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NEW OR LITTLE KNOWN BUTTERFLIES FROM THE
NORTH-EASTERN ASIA, WITH SOME
SYNONYMIC NOTES. III

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PIERIDAE

Colias erate formosana subsp. nov. (Pl. 30, figs. 1-4, ♂♀)

Colias hyale subsp. Esaki, *Zephyrus*, 4 (2/3): 139, 1932.

Specimens of *C. erate* Esper captured in higher elevation in Formosa are usually separable from those belonging to subsp. *poliographus* Motschulsky from Japan, Korea, Manchuria, China and the Loochoos, and seem to be worthy of subspecific separation.

♂♀. Somewhat smaller in size and narrower in wing shape than subsp. *poliographus* in general. The black bordering of forewings above in male is somewhat broader and usually more extended inwardly along the costal margin, but not always distinct. In female, the marginal and submarginal black bands of hindwings and dark scaling of both the wings are stronger than in the same sex of subsp. *poliographus*.

Always yellow in male, white in female in ground colour of wings above so far as the specimens examined concerned.

Length of forewings: 24-26 mm. (♂♀).

Habitat: Formosa (higher region).

Holotype ♂, Pianan-anbu (ca. 1810 m), Taihoku Pref., North Formosa, 20. vii. 1932, T. Esaki leg.; allotype ♀, Kanzan-goe (Kaimosu~Kanzan-anbu), Taitô Pref., South Formosa, 13. viii. 1932, T. Esaki leg.; paratopotypes 4 ♂♂, data same as holotype; paratypes 2 ♂♂ 2 ♀♀, Pianan-anbu, Taihoku Pref., North Formosa, 19. vii. 1932, T. Esaki leg.

NYMPHALIDAE

Tacoraea opalina hirayamai (MATSUMURA, 1935) comb. nov.

(Pl. 31, figs. 9-14, ♂♀)

Pantoporia hirayamai Matsumura, Ins. Mats., 10 (1/2): 42, f. ♂, 1935 (1 ♂, Sankakuhô near Hori, Taichû Pref., Central Formosa, 17. vii. 1934).

Pantoporia opalina constricta Nomura (nec Alphéraky), Zephyrus, 6 (3/4): 218-220, f. ♂, 1936 (1 ♂, Heiganzan~Tahoku, Taichû Pref., Central Formosa, 24. vii. 1935; 2 ♂♂, Formosa, no more exact data).

Pantoporia hirayamai Hirayama, Genshoku Chôrui Zufu, pl. 49, f. 14, ♂, 1939 (Hori, Taichû Pref., Central Formosa, 21. vi. 1938).

I examined the type of *hirayamai* Matsumura in Entomological Institute, Hokkaido University and other Formosan specimens identified by Nomura as *P. opalina constricta* Alphéraky in Entomological Laboratory, Kyushu University, as well as some additional Formosan specimens with the following data.

2 ♂♂, Kussyu, Taiheizan, 11. viii. 1936, S. Asahina leg.

1 ♂, Sankakuhô near Musha, 9. iii. 1937, Endô leg.

1 ♀, Sankakuhô near Musha, 16. iii. 1937, Endô leg.

1 ♂, Shishitô near Hori, 1. v. 1941, Y. Kurihara leg.

1 ♂, Musha, 25. viii. 1941, N. Ikeda leg.

2 ♂♂, Baikei near Hori, 12. vi. 1942.

So far as I observed, all the specimens mentioned above, including the type of *hirayamai* and *constricta* of Nomura, are entirely conspecific and undoubtedly belong to one and the same subspecies, though the white bands and spots in the type of *hirayamai* are slightly broader or larger than in the rest. The figure of the type of *hirayamai* shown by Matsumura in his original description is somewhat incorrectly figured, and the actual type provides the narrower postdiscal band than is shown in the figure.

This is apparently a subspecies of *Tacoraea opalina* Kollar inhabiting in Formosa as treated by Nomura, but there is some problem concerning the subspecific identity, as it is not clear whether the Formosan and Chinese forms are identical or not. In Formosan specimens captured in March, May, June and August, the broadness of the white bands of wings are almost constant, and the seasonal variation in the white bands and spots seems to be not marked.

As compared with the figure of subsp. *constricta* Alphéraky from China shown in Seitz, 1, pl. 59b, Formosan specimens are with more

developed white bands and spots, and this difference may not be regarded as seasonal judging by the above mentioned fact, thus it may be better to accept *hirayamai* as the name of the Formosan subspecies.

