think so) is a deep black horseshoe-shaped piece, each lower end bending out in a process, and apparently the part referred to by McLachlan. Seen from side, the clavate superior appendages hang down, and the intermediate are slenderer, the lower appendages curving upward and covering over half the genitalia.

The lower appendages from below are short on the inner edge, very long on outer side, the apical margin concave.

The female, from above, shows a broad median piece angularly notched in middle, each tipped with a slender finger; on each side of this central part is a broad rounded lobe, with an oval depressed hairy area; below this upper part is a broad pale lamina, its outer margin heavier, and broadly emarginate in the middle; below the latter is a still larger projection, the middle part pale, the broadly rounded almost projecting side lobes are black. From these genitalia it is evidently a *Pseudostenophylax* in the sense of Martynov; but the hindwings show no specialized hairs or scales in anal area; but there are many tubercles on the membrane and much long fine hair.

PSEUDOSTENOPHYLAX GRAHAMI Martynov

From Wei Chow, August 15, Szechwan; and Yu Long Gong, August 14, 14,000 feet, Tibet.

PSEUDOSTENOPHYLAX DIFFICILIS Martynov

From Chin Chi Shien, west of Yachow, July 10, 4,500 to 6,000 feet; others from Yellow Dragon Temple (type locality) July 25, 11,000 to 14,000 feet, and Hai Tsi Ping, near Tatsienlu, August 5, 13,000 feet.

PSEUDOSTENOPHYLAX MINIMUS, new species

PLATE 28, FIGURE 31; PLATE 29, FIGURE 36

Body brown, abdomen above dull black, the longer hairs and bristles are black, some long ones on pronotum are paler, and the short, more appressed hair on face and vertex is pale; basal joint of antennae brown, with black hairs, beyond paler; palpi brown; legs pale, with short black spines, hindtibia of male curved, and with a row of long, slightly curved hairs on hind edge.

Forewings pale brown, with scattered pale spots, not often connected, few pale spaces in costal area, membrane with short black hair, those on the veins not much longer, except in anal area; hindwings pale gray, hardly darker at tip. Forewings in shape like *grahami*, discal cell more than twice as long as the pedicel, its upper edge before fork one is concave, latter back on the discal cell about width of the cell. In hindwings no apparent scales, in anal area an elongate deep pouch, costal area very broad.

Tip of abdomen has a long sloping area, brown, and with very short curved hairs, above is a tuft or crest of long black hairs; below are the two median teeth, large, and quite long with narrowed and rounded tips, mostly black; the lower appendages are moderately long, seen from below long on the outer side, very much shorter on inner side, the tip concave, and provided with many very long bristles.

Length of forewings, 13 mm.; width, 5 mm.

One from near Washan, 4,000 to 6,000 feet. Holotype, U.S.N.M. No. 53169.

Differs from *P. brevis* by less broad wing, longer discal cell, ciliate hind tibia, and shape of the median teeth.

PSEUDOSTENOPHYLAX MIMICUS, new species

PLATE 29, FIGURES 42, 45

Greatly resembling *P. minimus*, of same size and general coloration; the forewings are more pale, better described as pale, marmo-

rate with pale brown, more or less connected spots. In forewings (both sexes) the discal cell is but little, if any longer than its pedicel, and its upper edge is not concave before fork one, and the latter does not go back so far on the discal cell; in the hindwing the costal area is fully as broad as in *minimus*, and in male there is the same elongate pouch near anal margin.

The tip of abdomen of male has a tuft of black hair above, below a large sloping area clothed with short bristles, this area is paler than in *minimus* but with dark outer corners; the median teeth are low and very broad (quite unlike *minimus*); the lower plates are small.

The hind tibia has the same long, curved, white hairs as in *minimus*. The tip of the abdomen of the female, from above, shows the usual two spinelike processes very far apart and curved toward each other.

Length of forewing of male, 13 mm.; width, 5 mm.; the female scarcely larger.

From Suifu, 1,000 to 2,000 feet, August 1928. Holotype, U.S.N.M. No. 53170. Paratypes in U.S.N.M. and M.C.Z.

PSEUDOSTENOPHYLAX BREVIS, new species

PLATE 29, FIGURES 34, 41, 43

Body brown, thoracic notum paler through the middle; erect hair mostly black, some appressed hair on face and vertex yellowish; antennae with basal joint dark brown with black hair, beyond paler; palpi pale brown; legs pale with black spines, not very long. Forewings brown, with many scattered pale spots, none very large, and mostly not connected, few in costal area, hyaline thyridial spot rather large; membrane with short black hair, veins with longer hair, especially the anal veins. Hindwings pale gray, slightly darker toward tip.

