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## SOME NEW FOSSIL PARASITIC HYMENOPTERA FROM BALTIC AMBER.<sup>1</sup>

BY CHARLES T. BRUES.

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THE abundant occurrence of fossil Parasitic Hymenoptera in Baltic amber has long been known, but in spite of the great activity of entomologists during recent years in dealing with this interesting fauna scarcely any amber species of this group of insects have so far been described. Brischke<sup>2</sup> published a brief list of the genera which he had observed in amber in 1886, but described no species. Some years ago<sup>3</sup> the present writer listed the amber species as an appendix to an account of the Parasitic Hymenoptera of the miocene shales of Florissant, Colorado, and he later extended this list<sup>4</sup> and drew a comparison between the Florissant and Baltic amber faunæ.

The present paper deals with a small, but very interesting series belonging to the Zoölogical Museum of the University of Königsberg. They form a part of the extensive amber collections formerly belonging to the Physikalisch-ökonomische Gesellschaft, now in the custody of the University Museum. The great diversity of the amber fauna is very evident from the fact that among 14 species here described, seven families and 11 genera are represented, two of the genera being new. They are distributed as follows:

EVANIDÆ	1 genus	1 species
BRACONIDÆ	3 genera	3 species
ICHNEUMONIDÆ	1 genus	1 species
BETHYLIDÆ	5 genera (2 new)	7 species
DRYINIDÆ	1 genus	1 species
SERPHIDÆ	1 genus	1 species
CALLIMOMIDÆ	1 genus	1 species

<sup>1</sup> Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 217.

<sup>2</sup> Die Hymenopteren des Bernsteins. Schrift. naturf. Gesellsch. Danzig, n. F. vol. 7, No. 6, pp. 278-279 (1886).

<sup>3</sup> Bull. Mus. Comp. Zool. Harvard, vol. 54, No. 1, pp. 108-122 (1910).

<sup>4</sup> Some Notes on the Geological History of the Parasitic Hymenoptera, Journ. New York Entom. Soc., vol. 18, No. 1, pp. 1-22 (1910).

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In addition there are a large number of specimens which are not perfectly preserved and as these could be better studied in connection with more extensive material, they are not considered in the present paper. The types of the new species are in the University Museum, Königsberg.

#### FAMILY EVANIIDÆ.

##### *Oleisoprister prævolans* sp. nov.

♀. Length 12 mm. Ovipositor at least as long as the body, its tip not being preserved in the type. Head seen from above nearly quadrate, but distinctly broader than thick antero-posteriorly. Ocelli large, close together; the anterior one separated from the lateral ones by one-half its own diameter; lateral ones equidistant from each other and from the eye-margin. Eyes oval, one-third longer than broad. Malar space equal to one-third the eye-height. Antennæ inserted midway between the vertex and the tips of the closed mandibles; 14-jointed; scape stout, twice as long as thick, one-half longer and twice as thick as the pedicel which is nearly twice as long as thick; first flagellar joint a little more slender, and twice as long as the pedicel; two following each one-third longer; others growing shorter to the apex; the last being half as long as the first flagellar. Maxillary palpi 5-jointed; last three joints slender and equal, the second shorter and much thickened; labials 4-jointed, joints except the longer basal one, about as broad as long. Mandibles triangularly acute, edentate. Pronotum without lateral tooth or tubercle. Mesonotum slightly produced at the humeral angles into a very blunt tooth; coarsely transversely grooved, there being about nine ridges; parapsidal grooves very deep, converging at the deep basal scutellar fovea. Propodeum coarsely irregularly reticulate, strongly constricted on a level with the surface of the mesonotum and scutellum. Abdomen as long as the thorax; viewed from the side, the first segment is funnel-shaped, as long as high at apex; following segments growing shorter. Pleuræ more or less reticulated, the propleuræ and pronotum smoother, punctulate, except the anterior margin of the latter. Legs slender; longer spur of middle and hind tibiæ each as long as the breadth of its tibia at the tip. Tarsal claws with three teeth, including the apical one, and with a slight trace of another near the base of the claw. Wings hyaline (as preserved). Stigma oval-lanceolate, nearly as wide as the length of the first section of the radius; median and submedian cells of

equal length; cubitus arising only a very little below the middle of the basal vein, the first discoidal cell therefore very large, its upper side twice as long as its basal one; first recurrent nervure received nearly one-half its length before the apex of the first cubital cell; second recurrent nervure received slightly but distinctly beyond the middle of the second cubital cell which is closed by a hyaline vein; second section of radius four times as long as the first, ending just before the wing tip. Posterior wing with one closed cell, the basal.

One finely preserved specimen No. XXB1697.

This species approaches closest to the genus *Oleisoprister* Bradley in general characters although the tarsal claws have only two long teeth before the apex; these however, are longer and much more prominent than in *Semenovius* and there is a trace of another nearer the base of the claw. It might thus be regarded as intermediate between the two. The first discoidal cell is very large.

