

Abstract of selected papers on Lepidoptera published in Japan in 1977.*

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The abstracts below have been compiled to assist those European lepidopterists who are interested in the Lepidoptera of the Palaearctis, but are not familiar with the Japanese language and have limited access to libraries possessing Japanese literature. The titles are given in English and the name of the author(s) is given in the arrangement equivalent to the European 'SURNAME', 'Forename' formation; the author's name is followed by his address for the convenience of those readers who need reprint of the paper for their research.

All papers included in this compilation have been published in the journal (Transactions) of the Lepidopterological Society of Japan; the journal is called in Japanese *Tyo to Ga* and has appeared since 1949. Its correct name used e. g. by the 'World list' is *Butterflies and Moths*, the valid abbreviation *Butterfl. Moths*. The papers included are arranged chronologically in the same order as they appeared in the two issues under review: Vol. 28, no. 1, publication date stated 1. III. 1977 (received VIII. 1977) and Vol. 28, no. 2, publication date stated 1. VI. 1977 (received XI. 1977).

ICHIDA, Tadao (547–1, Aza-Sakurai, Oaza-Tsutsui, Aomori-shi, 030 Japan). *Quadricalcarifera viridipicta himiko Nakamura* (Notodontidae) from Aomori Prefecture. *Butterfl. Moths* 28 (1): 7. [In Japanese]. – A male was collected on 27.IV.1975 in Aomori city. This is the first record of this species in Aomori Prefecture, northern Japan. Records from neighbouring areas have been available. The specimen is figured.

TAKEUCHI, Makoto (5–202, Honmachi, Tottori-shi, 680 Japan). *Syntarucus plinius Fabricius* collected on Ishigaki Island, Okinawa Prefecture (Lycaenidae). *Ibid* 28 (1): 8. 1977 [In Japanese]. – A male (figured) was collected 2. XI. 1976 near Yonebaru, Ishigaki Island. A few other specimens, collected on the nearby Iriomote Island, were the only specimens previously recorded from Japan.

THUNODA, Ichi (186 Kawai, Mishima-cho, Onuma-gun, Fukushima-ken, 969–75 Japan). *Geographical variation of Lycaeides argyrognomon in Oku-Aizu, Fukushima Prefecture, Japan*. (Lycaenidae). *Ibid* 28 (1): 25–26 [In Japanese]. – Local colonies recently found in Oku-Aizu are isolated from the neighbouring populations of Aizu (50–60 km away) and of Yamagata Prefecture. Males from Oku-

* This paper opens a new series of compilations listing selected recently published articles on Lepidoptera, which appeared in Japan and USA. The criterium for the selection is chiefly the anticipated interest of European lepidopterists in the paper. Papers on taxonomy, zoogeography, ecology, genetics and other lepidopterological topics will be extracted (Editor).

Aizu are characterized by markedly wider black borders of upper side of both wings. Black marginal spots on the hind wing upperside, though as large as in ssp. *shirahatai* Shirozu from Yamagata Pref., are half swamped by the wide borders. Ssp. *praeterinsularis* Verity from Aizu and elsewhere in Japan has distinctly narrower borders. Females from Oku-Aizu also show certain distinct characters. Specimens of both sexes from Oku-Aizu and Aizu are figured.

HAYAMI, Shoichi (257 Arakura, Fuji-Yoshida-shi, Yamanashi-ken, 403 Japan). *Some observations on the mating behavior of Lopinga achine* (Satyridae). *Ibid* **28** (1): 27–29 [In Japanese]. – A detailed sequence of courtship behaviour, observed in two separate instances, is recorded and illustrated with photos, but in neither case was actual mating witnessed. Reference is made to the behaviour of European *Hipparchia semele* Linnaeus described by Tinbergen in 1953.

