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CLASSIFICATION OF THE OLD FAMILY CHALCIDIDÆ.

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At the meeting of the Entomological Society of Washington held December 2, 1897, I suggested the segregation of the old family Chalcididæ into 14 distinct families, and gave a tentative

list of these families, treating them as a whole under the superfamily name Chalcidoidea.

In the present paper I propose to give my tables for recognizing the families and subfamilies into which this superfamily is now divided.

SUPERFAMILY VII.—CHALCIDOIDEA.

Table of Families.

- Hind wings exceedingly narrow, linear, peduncle at base; ovipositor issuing from beneath just anterior to tip of abdomen; antennæ without a ring-joint, the scape rather small, short, compressed..... 12
- Hind wings never very narrow, nor linear, not pedunculate at base; ovipositor issuing far anterior to the tip of abdomen; antennæ elbowed, with 1, 2, or 3 ring-joints, very rarely without, the scape large and rather long.
- Axillæ triangularly produced or advanced forward into the basal region of the scapulæ, their base or anterior margin *on* or *in advance* of an imaginary line drawn from tegula to tegula; anterior tibial spur most frequently small or weak; tarsi 3-4-jointed, rarely 5-jointed or heteromerous. 10
- Axillæ normal, or at least never produced forward into the basal region of the scapulæ, their base or anterior margin straight and always back of an imaginary line drawn from tegula to tegula; anterior tibial spur large and strong; tarsi 5-jointed (rarely 4-jointed, or 3- or 4-jointed in some wingless males).. 3
3. Head in ♀ oblong, with a deep, broad longitudinal furrow above, the occipital margin superiorly, usually with a small recurved tubercle or spine at its middle; mandibles or palpi most frequently furnished with saw-like appendages; anterior and posterior legs very stout, their tibiæ very much shorter than their femora, the middle legs very slender, sometimes aborted; hypopygium very prominent, acute, cultriform or lanceolate; ovipositor long, prominently exerted; ♂ always apterous, the head anteriorly with a deep triangular fovea, in which are placed the short 3-9-jointed antennæ; the abdomen in the ♂ is always long and tubular, thickened at base.

Family LX. Agaonidæ.

Head rarely oblong and quite differently formed, never with a deep broad longitudinal furrow above, most frequently transverse, or subquadrate, the occipital margin never with a small recurved spine; mandibles and palpi without saw-like appendages; middle legs not especially slender, the anterior and posterior legs are often stout, but their tibiæ are always longer, at least never shorter than their femora; hypopygium rarely very prominent; ♂ most frequently winged, rarely apterous; in the latter case the abdomen is normal, not long and tubular.

Mesopleura large, entire, without a femoral furrow, except occasionally in some males, the mesepisternum large, triangular, not extending to base of front coxæ; middle tibial spur saltatorial, most frequently long and stout, or dilated at base..... 8
 Mesopleura always with a femoral furrow or impression, the mesepisternum variable, rarely large, except in the *Cleonymidæ*, most frequently small, wedge-shaped, or linear and extending to base of front coxæ; if large and triangular, either the anterior or posterior femora are much swollen; middle tibial spur not saltatorial, usually short or weak, never very stout.

Hind tibiæ with 2 apical spurs, rarely with 1 only; in the latter case the radius terminates in a large, rounded stigma, the ovipositor very long..... 4

Hind tibiæ with 1 apical spur; ovipositor rarely long, if long the stigma is small..... 9

4. Mandibles falcate, usually with 1 or 2 teeth within; thorax most frequently very gibbous, the scutellum usually very large, often abnormally developed, elevated and produced posteriorly, the axillæ connate, not distinctly separated from the surrounding surface and broadly united along their inner margins..... 6

Mandibles usually 3-4-dentate at apex, rarely falcate, with 1 or 2 teeth within; thorax not or very slightly gibbous, the axillæ distinctly separate, their inner margins most frequently widely separated, very rarely touching.