#### FAMILY BRACONIDÆ.

##### **Brachistes normalis** sp. nov.

♀. Length 2.5 mm. Probably black or very dark colored, with clear wings. Head transverse, twice as broad as thick, the temples narrow, viewed from the side, less than one-half the width of the eye; its surface smooth. Head completely and strongly margined behind on the occiput, temples and cheeks. Eyes oval, rather strongly protuberant, one-half longer than wide and nearly touching the base of the mandibles below. Ocelli large and prominent, the lateral ones as far from each other as from the eye margin. Antennæ fully three-fourths as long as the body; inserted just below the middle of the head, on a slight ledge, 18-jointed; scape twice as long and slightly thicker than the rounded pedicel; first flagellar joint narrower, four times as long as thick and as long as the scape and pedicel together; second to seventh joints growing shorter to one-half longer than broad, following quadrate moniliform, the apical one one-half longer and obtusely narrowed at the tip. Mesonotum slightly rugulose, but quite shining; very convex, with distinct but not very deep, crenulated furrows. Sides of scutellum irregularly rugose; metathorax reticulate, with a well defined basal median, and a petiolar areola, as well as a number of smaller, irregular lateral areolæ. Abdomen slightly longer than the thorax, sessile; first segment short, as long as the propodeum, ele-

vated medially where it bears two convergent carinæ in addition to a lateral carina on each side, the surface between the carinæ finely rugulose; second segment smooth, twice as long as the first; third to seventh subequal, each **half** as long as the second. Ovipositor curving downward, as long as the abdomen. Propleuræ triangular, finely reticulate in a vertical band across the middle; mesopleuræ twice as high as broad, smooth and polished, with a crenulate line along the posterior margin. Legs slender, tibial spurs short. Wings with ovate stigma, the radius originating just beyond its middle, the latter strongly curved basally and straight apically, ending near the tip of the wing. First discoidal cell sessile; basal vein nearly straight; submedian cell slightly longer than the median; second discoidal cell closed, the discoidal vein broken near its posterior tip; first recurrent nervure received well before the transverse cubitus with which it is parallel. Anal cell with a slight stump of a vein above near the base.

On specimen **XXB2159**.

This is a very small, but typical representative of the genus. It was no doubt parasitic upon beetles occurring in or about the succiferous trees.

**Blacus multiarticulatus** sp. nov.

♀. Length 3 mm. Ovipositor as long as the body. Head broadly transverse, much narrowed behind the eyes, the ocelli large and placed in a small triangle, the lateral ones being twice as far from the eye margin as from the median ocellus. Eyes oval, but not much longer than broad. Surface of head shining and smooth, except for a slight shagreened sculpture on the face. Antennæ about 27-jointed, inserted close together midway between the mouth and the vertex; face strongly convex in the median plane. Clypeus separated by a deep crenate suture; mandibles small, acute, their bases well removed from the eyes. Head completely margined behind. Scape short, oval, thick; first joint of flagellum elongate, four times as long as thick and nearly as long as the width of the eye; second joint nearly one-third shorter; following decreasing in length until those near the apex become quadrate. Occiput medially with a short impressed line which extends forward from the occipital margin toward the ocelli. Mesonotum scarcely two-thirds as wide as the head, much narrowed anteriorly; median lobe narrowed behind, the furrows meeting far before the base of the scutellum; tip of mesonotum before the scutellum with a deep depression that is longitudinally wrinkled and reaches

forward nearly to the furrows. Scutellum narrow, convex. Propodeum rugose and, as well as can be seen, irregularly areolated. Pro- and mesopleuræ rugulose-reticulate, except the upper part of the mesopleura which is smooth. Abdomen subsessile, as long as the thorax; first segment of the same length, but much narrower than the second which is nearly twice as broad as long; third segment one-third shorter than the second, with an indistinct suture at the base; fourth as long as the third. Ovipositor as long as the body. Legs rather slender; spurs of four posterior tibiæ short. Wings probably entirely hyaline, stigma oval, distinctly broader than the length of the first section of the radius which issues a little beyond the middle of the stigma and is one-fourth as long as the nearly straight second to which it is almost perpendicular; first discoidal cell barely sessile, with an obsolete petiole above; submedian cell distinctly longer than the median; second discoidal cell open at apex; recurrent nervure received at the apical fourth of the first cubital cell, parallel with and one-fourth shorter than the transverse cubitus.

Male: Differs from the female by its somewhat more slender form, and longer antennæ. These are nearly a fourth longer than the body with the joints more elongate, the shortest ones being nearly twice as long as thick; basal joints of flagellum of about the same proportionate length as in the female.

Described from two specimens, male and female. Both are without number.

The species is here referred to *Blacus* since it does not agree in number of antennal joints with either *Blacus s. str.* or *Ganychorus* having considerably more than either of these genera. In the subpetiolate or subsessile form of the first discoidal cell it approaches *Pygostolus* and would on this account appear to be more generalized than any known recent species of the tribe Blacini.