As compared with specimens from Nepal, Formosan specimens are much smaller in size, i.e., in forewing length 27–31 mm. in ♂, against 31–34 mm. in ♂ in Nepalese specimens, and are provided with less incurved distal margin of forewings and smaller, sullied white bands and spots on both the wings. The subapical white spots in spaces 7 and 8 of forewings are much smaller. Underside of wings is almost uniformly much deeper reddish brown, and not becoming paler in distal parts of wings as seen in Nepalese specimens.

I describe the female of the Formosan subspecies in following lines, as it has never been recorded or described.

♀. Wing shape is broader, and the ground colour is paler in both sides of wings than in male. The white bands and spots are broader or larger than in male.

Allotype ♀, Sankakuhô near Musha, Central Formosa, 16. iii. 1937, Endô leg. (Pl. 31, fig. 14).

***Hestina assimilis shirakii* subsp. nov.** (Pl. 32, fig. 19, 22, ♀)

Hestina assimilis Fritze (nec Linné), Zool. Jahrb., Abt. Syst. 7: 896, 1894 (Okinawa).

Hestina assimilis Miyajima (nec Linné), Nippon Chôrui Zusetsu: 137–138, pl. 15, f. 1 [♀], 1904 (Ryukyu).

Hestina assimilis Yashiro (nec Linné), Zephyrus, 4 (2/3): 123, 1932 (Okinawa Island; scarce).

Hestina assimilis Sonan (nec Linné), Zephyrus, 5 (2/3): 115, 1934 (Amami-Oshima).

A well marked subspecies occurs in Amami-Oshima and the Loochoos.

♂♀. Size is almost same as the nominate race from China, Manchuria, Korea and Quelpart Island, but larger than subsp. *formosana* Moore from Formosa. The red ocular spots of hindwings are larger than in above mentioned two subspecies, and central black spots in them are well developed, which are weakly developed or almost absent in typical *assimilis*. The submarginal white spots in spaces 2 to 4 of hindwings are distinctly smaller as compared with those in spaces 5 to 7, while all the spots of the submarginal series are subequal in size in subsp. *formosana*. In the nominate race, this character is almost similar to that in this new subspecies, but the white spots in spaces 2 to 4 are sometimes entirely obsolete.

Length of forewings : 42 mm. (♂), 53 mm. (♀).

Habitat : Amami-Oshima and Loochoos (Okinawa-honto).

Holotype ♀, Yuwan, Amami-Oshima, 30. iv. 1953, T. Shiraki leg.; paratype ♂, Oganyama, Amami-Oshima, 5. iv. 1953, T. Morita leg.

According to the figure shown by Miyajima (loc. cit.), the specimens from Okinawa-honto are identical with those from Amami-Oshima.

Named after Dr. T. Shiraki, a well known Japanese entomologist, who kindly placed a good specimen (holotype) of this new subspecies at my disposal.

The geographical races of *H. assimilis* Linné may be enumerated as below :

- H. assimilis assimilis* (Linné, 1758) South to North China, South Manchuria, Korea and Quelpart Island.
- H. assimilis formosana* Moore, 1895 Formosa.
- H. assimilis shirakii* Shirôzu, 1955 Amami-Oshima and Loochoos (Okinawa-honto).

***Hestina japonica seoki* subsp. nov.**

(Pl. 33, figs. 24-25, 28-29, ♂)

Diagora subviridis Sugitani (nec Leech), Zephyrus, 8 (3/4): 92-93, pl. 7, f. 6, ♂, 1940 (Shoyozan, Central Korea).

Diagora japonica chinensis Mori, Doi et Cho (nec Leech), Colour. Butt. Korea: 36, pl. 24, f. 1, 1934 (Central and South Korea).

Diagora subviridis Mori, Doi et Cho (nec Leech), loc. cit.: 36, pl. 24, f. 2, 1934 (Central Korea).

Diagora japonica Seok (nec C. et R. Felder), Bull. Nat. Hist. Soc. Kagoshima, (1): 36-37, 1942 (Central and South Korea).

The Korean specimens of *Hestina japonica* are always separable from those of the nominate race of Japan, and the former race seems to be worthy of subspecific separation. The Chinese subspecies is rather similar to this new subspecies, but may be again distinguishable from it.

