

HOST-RELATIONSHIP OF GENUS *Anastatus* MOTSCHULSKY (EUPELMIDAE)
AND ITS INDIAN SPECIES

Species of the genus *Anastatus* Motschulsky (Eupelmidae) have frequently been observed in Ranchi and three species have so far been recorded from this area. *A. colemani* Crawford was first recorded from the eggs of *Tessaratomia javanica* Thunberg (Hemiptera : Pentatomidae) in 1938-39 (Annual Report, Indian Lac Research Institute, 1938-39), in 1951 and 1952 (Mehra and Kapur, 1955) and again in 1955 together with two other species viz., *A. amarus* Subba Rao and *A. dentatus* Narayanan, Rao and Rao (Mehra, 1965) during the studies on *T. javanica* (Mehra and Purakayastha, 1958).

Genus *Anastatus* is very widely distributed and includes over eighty species which have been recorded from all the zoogeographical regions of the world. It is also important since it represents a large number of wasps parasitic mostly on the eggs of various plant pests belonging to the following economically important families :

<i>Order</i>	<i>Family</i>
Lepidoptera	Nymphalidae, Lymantriidae, Lasiocampidae, Saturniidae, Papilionidae, Notodontidae, Sphingidae, Hesperidae and Brassiolidae.
Orthoptera	Blattidae, Mantidae, Acrididae and Tetti-goniidae.
Hemiptera	Pentatomidae and Coreidae.
Coleoptera	Chrysomelidae and Curculionidae.

Two of the species have also been recorded as pupal parasites, namely, *Anastatus* sp. on the Oriental fruit moth, *Grapholitha molesta* Busck. (Lepidoptera : Olethreutidae) (Nettles, 1934) and *A. viridiceps* Waterston on *Glossina morsitans* (Diptera : Muscidae) (Waterston, 1915-16). Dodd (1918) has reported a single instance of the genus being parasitic on a neuropteran, namely, *A. aristotelea* Gir. on the eggs of *Torbia viridissima* in Australia. The genus has also been recorded as a hyperparasite, namely, *A. bifasciatus* Fonscolombe on *Ooencyrtus pityocampae* Mercet (Hymenoptera : Encyrtidae) an egg-parasite of Cyprus processionary caterpillar (*Thaumetopoea wilkinsoni* Tams) in Cyprus (Wilkinson, 1926-27) and *A. pearsalli* Ashm. on *Apanteles melanoscelus* Ratzeburg (Hymenoptera : Braconidae) in the United States of America (Muesebeck and Dohanian, 1927). *A. pipunculi* Perkins has been recorded as being parasitic in the sacs of the dipteran *Pipunculus cinerascens* and also in those of *Paradyinus* sp. (Hymeno-

ptera : Dryinidae), both parasitic upon leafhoppers in Australia (Clausen, 1927). Clausen (*loc. cit.*), however, considers the report of *A. tachardia* How. occurring as parasitic upon the lac insect *Tachardia albizziae* in Ceylon (Cameron, 1913) as questionable and the doubtful record of *A. aureicarpus* Girault from a single syrphid puparium in Texas almost certainly erroneous.

In India the following eight species have so far been recorded :

1. *A. acherontiae* Narayanan, Rao and Rao from the eggs of *Acherontia styx* Westw. (Lepidoptera : Sphingidae) in Delhi (Narayanan, Rao and Rao, 1960).

2. *A. amarus* (Subba Rao) hyperparasite on *Apanteles delhiensis* Subba Rao (Hymenoptera : Braconidae) in New Delhi (Subba Rao, 1958) and egg-parasite on *T. javanica* in Hesal-Berwari (Ranchi District) (Mehra, 1965).

3. *A. bangalorensis* Mani and Kurian from the eggs of a pentatomid in Bangalore (Mani and Kurian, 1953).

4. *A. blattidarum* Ferriere female from an egg-case of a cockroach and male from an egg-case of *Blatella suppellectilium* in Khartoum, Anglo-Egyptian Sudan (Ch. Ferriere, 1930 and 1935), from the eggs of *Blattid* sp. in Mysore (Syn. *Solindia blattiphagus* Mani) (Mani, 1938) (Pruthi and Mani, 1940) and from the eggs of *Supella* in Arizona (Cameron, 1955).

5. *A. coimbatorensis* Gir. from the eggs of *Polyptychus dentatus* (Lepidoptera : Sphingidae) in Coimbatore (Ayyar, 1920) and from the eggs of *Oxya velox* (Orthoptera : Acridiidae) in Coimbatore (Rao, 1921).

6. *A. colemani* Crawford from the eggs of *Degonetus serratus* (Hemiptera : Pentatomidae) in Bangalore (Crawford, 1912), from the eggs of *Attacus atlas* L. (Lepidoptera : Saturniidae) in Malaya (Ch. Ferriere, 1930), from the eggs of a pentatomid in Dehra Dun (Ch. Ferriere, 1931), from the eggs of *T. javanica* in Namkum (Annual Report, Indian Lac Research Institute., *loc. cit.*) and in Hesal-Berwari (Ranchi District) (Mehra and Kapur, 1955 and Mehra, 1965) and from the eggs of *Rhynchochoris humeralis* Thunb. (Hemiptera : Pentatomidae) in Formosa (Takahaski, 1940).

7. *A. dentatus* Narayanan, Rao and Rao from the eggs of *Halis dentata* Fb. (? *Halys dentatus* Fabr.) (Hemiptera : Pentatomidae) in Delhi (Narayanan, Rao and Rao, *loc. cit.*) and from the eggs of *T. javanica* in Hesal-Berwari (Ranchi District) (Mehra, 1965).