#### ***Taphæus præcox* sp. nov.**

♂. Length 4 mm. Wings strongly tinged with brown, probably infuscated in life. Head broadly transverse, about three times as wide as thick. Ocelli large, in a small triangle, well removed from the occiput. Head sharply and distinctly margined behind, the occiput much depressed medially behind the ocelli. Antennæ 24-jointed, as long as the body; scape as long as the first flagellar joint; pedicel small, rounded; first flagellar joint the longest, four times as long as

thick and nearly twice as long as those near the middle of the flagellum; following joints growing shorter and more slender; the penultimate one being twice as long as thick; each antenna inserted on a small tubercle. Surface of head smooth and polished. Thorax high, the mesopleura very large; above, it is quite distinctly wider than the head. Mesonotum trilobed, its crenulate furrows concurrent considerably before the base of the scutellum; surface of mesonotum shining, almost smooth. Propodeum rugose and partially areolated by a median carina at base that divides into two which enclose an area defining the posterior slope. Abdomen but little longer than the thorax, subpetiolate; spiracles of first segment placed a short distance before its middle; first segment with a pair of discal carinæ convergent behind, and a lateral carina including the spiracle. Second segment as long as the first, but much broader; its surface smooth; following segments each but little more than one-half as long as the second; tip of abdomen bent down. Legs slender, the posterior tibiæ widened toward the apex; hind tibial spurs equal, less than one-half as long as the metatarsus. Stigma lanceolate oval, the radius originating beyond its middle and extending to the tip of the wing, its second section straight; basal vein originating in the costa; submedian cell considerably longer than the median; recurrent nervure received beyond the middle of the first cubital cell; second cubital as long on its cubital side as the distance between the first transverse cubitus and the recurrent nervure, cell much narrowed above, its upper less than half as long as its lower side; second discoidal cell twice as long as high; discoidal nervure broken far below the middle.

One specimen No. B19319.

The species is a typical representative of this genus which is at the present time represented in Europe. Two related genera, *Diospilus* and *Dyscoletes* have been found in the American tertiaries at Florissant.

#### FAMILY ICHNEUMONIDÆ.

#### *Astiphromma brischkei* sp. nov.

♂. Length 9 mm. A large slender species with the antennæ distinctly thickened near the apex. Head two and one-half times as broad as thick, with the eyes prominently projecting above its surface. Ocelli large and prominent, the lateral ones closer together than to the eye-margin. Antennæ 30-jointed, almost reaching to the tip of the abdomen, quite slender basally, but very perceptibly thickened from

the middle to near the tip; first joint much lengthened, as long as the width of the mesonotum; second to fifth joints each but little more than half as long as the first; following becoming shorter and thicker, till at the apical three-fourths they are quadrate from whence they remain of the same shape but grow smaller to the pointed apex of the antenna. Head very strongly contracted behind the eyes; margined behind, its surface entirely smooth above and behind. Face very much narrowed below to the clypeus which is oval, higher than broad, very convex, and separated from the face by a deep suture. Eyes ellipsoidal, very convex, nearly twice as long as broad; malar space short, shagreened. Maxillary palpi rather short, composed of four nearly equal joints. Mesonotum much elongated, strongly narrowed in front, with a distinct, raised margin around the sides and a deep, broad, foveate depression at the base of the scutellum; its surface shining, faintly punctulate. Scutellum convex, strongly carinate basally on each side of the basal depression. Propodeum gradually declivous from the base, completely and very distinctly areolated. Pleuræ more or less smooth, the mesopleura quite strongly convex medially; separated behind by a crenulate furrow from the short metapleural piece. Coxæ smooth, faintly punctate. Abdomen with a long petiole, claviform; fully twice as long as the head and thorax together. First segment nearly as long as the thorax, long stalk-like and but little widened toward the apex; its spiracles placed a short distance before its middle in a lateral carina which extends the entire length of the segment. Second segment half as long as the first, nearly twice as long as wide at the tip; third, fourth and fifth about equal, each one-third shorter than the second; following scarcely protruding. Wings nearly attaining the tip of the abdomen, apparently hyaline. Stigma narrowly ovate, the radius issuing from its middle, radial cell ending considerably before the wing-tip; first section of the radius one-third as long as the second; areolet rhombic, very large, the two sections of the radius forming straight lines with its two upper sides; median and submedian cells of equal length; cubito-discoïdal cell as long as the greatest diagonal of the radial cell, the cubito-discoïdal vein sharply bent, with a trace of a stump of a vein at this point. Legs slender, especially the anterior pair.

Two specimens. Type without number; paratype bearing the number K7554.

On account of the carinæ on the first segment of the abdomen, this species is better referred to *Astiphromma* than to *Mesochorus* although the structure of the tarsal claws is not to be seen.

The peculiar conformation of the antennæ which are very distinctly thickened near the apex raises some doubt whether the species may not be really worthy of generic rank, as I do not know of the occurrence of similar antennæ in any recent species of either genus, but as there appear to be no other differential characters, I have not thought such a procedure advisable.

I have dedicated this species to Brischke in recognition of his work on Amber Hymenoptera as it is quite possibly the one referred to by him ('88) as *Mesochorus*.

#### FAMILY BETHYLIDÆ.

#### **Palæobethylus** Gen. nov.

A characteristic bethylid type, showing however many resemblances to living members of the Ampulicidæ, particularly to *Rhinopsis*. Body much elongated, especially the prothorax and head, the former strongly flattened. Head large, flat; the occipital foramen placed very near the vertex. Eyes elongate, bare; ocelli in a triangle. Mandibles long, acute when seen from below, with rounded, edentate margins. Maxillary palpi with four nearly equal joints; labial palpi two-jointed, the basal joint more than twice as long as the apical one. Antennæ slightly thickened, 13-jointed; scape long. Prothorax very long, much depressed and narrowed anteriorly, with a sharp, median, grooved line; mesonotum shorter, with two pairs of furrows; scutellum without foveæ at the base; propodeum and all the pleuræ long. Abdomen of the usual form, obtusely pointed at the apex. Wings with a complete marginal cell, though the apical half of the radial vein is weakly marked; stigma lanceolate; submedian cell longer than the median; second discoidal cell closed, the first discoidal and also the first cubital cell indicated by streaks as in the genus *Pristocera*. Hind wing lobed at the base.