♂ (summer brood). Differs from the same brood of the nominate race from Japan in the following characters.

Wing-shape narrower and apex of forewings is more produced. The basal white patch on the cell of forewings is linear (instead of somewhat triangular in subsp. *japonica*), and more extended distally. The basal white streak in space 1 of forewings is well developed and

distinctly swollen in its distal half, while in subsp. *japonica* this streak is narrower and not so prominent (sometimes it almost disappears). The subapical series of white patches consisting an oblique band of forewings is proportionally smaller as compared with other white markings than in subsp. *japonica*. The marginal series of white spots is more developed and the submarginal one is situated farther from outer margin than in the typical form.

This new subspecies seem to be more closely related to subsp. *chinensis* Leech from West and Central China than to the nominate subspecies, but comparing with the accurate figure of *chinensis*, representing the summer brood, shown by Leech (Butt. China, Japan and Corea, pl. 20, f. 6, ♂), it differs in more developed basal white patches both in the cell and space 1 on forewings above, and more prominent white spots of the marginal and submarginal series on both the wings.

♂ (spring brood). Much differs in appearance from the summer brood, hence often regarded as a distinct species from *H. japonica* by many lepidopterists.

Black portions of the wings are much reduced and blackish colour became much paler than in the summer brood, thus it has a much whiter appearance than the summer brood. The extent of reduction of black portions is very variable, and the male specimen shown in pl. 33, figs. 24 and 28 represents one with the most whitish appearance. In any case, the veins are black. On underside, the blackish portions become much paler, and with more whitish appearance than on upper-side. I would like to name this spring form as **albicans** nov.

The individual variation of the spring brood of this new subspecies was excellently shown in photograph by D. M. Seok (loc. cit.).

Length of forewings: 36 mm. (summer brood), 37-38 mm. (spring brood).

Habitat: Central and South Korea.

Holotype ♂, (summer brood), Kyosho, Keisho-nandô, South Korea, 26. vii. (presented by D. M. Seok); paratype 1 ♂ (type of f. *albicans*), Shoyozan, Keikidô, Central Korea, 21. v. 1930, H. Doi leg.; paratype 1 ♂, Kainan, Zenra-nandô, South Korea, 4. vi. 1937, D. M. Seok leg.

The type of the spring form *albicans* was previously reproduced in colour by Sugitani as *subviridis* Leech (loc. cit.).

Named after the late Mr. D. M. Seok, the author of "A synonymic List of Butterflies of Korea (1939)," who assisted me in various ways.

The geographical races of *Hestina japonica* may be enumerated as below :

- H. japonica japonica* (C. et R. Felder, 1862) Japan (Hokkaido to Kyushu).
H. japonica chinensis Leech, 1896 West and Central China.
H. japonica manja (Fruhstorfer, 1913) Formosa.
H. japonica seoki Shirôzu, 1955 Central and South Korea.

***Bremeria nycteis pallescens* subsp. nov.**

(Pl. 34, figs. 32-33, 36-39, ♂♀)

♂♀. Somewhat smaller in size than the nominate race from Amur, Ussuri, East Manchuria and North Korea, viz., in forewing length being, 31-33 mm. in ♂, 38 mm. in ♀ in this new subspecies against 36-37 mm. in ♂, 40 mm. in ♀ in the nominate form. The ground colour of wings above is brown instead of brownish black in *nycteis*. The marginal and submarginal series of white spots are more developed than in *nycteis*, in which the marginal series of white spots is entirely or almost entirely absent on upperside. On underside, the ground colour is also much paler and the marginal and submarginal series of white spots are more enlarged than in the nominate form.

Length of forewings: 31-33 mm. (♂), 38 mm. (♀).

Habitat: Manchuria (Chung Chan or Sinkyô).

Holotype ♂, 26. vii. 1937, allotype ♀, 29. vii. 1938, Chung Chan, Manchuria, K. Tomikawa leg. (presented by Y. Kurosawa). Paratype 1 ♂, data same as holotype.

Explanation of Plates

Plate 30.

Colias erate formosana subsp. nov. (left row) from Formosa and *C. erate poliographus* Motschulsky (right row) from Japan are compared. All the specimens represent the summer brood.