Forewings very short and broad, broadly rounded at tip, costal margin convex, discal cell not as long as usual, but little longer than pedicel, fork one not width of discal cell back on discal; apical cells two and four about equal at base, forks two and three indenting the anastomosis but little; hindwing with no scales visible, but a deep elongate pouch in anal area. Tip of male abdomen shows the usual sloping area, very broad, brown, covered with appressed bristles, above it is a broad tuft of black hair; below it are the two median teeth, large, broad, truncate at tip, black at their margins, below it the two processes directed toward each other, and tipped with stiff reddish bristles; the lower appendages or plates are broad and short, longer on outer edge.

In the female the tip of abdomen from above shows two rather broad, somewhat quadrangular plates, each with a long curved spine.

Length of forewing, female, 12.5 mm.; width, 5 mm.

Length of forewing, male, 11 mm.; width, 4.5 mm.

Two from near Washan, 4,000 to 6,000 feet, July. Although the discal cell is short in this and *P. mimicus*, I keep them in this genus because they are very closely related to *P. minimus*, which has a long discal cell. Holotype, U.S.N.M. No. 53171. Paratype in M.C.Z.

PSEUDOSTENOPHYLAX (TRICHOPHYLAX) MONTICOLA, new species

PLATE 29, FIGURES 37, 38, 51

Face rufous, with black hair; vertex nearly black, also with black hair; basal joint of antennae pale and with pale hair, beyond the segments are darkened above; palpi pale, second and third joints equally long, mesonotum black on sides, more rufous through middle, hair black; metanotum rufous, darker above wing base; abdomen dull brown above, with innumerable distinct pits, larger than usual, and each with a long white hair, about one third as long as the segment, a few near middle of length longer, at tip a tuft of long hair as usual; venter more yellowish; legs pale, front and mid tibiae with black spots, and the tips of tarsal joints dark, many black spines.

Forewings rather densely clothed with short black hair, posterior part of wing from cubitus back is brown, and with some pale spots, one much larger near end of anal cell; apical veins with irregular brown spots along each side; hindwings with short black hair in front, paler behind, fringes short and pale.

Forewings rather short and broad toward tip (much like *T. rotundipennis*), fork one is back on discal cell about twice as far as in *T. rotundipennis*, fork three also reaching farther back; discal cell even longer, its pedicel no longer than cell width, and the discal cell not widened at tip. Male genitalia show below a rather long piece each side, obliquely truncate, and with long yellowish hair; the superior pieces (from side) are short and moderately broad, not pointed, the intermediate appendages have a pair of slightly curved slender black prongs directed upward; the penis sheaths have the terminal piece slender, curved, and with long hair at tip (like *Pseudostenophylax*); tip of last dorsal segment with a triangular depressed area, covered with minute black denticles. Tip of female has the two slender tipped pieces common in *Pseudostenophylax*, only slightly separated; these arise from a rather large base, and below (from side) is an elongate lobe, and at lower side, an elevated ridge, projecting most prominently below. The hairs on the abdomen of the female are only a little longer than usual in the family.

Length of forewing, 17 to 22 mm.; width, 7 to 8.5 mm.

From 9 miles southwest of Tatsienlu, June 23-27, 8,500 to 13,000 feet (holotype); 30 miles north of Tatsienlu, July 9-19, 1,200 feet; near Moupin, July 22-24; Wei Chow, 65 miles north of Chengtu, August 15, 9,000 to 12,500 feet (all in Szechuan). Holotype, U.S.N.M. No. 53172. Paratypes in U.S.N.M. and M.C.Z.

Although this species, as far as genitalia are concerned, agrees better with *Pseudostenophylax*, I place it near *Trichophylax*, since it has no specialized hairs or scales on the hindwings, and the hairs above on abdomen are very much longer than I have seen on any other limnephilid. These hairs, however, are not so long as Mosely figures for the genotype; it differs in the genitalia, in longer first apical fork, in the male palpi, etc.

This is very close to *Pseudostenophylax hirsutus* Forsslund from Kansu Province. His figure shows the terminal pieces of the penis sheath shorter and bent, and the lower appendages, although triangular, are not so long as in *monticola*. His name *hirsutus* would be very apt, but he does not say the hair is longer than usual, only that it is quite dense or thick.