Type species, *P. longicollis* sp. nov.

#### **Palæobethylus longicollis** sp. nov.

♂. Length 5 mm. Apparently aneous throughout; wings with a distinct brownish cast. Head, viewed from the front, as wide as high, the malar space one-third as long as the eye-height. Antennæ inserted very close to the oral margin; 13-jointed; scape broad and

flattened, as long as the four following joints together; pedicel contracted, as long as the broader first joint of the flagellum which is also narrowed at its base; second to sixth flagellar joints subequal, about quadrate and shorter than the first; joints beyond these of about the same length, but more slender. Surface of head punctate closely on the vertex, but becoming entirely smooth below the ocelli, except for a few very sparse delicate punctures. Ocelli in a triangle, the lateral ones as far from each other as from the eye-margin. Eyes over twice as high as broad. Prothorax above densely punctate, the median line complete; posterior edge strongly concave, the humeri produced into finger-like processes; propleuræ roughly shagreened below. Prosternum with a few sparse punctures, very long, the coxæ being far removed from the head. Mesonotum two-thirds as long as the prothorax and one-half broader than long; in front densely punctured, apically with larger, more scattered punctures; inner pair of furrows the deepest, placed far apart, and suddenly curved outwards at the anterior margin; external pair of furrows straight, close to the sides of the mesonotum. Scutellum twice as wide as long, smooth and polished, without foveæ at base. Propodeum medially above with a carina, on each side of which it is smooth and polished; posterior surface rounded off above, not sharply declivous; pleuræ with a carina above, their upper half reticulate, and their lower half in great part smooth and polished. Mesopleura elongated, polished, with large scattered punctures, abdomen rather short; second, third, and fourth segments of equal length, following ones not exerted beyond the fourth. Legs moderately thickened; anterior femora obclavate,

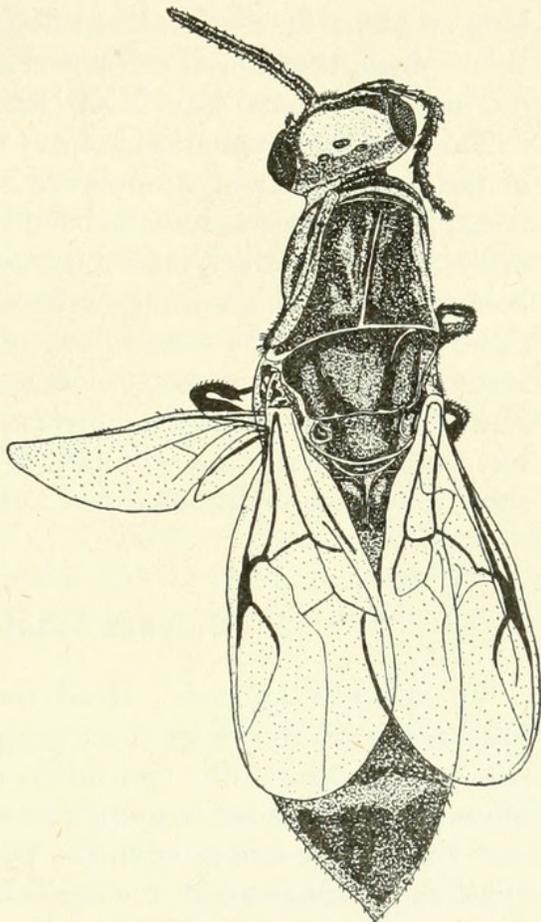


FIGURE 1. *Palæobethylus longicollis*  
sp. nov. ♂.

twice as long as their tibiae; middle legs rather slender; hind femora greatly thickened and flattened, over half as broad as long and only two-thirds as long as their tibiae, which are but little thickened. Tarsal claws apparently simple. Wings with an elongate, narrowly lanceolate stigma the tip of which reaches nearly to the middle of the radial cell; radial cell ovate, pointed at the tip; basal vein oblique, the cubitus arising near its upper third; submedian cell distinctly longer than the median; second discoidal cell closed, large, nearly twice as long as high; first cubital and first discoidal cells defined by hyaline thickenings, the cubital cell not closed externally.

Three specimens, type **XXB1629**; others not numbered.

This is a most remarkable form which combines certain characters of the Bethyridae and Ampulicidae. In its complete wing venation it resembles *Pristocera*, but the head is much more flattened and the legs much thicker, so thick indeed that one would suspect the specimens of being females. I am quite positive, however, that they are males, as there is no trace of a sting in any of the several finely preserved specimens at hand. The greatly elongated prothorax with a median furrow recalls members of the Ampulicidae, as does also the form of the head, but the abdomen is not petiolate. The flattened pro- and mesothorax show it to be a highly modified form.