- Fig. 1. *Colias erate formosana* subsp. nov., ♂ (holotype). Pianan-anbu, North Formosa, 20. vii. 1932, T. Esaki leg.
- Fig. 2. Ditto, ♂ (paratopotype). Data same as holotype.
- Fig. 3. Ditto, ♀ (allotype). Kanzangoe (Kaimosu~Kanzan-anbu) South Formosa, 13. viii. 1932, T. Esaki leg.
- Fig. 4. Ditto, ♀ (paratype). Pianan-anbu, North Formosa, 19. vii. 1932, T. Esaki leg.
- Fig. 5. *C. erate poliographus* Motschulsky, ♂. Fukuoka, Kyushu, Japan, 11. vi. 1954, T. Shirôzu leg.
- Fig. 6. Ditto, ♂. Kashine~Sasu~Izuhara, Tsushima Island, Japan, 29. v. 1930, T. Esaki and M. Fujino leg.
- Fig. 7. Ditto, ♀. Fukuoka, Kyushu, Japan, 11. vi. 1954, T. Shirôzu leg.
- Fig. 8. Ditto, ♀. Fukuoka, Kyushu, Japan, 27. vi. 1954, T. Shirôzu leg.

Plate 31.

- Fig. 9. *Tacoraëa opalina hirayamai* Matsumura, ♂. Sankakuhô near Musha, Central Formosa, 9. iii. 1937, Endô leg.
- Fig. 10. Ditto, ♂. Baikai near Hori, Central Formosa, 12. vi. 1942.
- Fig. 11. Ditto, ♂. Baikai near Hori, Central Formosa, 12. vi. 1942.
- Fig. 12. Ditto, ♂. Kussy, Taiheizan, North Formosa, 11. viii. 1936, S. Asahina leg.
- Fig. 13. Ditto, ♂. Kussy, Taiheizan, North Formosa, 11. viii. 1936, S. Asahina leg.
- Fig. 14. Ditto, ♀ (allotype). Sankakuhô near Musha, 16. iii. 1937, Endô leg.
- Fig. 15. *T. opalina* Kollar subsp. (probably subsp. *orientalis* Elwes), ♂. Kakani~Chaturali, Nepal, 30. iii. 1953, J. Kawakita leg.
- Fig. 16. Ditto, ♂ (summer brood). Lamphati~Nawakot~Trisuli Bazar, Nepal, 16. ix. 1952, K. Imanishi leg.
- Fig. 17. Ditto, ♂ (summer brood). Lamphati~Nawakot~Trisuli Bazar, Nepal, 16. ix. 1952, K. Imanishi leg.

Plate 32.

Three subspecies of *Hestina assimilis* Linné are compared.

- Fig. 18. *Hestina assimilis formosana* Moore, ♀ (summer brood). Hori, Central Formosa, 1-2. viii. 1926, I. Sugitani leg.
- Fig. 19. *H. assimilis shirakii* subsp. nov., ♀ (holotype) (spring brood). Yuwan, Amami-Oshima, 30. iv. 1953, T. Shiraki leg.
- Fig. 20. *H. assimilis assimilis* Linné, ♀ (spring brood). Kodaisan, Korea, 21. vi. 1942, K. Tsuneki leg.
- Fig. 21. Underside of fig. 18.
- Fig. 22. Underside of fig. 19.
- Fig. 23. Underside of fig. 20.

Plate 33.

