

## The genera *Lissaspis* Townes and *Singalissaspis* gen. n. (Hymenoptera, Ichneumonidae)

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The Ichneumonid (Hymenoptera) genus *Lissaspis* Townes, 1969, from tropical America is settled and the following nine species are described: *Lissaspis areolata* sp. n., *L. argentina* sp. n., *L. brasiliensis* sp. n., *L. exigua* sp. n., *L. flagellata* sp. n., *L. inca* sp. n., *L. laevigata* Townes, *L. longistriata* sp. n. and *L. obscura* sp. n. In addition, the genus *Singalissaspis* gen. n. and the species *S. tricolor* sp. n. from Singapore are described.

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### 1. Introduction

During an excursion in Singapore from 27 October to 7 November 1994 I found an unknown Ichneumonid wasp. I assumed it would be a peculiar *Lissaspis* Townes species, and I loaned the specimens of that genus from the American Entomological Institute, Gainesville, USA. However, after the comparison, I observed that it does not belong to *Lissaspis* or any other known genus. Therefore, I will describe a new genus, *Singalissaspis*, and its type species *tricolor*.

*Lissaspis* is a Neotropic genus, ranging from Venezuela to northern Argentina (Townes 1969b). Until now, only the genotype, *Lissaspis laevigata* Townes, has been described (Townes 1969b). My aim is also to examine the known material of *Lissaspis* and describe the species.

### 2. Methods

All the observations were made with a Euromex stereomicroscope at magnifications of  $\times 45$  or 90 and a cold-light source with two light conductors. The relative measurements, for the comparison of parts, were made with a mi-

croscoper at a magnification of  $\times 45$ . Length and breadth or width are always the maximum values obtained. The thickness of the flagellar segment was measured in the middle.

The terminology is that of Townes (1969a).

### 3. Taxonomy

The genera *Lissaspis* and *Singalissaspis* belong to the Ichneumonid subfamily Cryptinae (Gelinae, Phygadeuontinae), tribe Phygadeuontini (Hemitelini, Gelini) and subtribe Chiroticina which now comprises 19 genera.

The known hosts of Chiroticina are small cocoons, e.g. of Psychidae (Lep.). Nearly all species occur in the tropics or subtropics but also some species occur in Nearctic and Palaearctic Regions (Townes 1969b), three species in Finland (Koponen *et al.* 1998).

*Key to the genera of Chiroticina (after Townes 1969b, modified to include the new genus)*

1. Genal carina reaching base of mandible ..... 2
- Genal carina reaching oral carina above base of

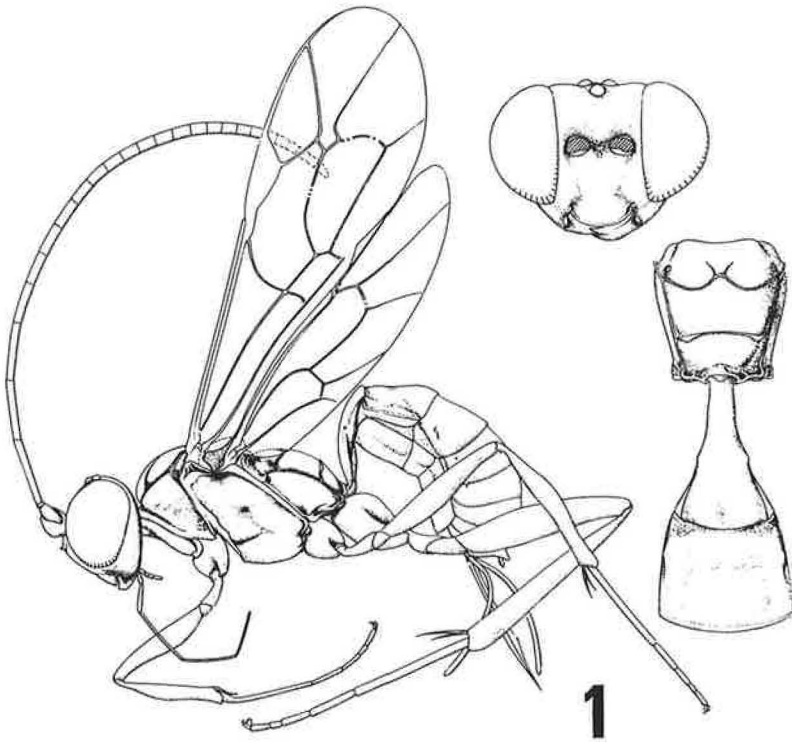


Fig. 1. *Lissaspis laevigata* Townes (according to Townes 1969b).