#### ***Calyoza longiceps* sp. nov.**

♀. Length 2.7 mm. Head very long, including the mandibles, fully as long as the entire thorax; these much elongated, seen from the side of the head fully two-thirds as long as the head. Eyes oval, placed near the anterior margin of the head, removed by one and one-half times their length from the posterior margin, their surface bare. Head finely shagreened, the ocelli in a small equilateral triangle near the vertex. Antennae 13-jointed; short, reaching but little beyond the posterior margin of the head. Scape stout, twice as long as the pedicel, curved; first flagellar joint narrow, only about one-half the length of the pedicel; following of about equal length, widening and becoming quadrate; apical joint longer and obtusely pointed. Mandibles broad at tips, 5-dentate, the four posterior teeth short and equal, the anterior one very long and acute, about three times as long as the others. Pronotum one-half longer than the mesonotum, and about twice as broad as long, exclusive of the neck portion. Mesonotum with two furrows, convergent behind, which separate it into three

nearly equal parts. Scutellum with no grooves or foveæ, except the lines separating the axillæ. Propodeum somewhat broader than long, margined laterally and at the tip; also with a complete median carina, and an oblique lateral groove on each side which connects the tip of the median carina with the middle of each lateral half. The included area thus formed is reticulate, while the rest of the propodeum and part of the pleuræ as well are shagreened. Mesopleura smooth. Abdomen long, fully equal in length to the head and thorax together; first segment short, quite sharply truncate at the base and sharply declivous; following segments about equal in length. Legs moderately thickened, the tibiæ all rather slender, except the anterior ones, and smooth, not at all spinulose. Wings rather short, but perfectly formed, reaching to the middle of the abdomen. Two basal cells, the posterior one (submedian cell) distinctly longer than the median on the externo-median vein. Second discoidal cell very distinctly marked except on the posterior side; basal vein attaining the submarginal vein far before the stigma which is small, about twice as long as wide at tip. Radial vein long, equalling the submarginal. The first discoidal cell indistinctly indicated, the transverse cubitus meeting the radius before its middle.

One specimen without number.

This species agrees very well with *Calyoza* Westwood, although the stigma is quite distinctly narrower and the head so extremely long. The striking form of the head will make it very readily recognizable:

#### **Protopristocera** Gen. nov.

♀. Head shaped as in *Pristocera*, but not coarsely punctate as in that genus; margined posteriorly. Ocelli large in a small triangle. Eyes oval, nearly contiguous with the base of the mandibles, pubescent. Mandibles apparently with several teeth, the apical one acute and much prolonged. Maxillary palpi 5-jointed; labials with two visible joints and possibly a third basal one. Antennæ long, 13-jointed. Pronotum nearly as long as broad, without any furrows or coarse punctures. Mesonotum nearly one-half as long as the pronotum, with two rather approximated parapsidal grooves which converge posteriorly and a second, less distinct pair, laterally. Propodeum margined and with several longitudinal carinæ, sharply declivous posteriorly. Abdomen subsessile, acuminate; second segment the longest, wings fully developed. Marginal cell open at the apex; sub-

median cell much longer than the median; second discoidal large, oblong; closed by a weak vein at the tip. Legs moderately thickened.

While the type species is very much like *Pristocera* it is remarkable in having the female winged and like the male, not entirely apterous and so different from the male as in the recent genus. On this account it appears to be a stem form close to those from which the recent *Pristocera* has developed with its greatly degenerate female. Recently Kieffer (*Bull. Soc. Hist. Nat. Metz* XII, p. 98 (1905)) has described a genus *Propristocera* from the Indian region which is known only in the male sex. It is of course possible that this genus may be found to have winged females and approach the present one although this appears unlikely. If such be the case the present one may not be distinct although it differs by its pubescent eyes and quite distinct second discoidal cell.

***Protopristocera sucini* sp. nov.**

♀. Length 4.5–5.25 mm. Apparently uniformly dark-colored, with hyaline wings. Head from tip of mandibles about twice as long as high. Eyes close to the mandibles, but not contiguous; separated from the hind margin of the head by a little more than their own length. Head above finely punctulate and clothed with a fine, close, pubescence; on the underside with very sparse, delicate, setigerous punctures. Antennæ inserted close together on a frontal tubercle. Antennal scape as long as the following three joints, curved, and slightly thickened apically; pedicel and following joints of nearly equal length, thickening to the second flagellar, then becoming more slender to the tip; penultimate and last longer and shorter than the others, respectively; tip of antennæ reaching about to the tip of the propodeum. Pro- and mesonotum finely punctulate and thinly hairy. Parapsidal furrows very delicate, the lateral pair more deeply cut anteriorly. Mesopleura smooth, margined by a foveate line; with a foveate depression medially, above which it is divided by a carina nearly perpendicular to its hind margin. Upper surface of propodeum margined laterally and at the tip, with a median carina which extends to the tip of the posterior slope; with two other less distinct carinæ above on each side of the median one. Each posterior angle with a small areola. Pleuræ and posterior slope irregularly wrinkled. Abdomen conic-ovate. Legs, except anterior femora, only slightly thickened; four posterior tibiæ each with two spurs; tarsal claws slender, apparently entire. Wings hyaline, marginal cell

almost closed, the marginal vein as long as the submedian cell; the latter above longer than the median by two-thirds the length of the basal vein. Stigma long, narrow.

Two specimens, B1064 (type) and B1480.