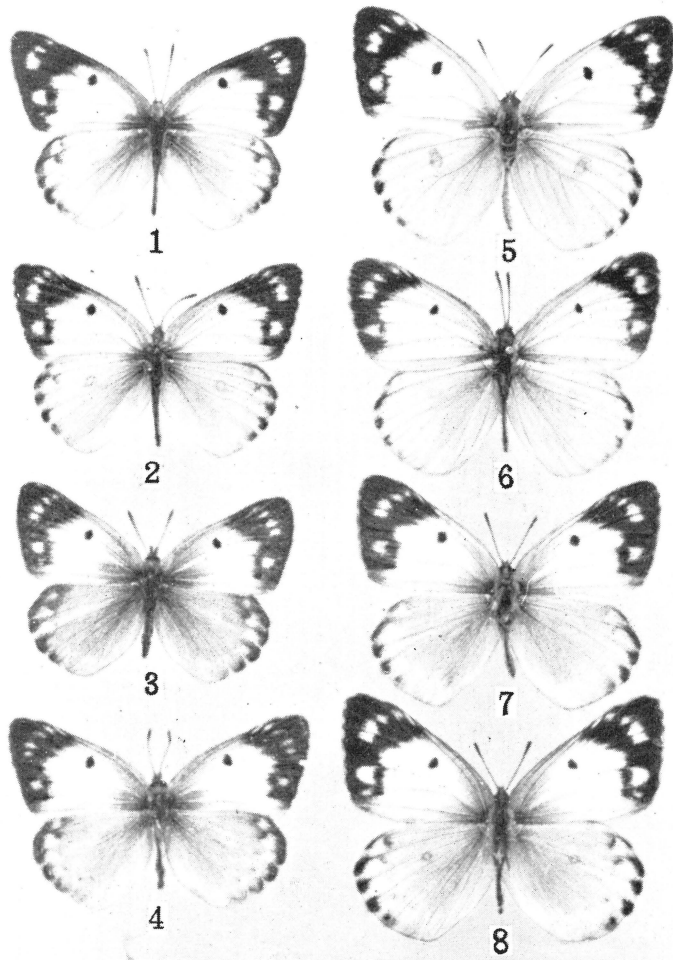
Hestina japonica seoki subsp. nov. from Korea and *H. japonica japonica* C. et R. Felder from Japan are compared.

- Fig. 24. *Hestina japonica seoki* subsp. nov., ♂ (spring brood) (holotype of f. vern. *albicans*). Shoyozan, Central Korea, 21. v. 1930, H. Doi leg.
- Fig. 25. *H. japonica seoki* subsp. nov., ♂ (summer brood) (holotype). Kyosho, Keishonandô, South Korea, 26. vii.
- Fig. 26. *H. japonica japonica* C. et R. Felder, ♂ (spring brood), Kurama near Kyoto, Honshu, Japan, 19. vi. 1932, I. Sugitani leg.
- Fig. 27. Ditto, ♂ (summer brood). Kyoto, Honshu, Japan, 10. viii. 1930, I. Sugitani leg.
- Fig. 28. Underside of fig. 24.
- Fig. 29. Underside of fig. 25.
- Fig. 30. Underside of fig. 26.
- Fig. 31. Underside of fig. 27.

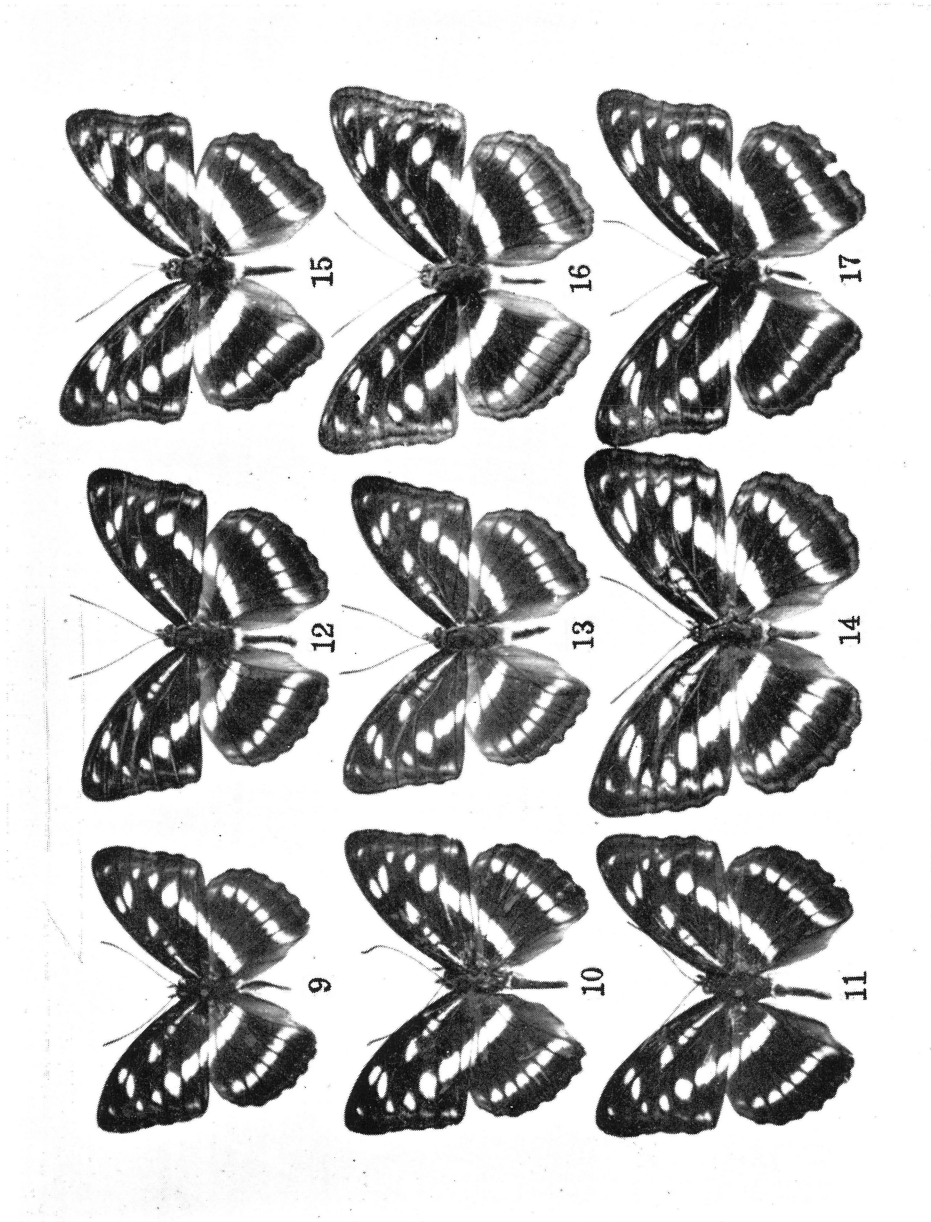
Plate 34.