- mandible or curved inward toward oral carina with its lower end incomplete ..... 4
- 2. Areolet a distinctly formed pentagon (though its outer side open) as a result of the first intercubitus being rather long, the radius distinctly broken forward distal of first intercubitus and the cubitus strongly broken forward distal of second recurrent vein (Fig. 1); maxillary palpi reaching at least middle of mesopleurum ..... 3
- Areolet only indistinctly formed: the first intercubitus distinctly longer than the section of cubitus between the first intercubitus and second recurrent vein, and radius and intercubitus less distinctly broken (Fig. 12); palpi short. Singapore ..... *Singalissaspis* gen. n.
- 3. Median lobe of mesoscutum polished and impunctate, with a median longitudinal groove. Neotropical Region ..... *Lissaspis*
- Median lobe of mesoscutum mat or punctate, or both, without a median longitudinal groove ..... (couplet 3 in Townes' key)
- 4. Areolet as in *Lissaspis* (cf. Fig. 1). Postpectal carina incomplete. Ethiopian Region ..... *Bodedia*
- Areolet not or only indistinctly formed, the intercubitus usually short and cubitus only weakly angled forward

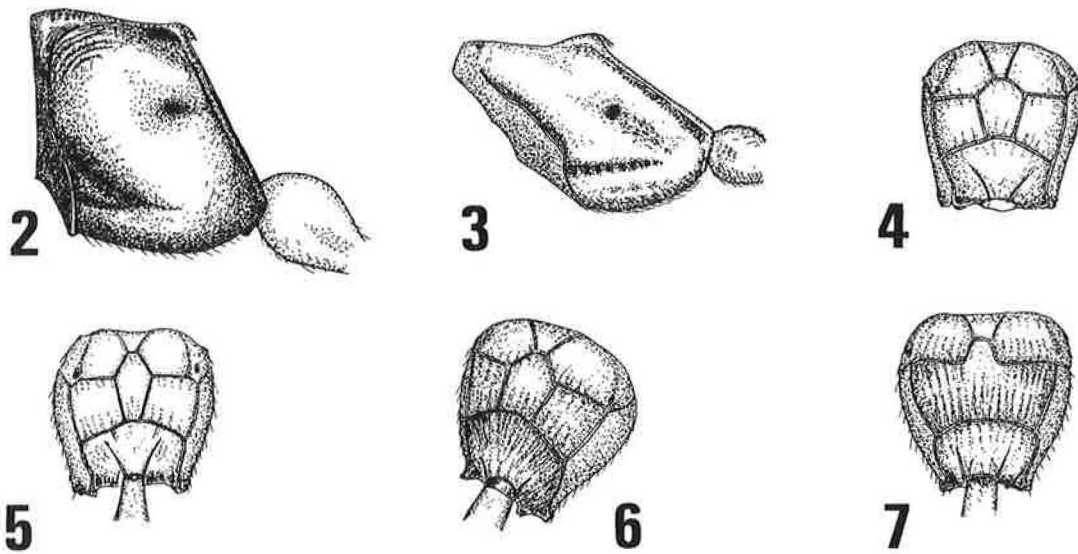
distal of second recurrent vein; postpectal carina complete' ..... (couplet 8 in Townes' key)

***Lissaspis* Townes, 1969**

*Lissaspis* Townes 1969b: 13; type species *Lissaspis laevigata* Townes.

Length 3.0–5.0 mm. Body moderately slender. Head polished, narrowed behind compound eyes; face wide, almost flat but with its central 0.3 weakly bulged; malar space 0.5–1.1 × width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining ± base of mandible; occipital carina angular to curved angular on middle part; mandible moderately tapered to apex, its lower tooth ± shorter than upper tooth; maxillary palp very long; flagellum of female a little widened on its apex, with 20–27 segments, 20–30 in male, length-to-

<sup>1</sup>The areolet of some *Paraphylax* specimens resembles that of *Lissaspis* but their postpectal carina is complete. The postpectal carina of the female of *Paraphylax hiatus* Townes, 1958, from Guam, Micronesia, is incomplete but its areolet does not resemble that of *Lissaspis*.