Genus HALESINUS Ulmer

HALESINUS FENESTRATUS, new species

PLATE 29, FIGURE 53

Black; clothed mostly with black hair, some yellow on face, vertex and mesonotum with numerous black hairs with yellow tips; tarsi black, femora and tibiae more or less pale brownish, hind tibiae especially pale. Forewings dark brown to nearly black; costal area with transverse pale marks much like *H. tenuicornis*; in anal area two oblique white marks, nearly parallel, basal one usually broken (in *tenuicornis* divergent), around outer margin with white spot in each cell, and extended in white on the otherwise black fringe; a few small patches of white scattered over wing, and at the anastomosis, just before and a wide area beyond, is a large pale area, clothed with white and golden hairs, the anastomosis and apical veins remain dark. Hindwings gray, costal tip darker, veins dark, outer fringe nearly black.

Venation much as in *tenuicornis* and *albopunctatus*, but in forewing the discal cell is not twice as long as its pedicel, and in hindwing fork one does not extend back on the discal cell (considerably so in other species). Forewings with outer margin distinctly crenulate.

Length of forewing, 12 mm.; width, 4 mm.

Two females without definite locality, except Szechwan, 13,000 feet, July 9-12.

Readily distinguished by the large pale area at anastomosis; *H. ussuriensis* is also separated by the very long discal cell. Holotype, U. S. N. M. No. 53173. Paratype (no head) in M. C. Z.

HALESINUS ALBOPUNCTATUS Martynov

From near Yien Long Shien, August 3-6, 13,000 to 15,000 feet; Yin Kuan Tsai, July 25, 13,000 to 15,000 feet; and Jedo Pass, July 13, 12,000 to 15,000 feet, all on China-Tibet border.

HALESINUS TENUICORNIS Ulmer

From Wen Chuan Shien, July 26, 5,800 feet; Hai Tsi Ping near Tatsienlu, August 5, 13,000 feet; near Moupin, July 22-24; O-Er, north of Li Fan, 9,000 feet; Bul Lau Tsen, northeast of Li Fan, July 31, 8,500 feet; 9 miles southwest of Tatsienlu, June 25, 8,500 to 13,000 feet (all Szechuan); and Jedo Pass, July 17, 12,000 to 15,000 feet, China-Tibet border.

Family CALAMOCERATIDAE

Genus **PSILOTRETA** Banks**PSILOTRETA CHINENSIS**, new species

PLATE 27, FIGURE 1; PLATE 30, FIGURES 67, 68, 70

Head and thorax reddish brown, abdomen dull black; face with yellowish hair, vertex and thorax above with short gray hair; palpi brown; antennae pale, basal joint darker, legs pale yellowish, with fine whitish hair, spurs pale.

Forewings brownish gray clothed with golden and black hair, the latter short and hidden by the golden; hindwings gray, with black hair. In shape and venation the forewings are similar to *P. japonica*, the discal cell is rather longer and slenderer, fork one is much longer, reaching back more than halfway on discal cell; fork two with a moderate pedicel, fork three quite short, fork five a little widened near base.

Tip of abdomen of female (from above) shows two emarginate lobes, the shorter one above the other. The male genitalia are rather complicated. Above is a median triangular superior plate, beyond its tip is a slender peniscover, and the penis, the latter deeply bilobed at tip; from each lateral side or tip of the abdomen is a moderately long and broad, extremely hairy appendage, from its inner tip projects a dark bar toward the tip of superior plate, at its upper tip is a curved spine, also a curved spine at inner tip of the lateral appendage, but hidden in the long hair. Between these median and lateral parts is a dark, 3-pointed piece, the outer and inner processes tapering to a long, slender-curved point, one of which projects downward and is seen from the side.

Length of forewing, male, 12 mm.; female, 15 mm.

From near Washan, Szechwan, July, 4,000 to 6,000 feet, several specimens. Holotype, U.S.N.M. No. 53174. Paratypes in U.S.N.M. and M.C.Z.

The male genitalia have the superior plate and the lateral appendages very much shorter than in *P. kwantungensis* Ulmer, and the lower appendages (from side) are very broad throughout, and the wings are a uniform brownish, without the white hair of *P. kwantungensis*; I have a male of the latter species from Yim Na San, East Kwantung (Gressitt coll.).

Family LEPTOCERIDAE

Genus NOTANATOLICA McLachlan

NOTANATOLICA LEGENDRINA Navás

Several from Chengtu, July 3-5, 1,700 feet, Szechwan, and one from near Tsao Tong, July 12, Yunnan. It was described from Yunnan.

Genus OECETIS McLachlan

OECETIS TURBATA Navás?

A female from Chengtu, July 3-5, may belong to this species of eastern China; the spots at forks are the same, but the apical part is more evenly dark; a male might show it different.