Hind coxæ rarely much larger than the anterior coxæ, most frequently smaller or equal; if much larger, the pronotum is elongate, mesepisternum large, the hind legs very long, the postmarginal vein very long; ovipositor very rarely prominent..... 5

Hind coxæ very large and long, usually five or six times larger than the anterior coxæ.

Hind coxæ subtriquetrous, or at least compressed into a sharp ridge above; hind femora never very much swollen, and most frequently simple, rarely with one large tooth or denticulate beneath; abdomen most frequently subcompressed (more rarely depressed), with a long ovipositor; if without an exerted ovipositor, the abdomen is conical or conic-ovate with a peculiar sculpture, the radius (stigmatal vein) usually very short, the hind tibiæ at apex normalFamily LXI. *Torymidæ*.

Hind coxæ usually very long and subcylindrical, rarely triquetrous; hind femora always much swollen and most frequently armed with teeth beneath or finely serrated, rarely without teeth; abdomen of various shapes, most frequently conical or conic-ovate, more rarely globose,

or oblong oval, the ovipositor very rarely prominent; radius variable, rarely very short; hind tibiæ strongly curved and obliquely truncately produced at apex, so that the tarsi seem to be attached a little before tips.

Family LXII. Chalcididæ.

5. Pronotum rarely transverse-quadrate, conical or conically produced anteriorly, or very short, transverse, and very much narrowed medially, rarely as wide as the mesonotum..... 7
 Pronotum large quadrate or transverse quadrate, never very short, if somewhat shortened always as wide as the mesonotum.

Pronotum quadrate or subquadrate; abdomen in ♀ not triangulated, globose, ovate, conic-ovate or lanceolate and compressed or subcompressed, the hypopygium most frequently prominent plow-share shaped; second dorsal segment never very large; mandibles not strong, most frequent 4-dentate.

Family LXIII. Eurytomidæ.

Pronotum shorter, more transverse and as wide as the mesonotum; abdomen in ♀ most frequently triangulated, or globose, the second and third segments occupying most of the dorsal surface, the following very short and more or less retracted within the third; hypopygium not prominent; mandibles 2- or 3-dentate at apex.....Family LXIV. Perilampidæ.

6. Second abdominal segment very large and most frequently enclosing the following; coxæ not large, subglobose, nearly equal; all legs very slender; radius scarcely developed, its stigma sessile or subsessile.

Family LXV. Eucharidæ.

7. Mesepisternum not large, triangular; anterior femora never much swollen, the posterior femora also normal or only slightly swollen; marginal vein in hind wings usually long, the costal cell not reaching to the hooklets or spinulæ and most frequently very narrow; radius well developed..... Family LXVI. Miscogasteridæ.

Mesepisternum large, triangular; either the anterior or the posterior femora are much swollen and sometimes toothed, or both are swollen with the hind femora toothed; if with slender legs, the hind legs are very long, their coxæ long, cylindrical, while the radius (stigmatal vein) in front wings is very short, with the postmarginal vein very long extending to the apex of the wing (Pelecinea).

Family LXVII. Cleonymidæ.

8. Mesonotum either depressed, with more or less distinct parapsidal furrows, the scapulæ longitudinally ridged, or convex or subconvex, entirely without furrows, rarely convex with distinct furrows; axillæ most frequently meeting at inner basal angles, rarely very widely separated.....Family LXVIII. Encyrtidæ.

9. Mesonotum subconvex with incomplete or complete parapsidal furrows; hind coxæ rarely much larger than the front coxæ; axillæ

separated, not meeting at inner basal angles; mesepisternum usually small, wedge-shaped or triangular; hind wings with a long marginal vein; mandibles usually stout, 3- or 4-dentate at apex.

Family LXXIX. Pteromalidæ.