Bremeria nycteis pallescens subsp. nov. (left row) and *B. nycteis nycteis* Motschulsky (right row) are compared.

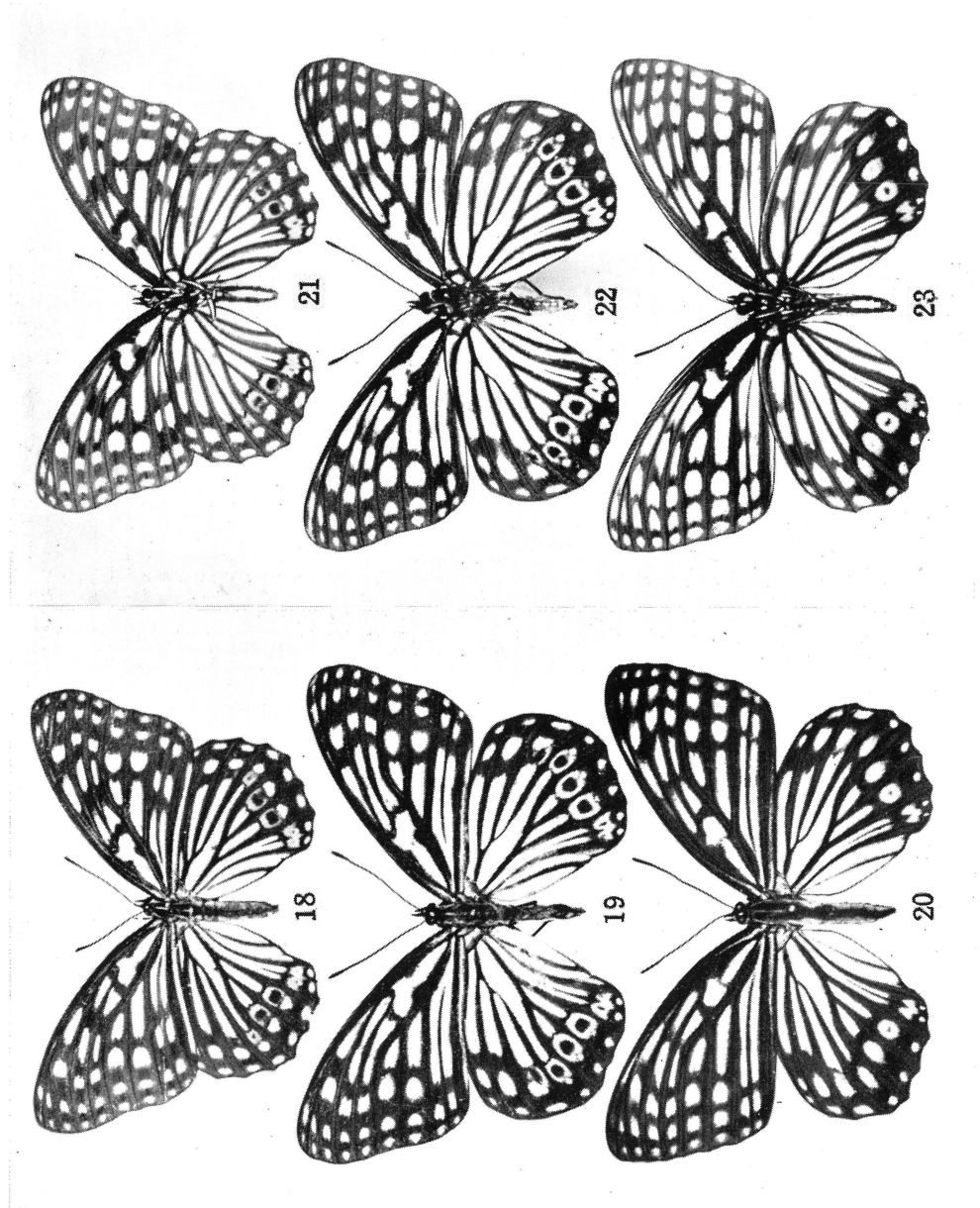
- Fig. 32. *Bremeria nycteis pallescens* subsp. nov., ♂ (holotype). Chung-Chun, Manchuria, 26. vii. 1937, K. Tomikawa leg.
- Fig. 33. Ditto, ♀ (allotype). Chung-Chun, Manchuria, 29. vii. 1938, K. Tomikawa leg.
- Fig. 34. *B. nycteis nycteis* Motschulsky, ♂. Yablonya, East Manchuria, 2. vii. 1940, M. I. Nikitin leg.
- Fig. 35. Ditto, ♀. Kwainei, North Korea, 19. vii. 1934, I. Sugitani leg.
- Fig. 36. Underside of fig. 32.
- Fig. 37. Underside of fig. 33.
- Fig. 38. Underside of fig. 34.
- Fig. 39. Underside of fig. 35.