***Epyris inhabilis* sp. nov.**

♂. Length 5 mm. Head, seen from above, fully one-fourth wider than long; surface above finely rugulose without any coarse sparse punctures. Ocelli in an equilateral triangle, the lateral ones equidistant from each other and the eye-margin. Eyes bare, separated by over one-third their length from the hind margin of the head; head narrowing behind the eyes, the posterior angles broadly rounded and the occiput rounded and regularly emarginate. Head behind, and the cheeks, shagreened. Antennæ 13-jointed scarcely longer than the width of the head, inserted far apart, at their bases separated by one-fourth the width of the head. Scape short, stout, strongly curved; pedicel long, two-thirds as long as the scape; first three flagellar joints of about equal length, growing thicker, the first a little shorter; following joints distinctly transverse, of about the same width as the third joint of the flagellum; apical joint obtusely narrowed and somewhat longer. Maxillary palpi 5-jointed, including the shorter basal joint; labial palpi 3-jointed. Thorax slightly over twice as long as broad. Pronotum, exclusive of the anterior neck-like portion, rounded anteriorly and less than half as long as broad behind; posterior margin slightly curved forward medially. Mesonotum half as long as the pronotum, sculptured like it and the head, except behind medially where it is more nearly smooth; parapsidal furrows deep, complete, strongly converging behind; posterior margin carinate, the carina curving forward a short distance on each side. Scutellum with an impressed line at the base, which is curved backward and foveate on the sides; much depressed laterally and with a deep pit on each side at the bottom of the depression; its surface shagreened. Propodeum quadrate, margined laterally and at the tip; with a sharp median carina; elsewhere finely reticulate. Pleuræ, as nearly as they can be seen, finely punctate. Abdomen short, but little longer than the thorax, ovate; the base sharply constricted and with an extremely short but quite distinct petiole; second segment the longest, occupying one-third the length of the abdomen. Legs, except the anterior femora, but little thickened; four posterior tibiæ each with two spurs.

Wings hyaline. Radial vein long, nearly equal to the distance from the root of the wing to the origin of the basal vein, which arises some distance before the small linear stigma; the latter narrow and twice as long as broad; basal vein short, nearly straight; transverse median vein strongly curved, one-third longer than the basal vein.

One specimen, without number.

This species may possibly belong to one of the groups recently segregated from *Epyris*, agreeing well with *Monepyris* Kieffer except that there is no third closed basal cell in the wing. As it does not agree perfectly with any of these I have preferred to let it remain in the old genus.

### **Sierola** Cameron.

The three amber species all have a small closed discoidal cell, and may possibly represent a distinct genus.

#### *Key to the Amber Species.*

1. Prothorax more than one and one-half times as long as the mesonotum; antennae stout; joints 4-10 of the flagellum quadrate; head above without bristly hairs.....**S. simplex.**  
Prothorax and mesonotum of more nearly equal length; antennae more slender; head above with a series of long bristly hairs.....2.
2. Slender species; eyes oval, nearly twice as long as broad; mesonotum distinctly longer than the prothorax.....**S. setigera.**  
Stout species; eyes nearly circular, but little longer than broad; mesonotum distinctly shorter than the pronotum.....**S. crastina.**

### **Sierola simplex** sp. nov.

♀. Length 3 mm. Body apparently entirely dark colored, probably black or aeneous, the head and thorax thinly clothed with very short hair. Head evenly convex in front, its surface finely punctulate. Clypeus with a very prominent, but short median carina which extends on to the front above the clypeal suture for a distance equal to the length of the pedicel of the antenna. Eyes oval, nearly twice as long as broad, thinly pubescent. Ocelli in a small triangle, close to the occipital margin of the head. Mandibles moderately stout, their apices not visible. Maxillary palpi 5-jointed. Antennæ 13-jointed, of nearly equal thickness throughout, slightly stouter before the middle of the flagellum; scape stout, bent, broadened at the apex; pedicel and first two flagellar joints each of nearly equal length, the second one broader; third stouter, fourth and following quadrate,

becoming slightly moniliform; last joint oval, one-half longer than the preceding. Thorax above shagreened, but little convex; the propleuræ below the suture smooth and shining. Pronotum almost twice as long as the mesonotum, its pleural piece with slight longitudinal striate sculpture. Mesonotum about twice as wide as long, its anterior and posterior margins nearly straight; with two fine but very distinct parapsidal furrows, which are interior apically to the small foveæ at the base of the scutellum; the latter as long as the mesonotum, with a delicate impressed line at the base connecting the foveæ. Propodeum margined behind and at the sides in addition to a median carina; its pleuræ microscopically reticulated and its posterior face shagreened. Mesopleural piece very convex; its discal fovea small, distinct, equidistant from the upper and hind margins of the mesopleura, nearly twice as far from its oblique anterior edge. Abdomen rather slender, one-fourth longer than the elongate thorax; second segment the longest, the following gradually decreasing in length. Legs very much thickened; anterior femora nearly one-half as broad as long. Tarsal claws apparently with a single tooth near the base. Wings fully developed, quite strongly infuscated. Radial cell complete, broadly rounded at the apex. Median cell nearly as long as the submedian; closed discoidal cell small, much narrowed basally, being nearly ovate in form; closed cubital cell large, two-thirds as long and nearly as broad as the radial.

One finely preserved specimen, without number.