10. Hind coxæ normal; mesopleura impressed..... 11
Hind coxæ abnormally large and dilated, their femora flat or compressed; tarsi very long; mesopleura entire, not impressed; marginal vein in front wings most frequently extraordinarily lengthened, the radius very short, scarcely dilated; mesonotum without furrows..... Family LXX. Elasmidæ.
11. Tarsi 4-5-jointed, rarely heteromorous; anterior wings not short and broad, with the pubescence normal; marginal and radial veins normal; postmarginal vein often wanting; mesonotum with complete or incomplete furrows..... Family LXXXI. Eulophidæ.
Tarsi 3-jointed; anterior wings short and broad, broadly rounded at apex with the pubescences most frequently arranged in rows, more rarely normally pubescent; marginal and radial veins united in the form of a strongly curved line \cap .

Family LXXII. Trichogrammidæ.

12. Pronotum usually large, rounded, or conically produced anteriorly; wings always with a long marginal fringe, nearly veinless and always without a radius (stigmatal vein), the marginal vein most frequently reduced to a mere dot; antennæ in ♀ most frequently terminating in a distinct fusiform or egg-shaped solid club, more rarely with a 2-jointed club; tarsi 4-5-jointed.

Family LXXXIII. Mymaridæ.

Table of Subfamilies.

FAMILY LXI.—TORYMIDÆ.

- Metathoracic furrows not well defined, the scapulæ therefore scarcely or indistinctly separated; ovipositor not exerted..... 3
Metathoracic furrows distinctly defined, the scapulæ therefore well separated; ovipositor always prominently exerted, most frequently very long.

Hind tibiæ with only 1 apical spur..... 2

Hind tibiæ with 2 apical spurs.

Posterior margin of mesepisternum incised beyond the middle; metepimeron curved, dilated above the apex; posterior femora simple, neither armed with a tooth nor serrate beneath.

Stigmatal vein always long; abdomen usually more or less depressed, if subcompressed the hypopygium large and prominent; ♂ usually apterous, the head oblong, with a triangular fovea anteriorly in which lie the antennæ; abdomen short, not tubularly lengthened..... Subfamily I. Idarninæ.

Stigmal vein very short, the stigma sessile or subsessile; abdomen usually subcompressed, the hypopygium not prominent; ♂ most frequently winged, if apterous the head without the triangular fovea anteriorly.

Subfamily II. *Toryminæ*.

Posterior margin of mesepisternum entire; posterior femora beneath serrate or armed with 1 or 2 teeth.

Stigmal vein not long, but still not so short as in the *Toryminæ*; ♂ very rarely apterous, but always with the hind femora toothed.

Subfamily III. *Monodontomerinæ*.

2. Front wings with the stigmal vein terminating in a large rounded or dilated stigma or knob, the basal nervure distinct, straight.

Subfamily IV. *Megastigminæ*.

3. Abdomen in ♀ conic-ovate or produced at apex, in ♂ oblong, with a peculiar sculpture, the middle segments at base most frequently with transverse rows of rounded punctures; stigmal vein very short.

Subfamily V. *Ormyrinæ*.

FAMILY LXII.—CHALCIDIDÆ.

Front wings longitudinally folded; ovipositor curving upwards over the dorsum of the abdomen.....Subfamily I. *Leucospidinæ*.

Front wings not folded; ovipositor straight, not curving over the dorsum of the abdomen.....Subfamily II. *Chalcidinae*.

FAMILY LXVI.—MISCOGASTERIDÆ.

Abdomen distinctly petiolated..... 2

Abdomen sessile or subsessile.

Antennæ 8-10-jointed, inserted just above the clypeus or close to the mouth border.....Subfamily I. *Pireninæ*.

Antennæ 12-13-jointed, most frequently inserted far above the clypeus, rarely just above it.....Subfamily II. *Tridyminæ*.

