158. (1421) *Agdistis meridionalis* Z. 10. V. 12. Ham. Salahhin det. Rbl.).

159. (2961) *Nothris verbascella* Hb. El Kroubs Tagfang 8. V. 12.; ehr lichte, südliche Form; stark abgeflogen (det. Rbl.).

160. (3016) *Oecocecis gyonella* Gn. Raupen in Gallen an Limoniastrum yonianum knapp beim Bade Ham. Salahhin sehr gemein IV. 11. und V. 12. Herr Mitterberger, Steyr O.-Oe. teilte mir unterm 30. XI. 13 mit, dass die von mir vor 2 Jahren übersandten Raupen bis jetzt noch keinen Falter ergeben haben. Die Raupen befinden sich noch in lebendem Zustande in der Galle, ohne zur Verpuppung geschritten zu sein. Mir schlüpften die ersten Falter aus den Ende April 1911 mitgenommenen Gallen bereits Anfang Oktober desselben Jahres; kein Stück überwinterte weder als Puppe noch als Raupe. Die Puppenruhe hatte bei meinen Stücken 14 Tage gedauert. Die Ursache der Verspätung bei den Mitterberger's) Raupen dürfte wohl in gänzlich ungeeignetem Alpenklima zu suchen sein.

161. (3282) *Depressaria discipunctella* H. S. 10. V. 12. Ham. Salahhin det. Rbl.).

162. (3602) *Stagmatophora dohrnii* Z. Ende IV. 11. Biskra.

163. (4693) *Nemotois latreillellus* F. 7. V. 12. Constantine (Tagfang).

164. (4695) *N. pantherellus* Gn. Luc. 8. V. 12. El Kroubs (Tagfang).

Corrigenda:

Pag. 82, 12. Zeile von unten: *Euchloë falloui* kann nicht gerade als spezifische Biskraer-Art aufgefasst werden, da sich ihr Verbreitungsgebiet auch auf andere Teile Algeriens sowie auch Nordostafrika und die sinaitische Halbinsel erstreckt.

Pag. 83, 19. Zeile von oben: statt „Mitterber-Steyr" lese man „Mitterberger-Steyr".

Pag. 85. 9. Zeile von oben: Nach „Forma *biformata*" ist zu streichen: „(ab. indiv.)", da *biformata* die ständige Herbstform und keine Zufalls-Aberration repräsentiert.

Hosts of Insect Eggparasites in Europe, Asia, Africa and Australasia, with a Supplementary American List.

By **A. A. Girault,** Nelson N. Q., Austral.

(Fortsetzung aus Heft 4.)

Supplementary American Records.

(See Girault, 1907, 1911a.)

Hemiptera.

Delphax saccharivora. Antilles	*Anagrus armatus* (Ashmead)	Girault, MS. notes, 1913 (D. L. van Dine)
Empoasca flavescens. N. A.	*Anagrus armatus* (Ashmead)	Girault, 1913a, pp. 62—63
	? *Polynema consobrinus* Girault	id., ib., p. 197
Goniopis chrysocoma	*Telenomus goniopis* Crawf.	Crawford, 1913, pp. 244—245
Horiola arquata. Trinidad	*Trichogrammatella tristis* Girault	Girault, 1911 d, p. 128
	Uscanella bicolor Girault	Girault, 1911d, p. 129
	Tumidifemur pulchrum Gir.	Girault, 1911 d, p. 125
Ormenis species. Antilles	*Phanurus flavus* Dodd.	Girault, MS. notes, 1913