#### *Sierola setigera* sp. nov.

♀. Length 3.2 mm. Head in front but little convex, nearly flat on the front below the vertex. Median carina of clypeus very strongly elevated anteriorly, extending but little on to the front above the clypeal suture. Eyes oval, nearly twice as long as wide, not, or very indistinctly pubescent. Ocelli large, in a moderately small triangle close to the occipital margin. Head seen in side view, quite strongly triangularly prolonged behind the eye for a distance nearly equal to the width of the eye. Mandibles rather narrow, indistinctly bidentate at the tips; palpi 5-jointed. Antennæ slender; scape broad and flattened toward the apex; 13-jointed, all the joints longer than thick. Pedicel slender, a trifle longer than the first flagellar joint; following joints a little shorter; those near the middle of the flagellum about twice as long as thick; near the tip one-third longer than thick;

apical joint twice as long as the preceding. Occipital margin with about six long bristly hairs across the vertex and a couple along the inner eye-margin near the top; also with three close to the outer eye-margin near the top. Pronotum distinctly shorter than the mesonotum; polished and faintly shagreened above, on the sides faintly irregularly striated; prosternum smooth and polished on the sides. Mesonotum very faintly shagreened, with very faint traces of parapsidal furrows external to the scutellar foveæ; the latter rather large, connected by a very distinct transverse groove. Scutellum shorter than the mesonotum. Mesopleura with its discal fovea large and somewhat nearer to the posterior than upper margin. Propodeum margined on the sides, but not behind, where its surface rounds off to the posterior slope. Mesopleura smooth; metapleura shagreened except at the base which is smooth; metathorax both above and behind very faintly sculptured, nearly smooth. Abdomen slender, nearly as long as the head and thorax together; second segment longest; third nearly as long; following rapidly growing shorter. Legs rather slender except the femora which are thickened, particularly the anterior ones which are fully one-third as broad as long. Wings fully developed, hyaline; radial cell broad, broadly rounded at the tip, scarcely longer, but one-third wider than the closed cubital cell; median cell indistinctly shorter than the submedian; discoidal cell diamond-shaped, the two proximal sides equal, each one-half longer than the equal distal sides; stigma elongate, narrow, with nearly parallel sides.

One specimen, without number.

***Sierola crastina* sp. nov.**

♀. Length 3 mm. Stout, seemingly entirely aeneous, with somewhat infuscated wings. Head large and stout, thickened antero-posteriorly. Eyes oval, but much more nearly circular in outline than in the preceding species. Head seen from the front as broad as high, the clypeal carina strongly elevated, three-fourths as long as the height of the eye. Eyes pubescent; front shining, scarcely at all shagreened. Ocelli in a rather large triangle, the lateral ones one-half closer to each other than to the eye margin. Occipital margin above with six long bristly hairs, and with several more on each side behind the upper part of the eyes. Antennæ short and slender, but little exceeding the head in length. Scape stout, two and one-half times as long as thick; following joints to the fifth flagellar of nearly equal

length, almost twice as long as thick; following narrower and shorter, tenth and eleventh submoniliform; apical joint narrower and one-half longer. Thorax above strongly convex, the pronotum shagreened, but the mesonotum and scutellum nearly smooth. Seen from above the mesonotum is slightly longer than the pronotum. Parapsidal furrows distinct posteriorly, but indistinctly marked on the anterior half of the mesonotum, meeting the scutellum a considerable distance external to the basal foveæ of the latter. Scutellar foveæ deep, but not large; connected by an impressed line along the base of the scutellum. Metanotum short, rounded on its posterior crest; with a lateral carina both above and on the posterior slope, but otherwise without sculpture, except for a faint transverse or oblique aciculation. Mesopleura large, sparsely punctulate, its discal fovea large and deep, placed near its upper posterior angle. Pro- and metapleuræ shagreened or faintly aciculated. Abdomen short and stout; second segment longest, the following gradually shorter. Legs stout, the anterior femora twice as long as broad; middle and posterior tibiæ not thickened, smooth. Tarsal claws apparently each with a single long tooth beneath near the base. Wings fully developed. Stigma two and one-half times as long as broad; median cell slightly shorter than the submedian; discoidal cell trapezoidal, the proximal lower side fully twice as long as the apical lower side; cubital cell but little shorter and narrower than the radial which is broadly rounded at the tip as in the preceding two species.

One specimen, without number.

#### FAMILY DRYINIDÆ.

#### *Dryinus filicornis* sp. nov.

♀. Length 6 mm. Head large, with the front slightly concave, seen from above somewhat more than twice as wide as thick. Ocelli large, very close together in a small triangle. Occiput with a strongly carinate marginal line which extends to the temples. Eyes bare. Palpi moderately elongate, but not preserved so as to show the number of joints present. Antennæ 10-jointed, very slender and greatly elongated, somewhat exceeding the body in length. Scape short and thick, one-half longer than the second joint which is three times as long as thick; third very long, six times the length of the second and equalling the width of the head; fourth almost half longer than the third; fifth and sixth growing shorter, each little more than half the