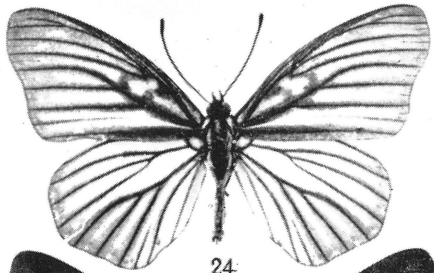
New or little known butterflies (1)



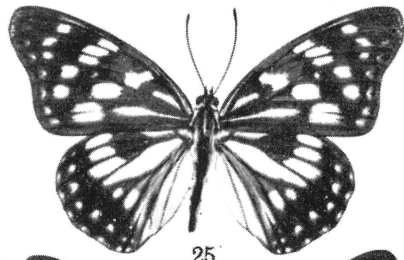
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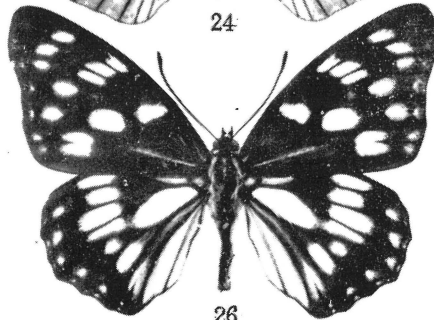
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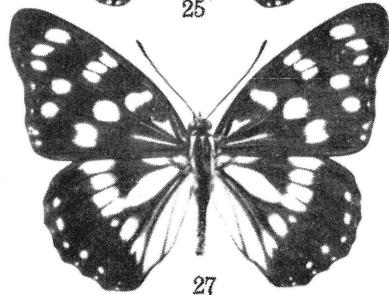
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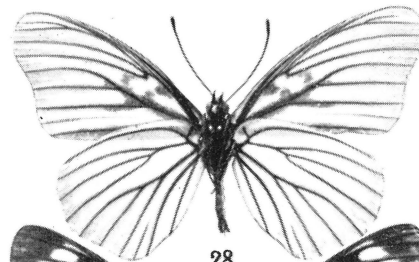
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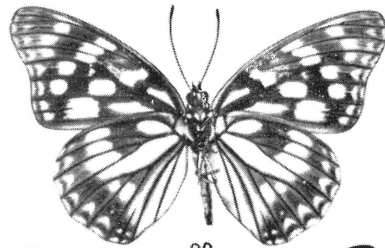
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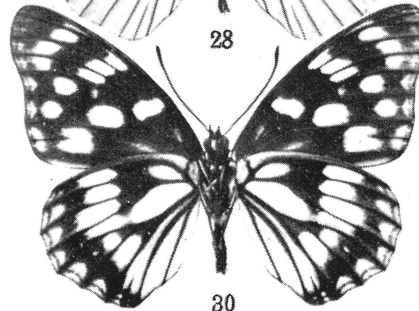
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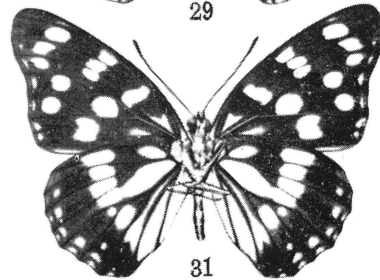
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29