2. Antennæ 12-13-jointed; marginal vein always shorter than the submarginal, the costal cell normal; second abdominal segment often large but not especially lengthened; ovipositor not exerted; mesothoracic furrows frequently complete.....Subfamily III. *Miscogasterinæ*.

Antennæ in ♀ 13-14-jointed, subclavate, inserted below the middle of the face; marginal vein very long, as long as or longer than the submarginal; second abdominal segment much lengthened; ovipositor exerted or subexerted; mesothoracic furrows complete.

Subfamily IV. *Lelapinæ*.

FAMILY LXVII.—CLFONYMIDÆ.

Subfamilies defined on p. 201 of this volume.

FAMILY LXVIII.—ENCYRTIDÆ.

Mesonotum not entire, usually depressed, the parapsidal furrows distinct, or at least more or less distinctly present, never entirely wanting; marginal vein usually long..... Subfamily I. Eupelminæ.
 Mesonotum entire, convex or subconvex, the parapsidal furrows always entirely wanting.

Marginal vein rarely very long, often punctiform, and always much shorter than the submarginal or subcostal vein; stigmal vein, except in a single case, short but distinct; scutellum never short or transversely linear; middle tibiæ without lateral spurs..... Subfamily II. Encyrtinæ.

Marginal vein long, as long as the submarginal or subcostal vein; scutellum very short, transversely linear; middle tibiæ with lateral spurs, the apical spur lobed.

Subfamily III. Signiphorinæ.

FAMILY LXIX.—PTEROMALIDÆ.

Abdomen distinctly petiolated. 2
 Abdomen sessile or subsessile.

Metanotum *without* spiracular sulci and most frequently without lateral folds Subfamily I. Merisinæ.

Metanotum *with* the spiracular sulci always present, distinct; the lateral folds also present, either complete or incomplete, the median carina usually more or less distinct, rarely entirely wanting..... Subfamily II. Pteromalinæ.

2. Front wings with a very long marginal vein, the costal cell very narrow 3

Front wings with the marginal vein not especially long, often short and thick, the costal cell not very narrow, normal.

Head, viewed from in front, short or rounded, the occipital line incomplete; antennæ 9-13-jointed.

Subfamily III. Sphegigasterinæ.

Head, viewed from in front, oblong, the occipital line complete; antennæ 8-12-jointed..... Subfamily IV. Spalangiinæ.

3. Mesonotum somewhat long; head anteriorly convex; scape long, extending beyond the ocelli..... Subfamily V. Diparinæ.

FAMILY LXXI.—EULOPHIDÆ.

Submarginal vein broken or interrupted before uniting with the marginal vein and usually very short; stigmal vein not long, usually very short, the stigma subsessile; postmarginal vein most frequently entirely wanting.

Abdomen usually petiolate; submarginal vein very short, the marginal very long, the postmarginal usually more or less present; scutellum with 2 bristles near the middle; metapleura very small..... Subfamily I. Entedoninæ.

Abdomen sessile (rarely petiolate); submarginal vein not very short, the postmarginal vein *always* wanting.

Stigmal vein nearly obsolete, its knob sessile or subsessile; mesopleura without a distinct femoral furrow.

Subfamily II. Aphelininæ.

Stigmal vein distinct and moderately long; mesopleura always with a distinct femoral furrow.

Subfamily III. Tetrastichinæ.

Submarginal vein entire, not broken before uniting with the marginal vein, and usually distinctly longer than the marginal; stigmal vein long, distinct, rarely very short, the postmarginal vein always present.....Subfamily IV. Eulophinæ.

FAMILY LXXII.—TRICHOGRAMMIDÆ.

Wings without regular rows of hairs..... Subfamily I. Oligositinæ.

Wings with regular rows of hairs.....Subfamily II. Trichogramminæ.

FAMILY LXXIII.—MYMARIDÆ.

Tarsi 5-jointed..... Subfamily I. Gonatocerinæ.

Tarsi 4-jointed Subfamily II. Mymarinae.