length of the fourth and fifth respectively; next three decreasing in about the same ratio; terminal joint one-half longer than the penultimate. Prothorax much narrowed anteriorly and strongly elevated posteriorly, but without any transverse depressions. Mesonotum somewhat shorter than the pronotum, with strong, moderately convergent parapsidal furrows; its surface indistinctly punctate. Scutellum as broad as long, with a shallow transverse depression across its base. Metanotum gradually declivous and tapering apically, with reticulations and some carinae, the exact position of which cannot be made out in the type specimen. Abdomen as long as the head and thorax together, lanceolate, acute apically. Wings fully developed, appearing hyaline; stigma very narrowly lanceolate. Veins piceous, only the radial, basal, transverse, median and basal section of the submedian vein thickly chitinized, the first basal and first cubital cell defined by nearly hyaline veins. Radial cell almost closed by the heavy part of the radius, and completely by its thinner, weakly chitinized tip. First discoidal cell above with a petiole fully one-third as long as the entire basal vein; first cubital cell receiving the recurrent nervure at its apical third; median and submedian cells of equal length. Legs very long; anterior coxæ and trochanters extremely elongated, the coxæ nearly as long as the femora; the trochanters equally long and strongly arcuate. Femora and tibiæ of equal length, the former strongly obclavate and the latter slender, straight. First tarsal joint four times as long as the short second; third much swollen; fourth very long; two-thirds as long as the tibia; fifth very short, quadrate; forceps denticulate on both arms, the inner one reaching the base of the second tarsal joint, at the tip with a large tuft of denticles. Middle and posterior legs elongate and slender, but otherwise of the usual form.

Described from a female XXB1547.

This species will be easily recognized by its extremely elongate and slender antennæ.

#### FAMILY SERPHIDÆ.

##### *Serphus cellularis* sp. nov.

♂. Length 3 mm. Apparently black, with hyaline wings and brownish legs. Head transverse, about twice as broad as thick antero-posteriorly, the lateral ocelli as far from the median one as from the eye-margin. Surface of head smooth and shining above,

faintly punctulate on the cheeks. Antennæ 13-jointed, the second to fifth flagellar joints dentate below, the teeth small, but sharply indicated; scape thickened toward the apex, about one-half longer than wide; pedicel small, very short, rounded; first joint of flagellum a little over twice as long as thick, cylindrical; second joint three-fourths as long, following to the apex of about equal length, each nearly twice as long as thick; last joint thicker, one-half longer and acute at the apex. Mesonotum elongate, with indications of parapsidal depressions. Scutellum but little convex medially. Propodeum very gradually rounded off behind, and not strongly decumbent; above irregularly rugose-reticulate, but without indications of a longitudinal arrangement, except possibly near the median line which is very much obscured in the type. Pleuræ not sculptured except on the metathorax; mesopleura with a horizontal impression extending for nearly its entire length and a punctate frenum posteriorly. Abdomen as long as the thorax, its second segment longer than all the following taken together, striate at its extreme base. Legs slightly, but quite distinctly thickened; inner spur of hind tibiæ barely one-half the length of the metatarsus. Wings with an oval stigma which is more than twice as long as broad; radius originating at the apical third of the stigma; radial cell well-developed; fully as long on the costa as the width of the stigma; its costal side twice as long as the first section of the radius; discoidal veins not well indicated except the upper part of the discocubital vein.

One specimen, No. 12,072.

This species resembles very closely some of the living members of this cosmopolitan genus. The radial cell is, however, unusually large, although not unparalleled among recent species.

#### FAMILY CALLIMOMIDÆ.

##### **Monodontomerus primævus** sp. nov.

♀. Length 4 mm. Ovipositor exerted to nearly the length of the abdomen, its tip removed, but the sheaths are a little shorter than the part preserved, being about three-fourths as long as the abdomen. Head smooth below, above on the front slightly shagreened. Antennæ 13-jointed, scape, pedicel, one ring joint, seven funicle joints and a 3-jointed club. Scape inserted well below the middle of the eye and reaching as far as the anterior ocellus; pedicel

as long as thick; ring joint small, but very distinct; first flagellar joint quadrate; second twice as broad as long; following to the club of the same form but becoming wider; club with the joints compact, considerably shorter than the three preceding joints together. Malar line very distinct, one-fourth as long as the eye-height. Head behind more coarsely shagreened, distinctly margined. Pro- and mesonotum shining, shagreened, of about equal length. Scutellum shagreened and with a few scattered punctures anterior to the cross furrow which is at the apical third, tip smooth, impunctate. Metanotum with some irregular areolæ defined by very strong carinæ. Abdomen elongate ovate; distinctly longer than the thorax; second, third and fourth segments of nearly equal length. Mesopleura large, polished with a deep fovea near the middle of its posterior margin; femoral furrow extending halfway up the pleura, transversely aciculate. Legs thickened, the posterior femora enlarged to near the tip and sharp below, with a blunt rounded tooth at the apical fourth. Wings apparently infuscated; basal vein very oblique; marginal vein two-thirds as long as the submarginal and nearly twice as long as the postmarginal; stigmal vein nearly half as long as the marginal, with a small knob at the tip and a short slender stump of a vein extending obliquely toward the costal margin of the wing.

One specimen, without number.

This species is either a *Monodontomerus* or a member of the closely allied genus *Diomorus*. It is impossible to make out the shape of the posterior margin of the second abdominal segment, but the sculpture of the head and thorax is not coarse as in *Diomorus*. Except for the typical monodontomerine form of the hind femora, the species looks much like those of the fossil genus *Palæotorymus* known from the Miocene of America.





Brues, Charles T. 1923. "Some new fossil parasitic Hymenoptera from Baltic amber." *Proceedings of the American Academy of Arts and Sciences* 58, 327–347.  
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