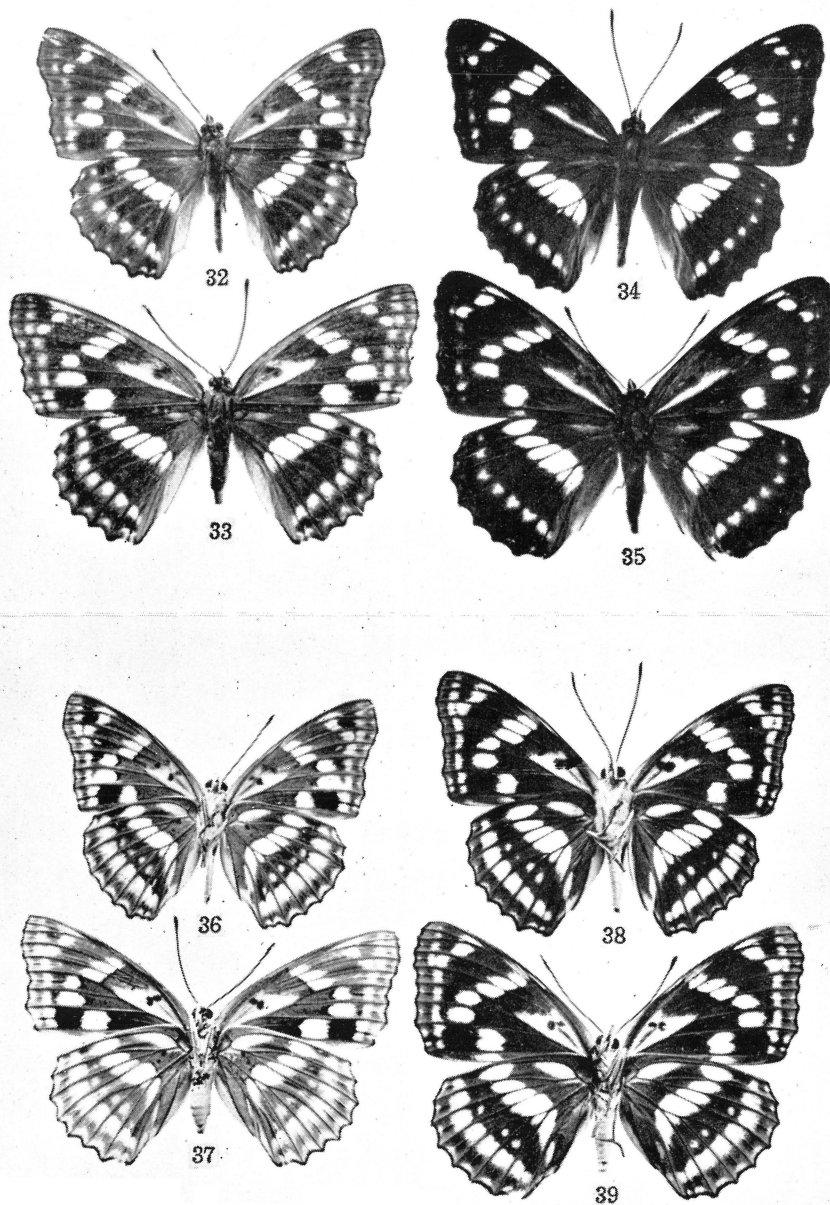


30



31

New or little known butterflies (4)



New or little known butterflies (5)