Figs. 2–3. Mesopleurum, in sinistro-lateral view. 2: *Lissaspis inca* sp. n. (holotype); 3: *L. flagellata* sp. n. (holotype). — Figs. 4–7. Propodeum, in dorsal view. 4: *L. argentina* sp. n. (holotype); 5: *L. areolata* sp. n. (holotype); 6: *L. brasiliensis* sp. n. (holotype); 7: *L. longistriata* sp. n. (paratype ♀).

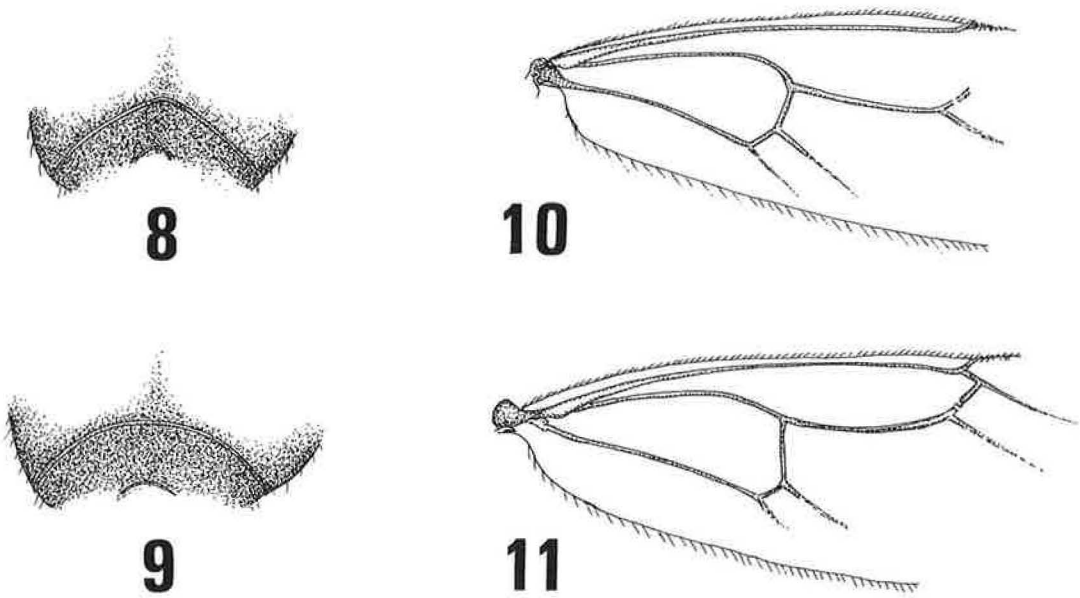
thickness ratios: 1st segment 5.7–12.3, 2nd 5.4–10.0, 10th 1.5–3.0 and penultimate 1.0–1.25 in female, and in male they are 5.5–10.0, 3.5–7.3, 2.4–4.6 and 1.3–2.0; occiput with a shallow median longitudinal groove. Pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, impunctate with a median groove that reaches from near the front to its centre; notaulus reaching 0.5–0.7 the distance to scutellum; sternaulus strong on front 0.6–0.8 of mesopleurum, absent on hind 0.2–0.4 (in *L. inca* sp. n. female with two branches), postpectal carina complete or narrowly interrupted in front of each middle coxa; scutellum moderately convex, polished and impunctate, its lateral carina extending 0.2 to 1.0 its length; propodeum of normal proportions, its transverse carinae strong, longitudinal carina often absent. Areolet of front wing pentagon but the second intecubitus absent; nervellus of hind wing postfurcal to antifurcal. Length of hind femur 4.6–5.7 × its width in female and 4.7–6.0 in male. First tergite without median dorsal carinae, its spiracle at the apical 0.46; gastral tergites smooth and polished or tergites 2 and 3 have weak and fine sculpture or longitudinal striae; length-to-width ratios of postpetiolus 0.8–1.1 in female and 1.15–1.6 in male, and of 2nd tergite 0.55–0.8

in female and 0.8–1.2 in male. Ovipositor about 0.8 as long as hind femur, its tip elongate and lanceolate.

A total of 9 species are now recognised, 8 of which are new to science.