Zelus longipes Linnaeus	*Eupelmus zeli* Ashmead	Dalla Torre, 1898 p. 278
	Hymenoptera.	
Arge salicis Rohwer. N. A.	*Winnemana argei* Crawford	Crawford, 1912b, p 176
	Closterocerus winnemanae Crawford*)	id., ib.
	Lepidoptera.	
Calpodes ethilius Cram. Antilles	*Trichogramma minutum* Riley	Girault, 1911a, p. 15
Diatraea saccharalis Fabricius. PortoRico	*Trichogramma minutum* Riley	Girault, MS. notes 1913 (D. L. va Dine)
Diatraea saccharalis Fabricius. Mexico	*Trichogramma fasciatum* (Perkins)	Perkins, 1912, p. 1
Helochara communis. N. A.	*Trichogramma helocharae* Perkins	Kirkaldy, 1907, p. 5
Orgyia antiqua. N. A.	*Telenomus dalmani* Ratz.	Crawford, 1911b, p 270
	Orthoptera.	
Mantidae. Mexico	*Podagrion echthrus* Crawf.	Crawford, 1912b, pp 163—164
	Platyptera.	
Chauliodes. U. S.	*Trichogramma semblidis* (Aurivillius)	Girault, 1911c, pp 49—50

In North America, a third possible eggparasite of *Cimbex american* Leach is recorded by Girault (1912, pp. 81—82). In Panama, *Uscanoide nigriventris* Girault is parasitic upon froghopper eggs. In Mexico, *Oligosit plebeia* (Perkins) lives in jaisid eggs in sugar cane as does also *Abbell prima* (Perkins) and *Gonatocerus nivalis* Girault and *Gonatocerus koebele* Perkins; in the same place, *Gonatocerus mexicanus* Perkins lives on jassi eggs in grass and *G. juvator* in fulgorid eggs in cane. The „Rileya species of Bruner (See Girault, 1907, p. 36), parasitic in North Americ upon the eggs of *Oecanthus latipennis* Riley and *O. niveus* De Gee is *Rileya oecanthi* Ashmead (1894, p. 321). In St. Vincent, *Telenomu zethos* Walker is parasitic upon lepidopterous eggs; in the United State of America, l. c. a species of *Telenomus* is apparently recorded fro ants (?), Proc. Ent. Soc. Washington, V, p. 308, and see ib., II, p. 12 *Pteratomus putnamii* on *Anthophorabia* (see Packard, 1880, p. 202). I Brazil, *Anastatus coreophagus* Ashmead is parasitic upon coreid egg and *A. punctiventris* of the same author on the eggs of *Locustiidae.* I Porto Rico, *Oligosita comosipennis* Girault, *Abbella prima* (Perkins), *Ufen niger* (Ashmead) and *Aphelinoidea semifuscipennis albipes* Girault a parasitic upon jassid eggs on sugar cane.

The following references have bearing upon the subject and shoul be consulted in order to complete the records; I have not been able t see them since: Ent. Meddel., 1903, pp. 192—197 (Kryger upon host of chalcidoids; at least four genera of Trichogrammatids are connecte with hosts; Denmark); Marchal in Annales Soc. Ent. France, LXIX

*) Probably secondary upon the Winnemana.

pp. 102—112 gives a list of hosts possibly including egg-parasites; Jacobs in Annales Soc. Ent. Belgique, XLVIII, p. 308 also gives a short list of hosts; Rondani in Bull. Soc. Ent. Italiana, Anno III and IV (about 1871 and 1872). Fitch and Bridgeman in Entomologist, London, XVI, pp. 64–69; Fitch, ib., XVII, pp. 67—69 (see also XV pp. 93, 94, XIV, pp. 138 ff. and XIII. Zoological Record, 1895, p. 258 (Hungarian hosts of some parasites). Bostock in Nature, XXIV, pp. 356—357. Zool. Jahrbuch, 1910, vol. 29, Nr. 2, pp. 105—124 (an undetermined parasite on *Pyrops candelaria* Linn.). Rondani, 1870, Arch. p. Zool. (2), 11, pp. 10—16, pl. 1, figs. 1—11. Lichtenstein and Frey-Gessner in Le Nat., I, p. 50, 1879. Thomson, 1878, Hymenop. Scandin., V, p. 117. The Ent., London, Dec. 1889. Agric. Journal India, I (1906), pp. 97—114. Enock in Journal Quekett Club (2), VI, 1896, p. 275; Proc. Ent. Soc. London, 1896, p. 183; ib., 1899, p. XV; ib., 1900, p. XII; Nature, LVIII, p. 175 and LIV, p. 28; in Ent. Mag., 1898, p. 152 and XXXII (*Prestwichia aquatica* Lubbock). Heymons in Deutsche Ent. Zeitschr., 1908, pp. 138—141. Howard, 1891, Proc. U. S. Nat. Museum, XIV, p. 568 et al. Ashmead 1893 on *Scoliomorpha bisulca* and De Dalla Torre, 1898, p. 496.