YATA, Osanu (Biol. Lab., College of General Education, Kyushu Univ., Ropponmatsu, Fukuoka-shi, 810 Japan). *Seasonal forms and photoperiodic response in Hebomoia glaucippe* L. (Pieridae). *Ibid* **28** (1): 30 [In Japanese]. – Two seasonal forms with relatively minor differences exist and are known as spring and summer forms. In southern Kyushu, Japan, where this species reaches its northern limit of distribution, hibernation generally occurs as a pupa or a nondiapausing larva. Little was known, however, concerning the relationship between diapause and seasonal forms. Newly hatched larvae from eggs obtained in November in southern Kyushu were reared on *Crataeva falcata* (Capparidaceae), a normal food plant in the habitat, under two conditions: group 1 in 13L–11D cycles and group 2 in 12L–12D cycles, both at 20°C. All 4 larvae of group 1 became nondiapausing pupae and produced summer form (1♂ 3♀♀), while all 4 of group 2 became diapausing pupae. Therefore, the critical day length seemed to be around 12.5 hr at 20°C. Larval period in group 1 (25–27 days) was 3–5 days shorter than in group 2 (30 days). Pupal period in group 1 was 16–18 days as compared with 3–4 months in group 2. Pupae as well as larvae of both groups showed no detectable outward differences: all diapausing pupae in this and previous rearings (total 15 pupae observed) were green coloured as in nondiapausing pupae, and the difference in the texture of cuticles commonly found between diapausing and nondiapausing pupae of genus *Pieris* could not be found in this species. The data thus indicate that the spring form emerges from a diapausing pupa and the summer form from a nondiapausing pupa, and that the temperature may have no direct connection to the seasonal forms.

HOSHIAI, Akira (260 Ome, Ome-shi, Tokyo, 198 Japan). *Androgenic scales in the marginal black borders of the wings of Colias erate poliographus* ab. *kutsukakensis* (Pieridae). *Ibid* **28** (1): 31–34 [In English with Japanese summary]. – The Far Eastern ssp. *poliographus* Motschulsky differs from the nominate *erate* Esper in having yellow spots within the black borders of both wings. Males of ssp. *erate* have abundant androgenic scales and few normal scales in the black border, while males of *poliographus* lack the androgenic scales and contain only normal scales in the same area (Yagi and Omoto, 1959). A rare form (ab. *kutsukakensis*) of ssp. *poliographus* occurs in central Japan which is superficially very similar to ssp. *erate* be-

cause of the total absence of yellow spots in the black borders. A specimen of this form collected in Nagano Pref. was found to have the same androgenic scales as in *ssp. erate*, though in a reduced number (32% androgenic scales vs. 78.2–100% in *ssp. erate*). Specimens transitional to *ab. kutsukakensis* with obsolete yellow spots in the borders occur more frequently, especially in mid-summer, but none were found to contain the androgenic scales. The observation warrants further studies on the relationships between *erate* und *poliographus*. Relevant forms and their scales are figured.

RAZOWSKI, Josef (Polish Academy of Sciences, Institute of Systematic and Experimental Zoology, Slawkowska 17, Kraków, Poland). *New Cochyliidae from Dr. Issiki's collection. Ibid* **28** (1): 35–37 [In English]. – Two new species and a new subspecies were described. *Hysterosia issikii* sp. nov. was described from Sapporo, Hokkaido, northern Japan, and it closely resembles west Palaearctic *H. schreiberiana*. *Stenodes nipponana* sp. nov. was described from Ashizuri-saki, Shikoku, southwest Japan, and is closest to *S. isocornutana* Razowski. *Aethes cnicana taiwanica* ssp. nov. was described from Tattaka, Taiwan (Formosa). Holotypes and genitalia are figured.

SUGI, Shigero (41–3, Akadutumi 5-chome, Setagaya-ku, Tokyo, 156 Japan). *Bryograptia new genus, with description of a new species from Japan* (Noctuidae). *Ibid* **28** (1): 39–40 [In English with Japanese summary]. – *Bryograptia* gen. nov. is proposed in the Ophiderinae to receive *B. kogii* sp. nov., Japan, the only species of the genus. Holotype male, paratype female, and male genitalia of the new species are figured.

SUGI, Shigero (41–3, Akadutumi 5-chome, Setagaya-ku, Tokyo, 156 Japan). *A new species of the Hermininae from Japan* (Noctuidae). *Ibid* **28** (1): 41–42 [In English with Japanese summary]. – *Paracolax dictyogramma* sp. nov. was described from Japan. The new species is quite different in general appearance from other species of the genus and resembles *Adrapsoides reticulatis* Leech in wing markings. However, the antennal, foretibial and genitalic characters place the species in the genus *Paracolax* Hb. Figures of the holotype female and male genitalia are given.

