ABSTRACT

Work on chalcid taxonomy started in the middle of eighteenth century with the description of *Cynips* by Linnaeus. Later in early nineteenth century, Latrielle (1809) laid down the foundation of encyrtid taxonomy by describing several species of *Encyrtus*. Some significant contributions of this period are by Dalman (1820), Westwood (1940), Foerster (1856), Mayr (1875), Thompson (1876), Aurivillius (1888), Howard (1894) and Ashmead (1899-1904).

Chalcids received their due importance in late nineteenth and early twentieth century. Their unique value in biological control attracted and boosted the enthusiasm of both, biocontrol scientists and chalcidologists. Special attention was paid to work out biology of parasites and their hosts. It resulted in accumulation of tremendous information from all over the world. Some contributions worth mention on encyrtid taxonomy are presented by: Schmideknecht (1909), Girault (1915 onwards), Mercet (1921 & 22), Ishii (1928), Compere (1928, 31, 37-40, 44, 57, 60 and 61), Risbec (1951), Nikolskaya (1952), Ferriere (1953), Erdos and Novicky (1955), Hoffer (1955), Alam (1957), Tachikawa (1963), De Santis (1963 & 79), Peck (1963), Peck, Boucek and Hoffer (1964), Kerrich (1964 & 67), Annecke (1963-77), Agarwal (1965), Graham
In the present work taxonomic studies on encyrtid fauna, especially from N-E region of India, have been undertaken. This region remained unexplored, since the dawn of modern Indian encyrtid taxonomy in sixties, despite its having ideal environmental conditions of temperature and humidity. During the tenure of present studies, species of 59 genera (30 belonging to sub-family Encyrtinae, and 19 to Tetracneminae) were handled. Out of these only 22 genera (5 being reported for the first time from India) have been dealt with in the present work.

Subfamily Encyrtinae (16 genera, number of species covered are indicated in brackets):

Neastymachus Girault (3 spp. n.), Paraphaenodiscus* Girault (1 sp.n.), Coccidoctonus Crawford (1 sp.n.), Agarwlenyrtus Hayat (old sp.), Cheiloneurus Westwood (4 spp.n.), Echthrogonatopus Perkins (2 spp. n.), Mahencyrtus* Masi (2 spp. n.), Protyndarichoides* Noyes (1 sp.n.), Anicetus Howard
(3 spp. included to show generic affinity with the members of tribe Cheiloneurini), Cerapteroceroides Ashmead (2 spp.n.), Cerapterocerus Westwood (1 sp.n.), Psyllaephagus Ashmead (2 spp.n., 1 old*), Rhitydotherax* Ashmead (2 spp.n.), Encyrtus Latereille (1 sp.n., 1 old*), Eugahania Mercet (2 spp.n.), Neocladia Perkin (1 sp.n.)

Subfamily Tetracneminae (7 genera with 7 species, including 1 new species): Charitopus Foerster (female of a male based species described), Potopus Noyes and Hayat (old species), Cremesina Noyes and Hayat (old sp.), Paranathrix* Myartseva (old sp.*), Tetracnemus Westwood (old sp.), Cladiscodes Subba Rao (sp.n.), Neodusmetia Kerrich (old sp.).

Genera and species marked with the asterisk are reported for the first time from India.

Out of a total of 32 species, 26 species are being described for the first time.

Scanning Electron Microscopic studies were done for most of the genera, results of which have given to understand affinities among the members of different tribes. Three genera of tribe Cheiloneurini i.e. Cheiloneurus, Echthrogonatopus and Mahencyrtus showed the presence of
postocellar pits (reported for the first time), and very deep scutellar sculpture as compared to that on mesoscutum. These characters are consistent among the members of tribe Cheiloneurini except in Protyndarichoides (a doubtful placement in the tribe by Noyes and Hayat, 1984).

Such structures were also seen in a species of Neastymachus, in Agarwalencyrtus (Both belonging to tribe Microteryini) and in three species of Anicetus (Cerapterocerini). A detailed study of all these related genera in the mentioned tribes is likely to throw some light on the phylogeny of the group and help in meaningful tribal classification.

Noyes and Hayat (1984) are of view that definition of tribe Encyrtini given by Trjapitzin (1973b) is very narrow and further detailed study is most likely to include those genera of the tribe Eughaniini, Prionomasticini, Neocladiininini and Aethognathini also in the tribe Encyrtini Hoffer. Later Gordh and Trjapitzin (1981) synonymised Neocladiinni Trjapitzin and Eugahaniinin Trjapitzin with Prionomasticini. Sharkov (1984) on the basis of studies on abdominal morphology removed Eugahania and Neocladia from Prionomasticini and kept them under reinstalled tribe
Eugahaniini. The characters he studied were ovipositor and a triangular plate seen for the first time in *Eugahania* and *Neocladia*, attached to II-valvifer. He believed that this triangular plate arose from the fusion of III-valvulae of ovipositor. In a species of *Stenoteropsis* which has well developed III-valvulae, this triangular plate is also present! Therefore, it is quite clear that this triangular plate does not appear to have evolved from the fusion of III-valvulae but some well developed sclerite around anal opening, perhaps Epiproct. This point is being studied separately and observations would be published on completion.

In the present work epiproct is also reported for the first time in a species of *Encyrtus*. Investigations on gasteral components i.e. X-tergum (especially its setation), subgenital plate, ovipositor and epiproct of *Encyrtus*, *Eugahania*, and *Neocladia* were also studied. Similarities of these structures is so well marked in these three genera that it is proposed that Eugahaniini Trjapitzin and Neocladiini be considered as junior synonyms of Encyrtini Hoffer. A very interesting -ve correlation exists between sizes of X-tergum and epiproct, suggesting some evolutionary trend in the group. Size of X-tergum increased with reduction in size of epiproct (inversely proportionate).