The following families and genera of the Hymenoptera are now known to be undoubted true parasites of insect eggs, in the sense of this paper.

Family.	Genera.
Mymaridae	All.
Trichogrammatidae	All.
Eulophidae	*Paraphelinus* Perkins
	Ooletrastichus Perkins
	Closterocerus Westwood (in part)
	Tetrastichus Haliday (in part)
	Foersterella Dalla Torre
	Perissopterus Howard (in part)
	Winnemana Crawford
	Nesomyia Ashmead
	Parachrysocharis Girault
	Hyperteles Foerster (secondary)
	Pleurotropis Foerster (secondary)
	Mestocharis Foerster (secondary)
	? *Tetracampe* Foerster
Pteromalidae	*Pterosemella* Girault
	Misocorus Rondani (= *Anastatus*)
	Agiommatus Crawford
	Chrysolampus Spinola
	? *Pteromalus* Swederus (only in part)
	Crytogaster Walker
Miscogasteridae	*Ericestus* Crawford
Encyrtidae	*Encyrtus*
	Oöencyrtus Ashmead
	Anastatus Motschulsky
	Eupelmus Dalman (in part)
	Dinocarsis Foerster
	Schedius Howard

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Encyrtidae	*Tyndarichus* Howard
	Fulgoridicida Perkins
	Ectopiognatha Perkins
	Leurocerus Crawford
Eurytomidae	*Rileyini* (mostly)
Callimomidae	*Podagrion* Spinola
	Pachytomoides Girault
Scelionidae	All.
Evaniidae	*Evania*

Parasites of insect eggs over the entire earth seem to be overwhelmingly hymenopterous. For an exception, see the second part of my American list (Girault, 1911 a) where an unknown Dipterous egg parasite is recorded. All (with the one exception) of the parasites of embryonic insects are included within the great group of the Hymenoptera Parasitica where all the species are parasitic upon insects or their allies, with the exception of some small tribes which are phytophagous. Of these great complexes of the Hymenoptera Parasitica, however, the parasitism of embryos is present usually only in those groups which comprise species of small stature. These are, of course the *Chalcidoidea* and the *Proctotrypoidea*; of the *Ichneumonoidea* only the anomalous *Evaniidae* parasitize eggs. In the first two great groups, size again seems to be related to the habit of parasitizing embryos, for the smallest of them, namely the *Mymaridae* and the *Trichogrammatidae* are exclusively of this habit. The relation, in a word, is so striking that this habit appears to be a secondary adaptation of the parasites to their hosts. One could conclude from this that the parasites of small size finding the eggs of insects suitable and sufficient as food for their progeny, gradually adopted them as their food and hosts, abandoning their former larval hosts.*) Parasitism, from its very nature, must be of secondary origin. The first animals could not have been parasites the first insects could not have been insect parasites. Parasitism of insects upon insects is of secondary origin, an adaptive habit. We know this from the phylogeny of insects and from the present surviving habits of the great majority of them. The tendency to simplification or to specialization present in all parasites is another evidence in favour of this fact. Parasitism of the eggs of insects does not differ from parasitism of the larva and there is no especial reason why insect egg parasites should always be Hymenopterous. We have some reason for believing, however, that the parasitism of insect embryos is a later adaptation, since for one thing insect egg-parasites themselves are probably later phylogenetic developments. More than this, they are of small size while their ancestors were of large stature; also they are exceptions in the groups to which they belong and appear to be descendents, rather than precursors or cotemporaries, of their allies. Taken as a whole, they also seem highly adaptive and variable; in some of them, the capacity for rapid reproduction and succession of developmental cycles is enormous (e. g. *Trichogramma minutum*), surpassing, no doubt that of any other insects. (Schluss folgt.)

*) On the other hand, it is possible that the small size of eggparasites is due to the effect of their hosts, the amount of food not being sufficient to produce largeness. But I do net believe this is probable from the nature of the case.