HACHIYA, Kazuhiko (5–30, Hongo-dori, Shiraishi-ku, Sapporo-shi, 062 Japan). *Notes on the host plants of Colias erate poliographus Motschulsky* (Pieridae). *Ibid* **28** (2): 46–54 [In Japanese with English summary]. – *C. erate* is a multivoltine widespread species and at least 30 plant species, including cultivated and/or introduced plants, have been recorded as larval host plants in Japan. However, being a native of steppes, this species may owe its current prevalence to agriculture. In an attempt to identify native foodplants which existed before the beginning of agriculture, growth-supporting properties of 12 leguminous plants native to Hokkaido Island, northern Japan, were examined. Agricultural settlement of this Island began only about 100 years ago.

Field-collected female butterflies were forced to lay eggs on *Trifolium repens* L., one of the best, but not native, food plants, and newly hatched larvae were divided into groups, each consisting of 30 larvae, and placed on different plants. In each of 3 separate experiments, 3 to 5 plants were tested simultaneously using *T. repens* as

the control in all cases. All experiments were carried out between June and August, 1976, following a preliminary survey of 11 plants in 1975. Recorded data include 1) mortality, 2) sex ratio of emerged adults, 3) stages at which mortality occurred, 4) larval head width, 5) larval period, 6) pupal weight, and 7) pupal period. Results showed that the tested plants fell into the following 3 groups:

Group 1. *Vicia cracca* L. and *Thermopsis lupinoides* (L.) Link. These plants supported normal growth with few mortalities (0% in both) and were equivalent to control *T. repens* (mortalities in 3 rearings were 7%, 3%, and 7%, respectively).

Group 2. *Lathyrus maritimus* (L.) Bigel. (mortality 27%),
Lathyrus palustris L. (mortality 40%),
Lespedeza bicolor Turcz. (mortality 43%),
Vicia unijuga A.Br. (mortality 93%).

These plants resulted in fairly high mortality and even those larvae that successfully pupated had the average pupal weight of around 180 mg as compared with about 280 mg in the control group. In *V. unijuga*, all mortalities occurred in the first instar.

Group 3. *Vicia amoena* Fisch., *Vicia japonica* A. Gray, *Maackia amurensis* Rupr. et Maxim., *Amphicarpa edgeworthii* Benth., *Pueraria lobata* (Willd.) Ohwi, and *Desmodium racemosum* (Thunb.) DC.

No adults emerged from the larvae reared on these plants (100% mortality). All larvae died in the first instar in *V. amoena*, *V. japonica*, *P. lobata*, and *D. racemosum*, while in the other 2 plants most died before the half way through larval stage.

Normal larvae in this species have 5 larval instars, but additional instars up to 7 were observed in the groups reared on *L. maritimus* (one out of 24 5th instar larvae became 6th instar), *L. palustris* (all 23 surviving larvae became 6th instar, of which 10 pupated at the instar, 12 pupated at the 7th instar, and one died at 6th instar), *L. bicolor* (14 out of 25 5th instar larvae became 6th instar), and *M. amurensis* (21 out of 26 5th instar larvae became 6th instar). Except for *L. maritimus* that contained some hardened leaves, all plants were fresh and those extra instars could not be accounted for by the plants' physical conditions, and must be attributed to the plants' inherent unsuitability as the food plants of *C. erate*. Control groups showed a regular growth rate of larval head width with very little individual variation, almost exactly fitting with Dayr's formula. Similar results were obtained in groups reared on *V. cracca*, *T. lupinoides*, and *L. maritimus*, but considerable individual variations and deviation from the formula were found in the groups reared on the rest of Group 2 plants. A plot correlating pupal weight and length of larval period resulted in 2 distinct groups: the first group (those reared on Group 1 plants and *T. repens*) had 12–17 days of larval period with about 280–310 mg pupae and the second group (those reared on Group 2 plants) had 21–30 days of larval period and less than 200 mg pupae.

These results are discussed in relation to previous records of host plants, distribution, abundance, and seasonality of each plant, seasonal shift in food plant utilization as reported in literature, hibernation behaviour (as the middle instar larva), and female oviposition behaviour. Based on the literature and the author's own field observation, it is emphasized that the female often fail to distinguish between suitable and unsuitable plants. It is concluded that 6 or 7 plants (Group 1 plants, *T. repens*, and other introduced plants tested in the preliminary survey such as *Tri-*

folium pratense L., *Medicago sativa* L., and *Robinia pseudoacacia* L.) serve today as the main food plants in Hokkaido, and that the plants mainly utilised before the agricultural development of the Island were probably only those 2 plants in Group 1.