8. *A. kashmirensis* Mathur from the eggs of *Lymantria obfuscata* Walker (Lepidoptera : Lymantriidae) in Kashmir (Mathur, 1956).

The author thanks Dr. G. S. Misra, Director and Dr. A. Bhattacharya, Entomologist, Indian Lac Research Institute, Namkum, for their keen interest.

REFERENCES

- Annual Report, 1938-39, Entomological Section. *Indian Lac Research Institute, Namkum* : 24.
- Ayyar, T. V. Ramakrishna, 1919, On the insect parasites of some Indian crop-pests. *Proc. Third ent. Meet. Pusa.*, 3 : 933.
- Cameron, E., 1955, On the parasites and predators of the Cockroach. *Bull. ent. Res.*, 46 : 138.
- Cameron, P., 1913, On the parasitic Hymenoptera reared at Dehra Dun, Northern India, from the lac (*Tachardia*) and *sal* insects. *Indian For. Rec.*, 4 (2) : 1-20.
- Ch. Ferriere, 1930, On some egg-parasites from Africa. *Bull. ent. Res.*, 21 : 33-34, 355.
- Ch. Ferriere, 1931, New Chalcidoid egg-parasites from South Asia. *Bull. ent. Res.*, 22 : 291.
- Ch. Ferriere, 1935, Notes on some bred exotic Eupelmidae (Hym. Chalc.). *Stylops*, 4 : 150.
- Clausen, C. P., 1927, The bionomics of *Anastatus albitarsis* Ashm. parasitic on the eggs of *Dictyoploca japonica* Moore (Hymen.). *Ann. ent. Soc. America.*, 20 : 461-473.
- Crawford, J. C., 1912, Description of new Hymenoptera, *Proc. U. S. nat. Mus.*, 42 (4) : 6-7.
- Dodd, A. P., 1918, Records and descriptions of Australian Chalcidoidea. *Trans. Proc. R. Soc. S. Australia*, 1917 : 344-368. *Rev. appl. Ent. (A)*, 6 : 387.
- Mani, M. S., 1938, *Catalogue of Indian Insects part 23—Chalcidoidea* : 84.
- Mani, M. S. and Kurian, C., 1953, Descriptions and records of Chalcids (Parasitic Hymenoptera) from India. *Indian J. Ent.*, 15 : 13-14.
- Mathur, R. N., 1956, A new species of *Anastatus* Motschulsky (Chalcidoidea : Eupelmidae) from Kashmir. *Proc. R. ent. Soc., London. (B)*, 25 : 93-97.
- Mehra, B. P., 1965, Studies on the egg-parasites of *Tessaratomya javanica* Thunberg (Hemiptera ; Pentatomidae) with special reference to *Anastatus colemani* Crawford (Hymenoptera : Eupelmidae) (In press).
- Mehra, B. P. and Kapur, A. P., 1955, Bionomics and control of *Tessaratomya javanica* Thunberg, a sporadic pest of *Kusum* (*Schleichera oleosa*) in Chota Nagpur. *Indian J. Ent.*, 17 (1) : 76-88.
- Mehra, B. P. and Purakayastha, B. K., 1957, Field observations on a severe outbreak of *Tessaratomya javanica* Thunberg, a sporadic pest of *kusum* (*Schleichera oleosa*) and preliminary trials on its control. *Indian J. Ent.*, 19 (3) : 214-216.

- Muesebeck, C. F. W. and Dohanian, S. M., 1927, A study in Hyper-parasitism, with particular reference to the parasites of *Apanteles melanoscelus* Ratzeburg. *U. S. Dept. Agric., Dept. Bull.*, 1487 : 35. *Rev. appl. Ent. (A)*, 15 : 544.
- Narayanan, E. S., Rao, B. R. Subba and Rao, M. Ramachandra, 1960, Some new species of Chalcids from India. *Proc. nat. Inst. Sc. India. (B)*, 26 (4) : 168-175.
- Nettles, W. C., 1934, Pupal parasites of the Oriental Fruit Moth in South Carolina—A preliminary report. *J. econ. Ent.*, 27 (4) : 814-817.
- Pruthi, H. S. and Mani, M. S., 1940, Biological notes on Indian Parasitic Chalcidoidea. *The Imperial Council of Agricultural Research. Miscellaneous Bulletin, Delhi. No. 30* : 12.
- Rao, Y. Ramachandra, 1921, *Oxya velox*. *Rep. Proc. Fourth ent. Meet., Pusa.* : 42.
- Rao, B. R. Subba, 1958, Some new species of Indian Hymenoptera. *Proc. Indian Acad. Sci. (B)*, 46 : 376-378.
- Takahashi, R., 1940, Observations on *Rhynchocoris humeralis* Thunb. (Pentatomidae), a citrus pest. *Formosan agric. Rev.*, 37 (1) ; *Rev., appl. Ent. (A)*, 28 : 258.
- Waterston, J., 1915-1916, Chalcidoidea bred from *Glossina morsitans* in Northern Rhodesia. *Bull. ent. Res.*, 6 : 69-81.
- Wilkinson, D. S., 1926-1927, The Cyprus Processionary caterpillar. *Bull. ent. Res.*, 17 (2) : 175.

*Division of Entomology,
Indian Lac Research Institute,
Namkum, Ranchi.*

B. P. MEHRA