SUGI, Shigero (41–3, Akadutumi 5-chome, Setagaya-ku, Tokyo, 156 Japan). *The placida group of the genus Aletia Hübner, with descriptions of two new species* (Noctuidae, Hadeninae). *Ibid* 28 (2): 55–60 [In English with Japanese summary]. – The *placida* group of the genus *Aletia* is defined by genitalic characters. The group includes *A. placida* (Butler) and the two other species described in this paper as new: *A. subplacida* sp. nov. from Formosa and *A. bani* sp. nov. from central and southwestern Japan. Holotype males of new species are figured along with *A. placida*. Photomicrographs illustrate male and female genitalia of all 3 species.

TAKAHASHI, Akira (126, Momoyama-cho 4-chome, Ōbu-shi, Aichi-ken, 474 Japan). *A record of food plant and ovipositing behaviour of Salatura genutia* (Danaiidae). *Ibid* 28 (2): 61–63 [In Japanese with English summary]. – In Japan this species occurs as a resident only in the Ryukyu Islands, south of Miyako Island inclusive, while accidental specimens have been recorded as far north as Honshu Island, mainland Japan. Where it occurs, it is abundant from early spring to late fall. Oviposition behaviour observed on Oct. 8, 1972, at about 13:30 pm in an open grassland in Iriomote Island, southern Ryukyus, is described. The plant was *Cynanchum liukiensis* Warb. (Asclepiadaceae). Other food plants (9 genera, 10 species) recorded previously from Japan and elsewhere are listed.

TAKAHASHI, Akira (126, Momoyama-cho 4-chome, Ōbu-shi, Aichi-ken, 474 Japan). *Larvae of Inachis io* (Nymphalidae) *feeding on Trifolium repens* (Leguminosae) *in a cluster. An example of abnormal food-habit*. *Ibid* 28 (2): 64 [In Japanese]. – Food plants of this species recorded in Japan include *Urtica platyphylla* Wedd., *U. angustifolia* Fischer, *Laportea bulbifera* Wedd. (Urticaceae), *Humulus lupulus* L. (Moraceae), *Ulmus davidiana* Planch. (Ulmaceae), etc. Middle instar larvae of about 1 cm in length were found on *Trifolium repens* L. on July 7, 1971, in Hokkaido, northern Japan. Since nearby *U. platyphylla* were infested by mature larvae and prepupae, it seemed likely that those larvae on *T. repens* had been feeding on this plant since hatching from accidentally laid eggs, rather than a later switch of food plants.

TAKAHASHI, Akira (126, Momoyama-cho 4-chome, Ōbu-shi, Aichi-ken, 474 Japan). *Neptis philyra and Pieris melete from the Tsushima Islands* (Nymphalidae, Pieridae). *Ibid* 28 (2): 65–68 [In Japanese with English summary]. – Tsushima Islands have a unique butterfly fauna which includes *Pithecopis fulgens* Doherty (Lycaenidae) not found elsewhere closer than Formosa. Certain other species of butterflies show varying degree of racial differentiation from the populations of mainland Japan and Korea. Captures of a second known specimen (♀) of *N. philyra* and 11th specimen of *P. melete* (♀) from the Islands are reported with their figures. Previous records of both species are also given in detail. The specimen of *N. philyra* seemed to differ from the usual specimens of Korea and elsewhere in Japan in the better developed white bands and spots, but its significance can be determined only when additional specimens became available.

SATO, Rikio (472-2, Makio, Niigata-shi, 950-21 Japan). *Larvae of Japanese Myrteta and Scionomia* (Geometridae: Ennominae), *Ibid* 28 (2): 69-84 [In Japanese with English summary]. - The paper, third of a series describing the larvae of Japanese Geometridae, deals with morphology, food plants, and other biological aspects of the larvae of all the Japanese species of the genus *Myrteta* Walker (*M. angelica* Butler, *M. sericea* Butler, *M. tinagmalia* Guenée, and *M. punctata* Warren) and the genus *Scionomia* Warren (*S. anomala* Butler, *S. mendica* Butler, and *S. sinuosa* Wileman). Morphological descriptions are given for the last instar larvae, but references are also made to younger larvae. Generic characters are defined for the larvae and specific keys are given for identification of the larvae within each genus. Photographs of all larvae and setal maps are presented.

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