*Key to the females of Lissaspis*

- 1. Sternaulus with two frontal branches (Fig. 2) ..... 6. *inca* sp. n.  
— Sternaulus with one branch (Fig. 3) ..... 2
- 2. Front wing clear ..... 5. *flagellata* sp. n.  
— Front wing with dark blotches ..... 3
- 3. Propodeal areola with median longitudinal carinae (Figs. 4–6) ..... 4  
— Propodeal areola lacking (Figs. 1 and 7) ..... 6
- 4. Areola long, length about 2.0 × its breadth (Fig. 5) ..  
..... 1. *areolata* sp. n.  
— Areola shorter, length at most 1.4 × its breadth (Figs. 4 and 6) ..... 5
- 5. Occipital carina a little angular on middle part (Fig. 8); lateral carinae of scutellum extending about 0.8 its length; length of areola about 1.2 × its breadth (Fig. 4); brown blotches of front wing rather indistinct; nervellus weakly postfurcal (Fig. 10) ..... 2. *argentina* sp. n.  
— Occipital carina curved on middle part (Fig. 9); lateral carinae of scutellum extending to its apex; length of areola about 1.4 × its breadth (Fig. 6); brown blotches of front wing distinct; nervellus weakly antifurcal (Fig. 11) ..... 3. *brasiliensis* sp. n.



Figs. 8–9. Occipital carina. 8: *Lissaspis argentina* sp. n. (paratype ♀); 9: *L. brasiliensis* sp. n. (holotype). — Figs. 10–11. Base of right hind wing. 10: *L. argentina* (paratype ♀); 11: *L. brasiliensis* sp. n. (holotype).

6. Propodeum with longitudinal striae (Fig. 7) .....  
 ..... 8. *longistriata* sp. n.  
 — Propodeum entirely smooth and shining (Fig. 1) .....  
 ..... 7. *laevigata* Townes

#### Key to the males of *Lissaspis*

1. Lateral carinae of scutellum extending about 0.2 its length ..... 9. *obscura* sp. n.  
 — Lateral carinae of scutellum extending at least 0.7 its length ..... 2  
 2. Gastral tergite 2 ± chagrined ..... 3  
 — Gastral tergite 2 at least in the centre smooth and shining ..... 4  
 3. Propodeum without median longitudinal carinae between basal and apical transverse carina (cf. Fig. 7); head and thorax entirely yellowish; front wing with a brownish blotch below stigma .. 8. *longistriata* sp. n.  
 — Median longitudinal carinae of propodeum noticeable from basal transverse carina to apical transverse carina (as in Figs. 4–6); head and thorax dark brown except for yellowish pronotum; front wing wholly clear .....  
 ..... 5. *flagellata* sp. n.  
 4. Propodeal areola with median longitudinal carinae (cf. Figs. 4–6) ..... 5  
 — Areola lacking (cf. Fig. 1) ..... 7  
 5. Areola long, length about 2.0 × its breadth (cf. Fig. 5); thorax yellowish ..... 1. *areolata* sp. n.  
 — Areola shorter, length at least 1.4 × its breadth (cf. Figs. 4 and 6); thorax brownish ..... 6

6. Occipital carina angular on its middle part (cf. Fig. 8); length of areola about 1.2 × its breadth .....  
 ..... 2. *argentina* sp. n.  
 — Occipital carina curved angular on its middle part (cf. Fig. 9); length of areola about 1.4 × its breadth .....  
 ..... 3. *brasiliensis* sp. n.  
 7. Thorax yellowish or brownish yellow; postpectal carina complete ..... 7. *laevigata* Townes  
 — Thorax at least dorsally dark brown or blackish; postpectal carina shortly intercepted in front of middle coxae ..... 8  
 8. Thorax, except pronotum, blackish; nervellus post-furcal ..... 4. *exigua* sp. n.  
 — Ventral part of thorax yellowish but dorsal part dark; nervellus antefurcal ..... 6. *inca* sp. n.

#### 1. *Lissaspis areolata* sp. n.

Holotype ♀: Peru, Quincemil, Marapata 2.IX.1962, and 2 paratype ♂♂ from the same locality X. and 10–15.XI.1962, Luis Peña leg.; paratype ♀: Ecuador, Rio Pastaza of San Francisco 2.X.1938, W. Clarke-Mac Intyre leg.; one paratype ♀: Ecuador, Rio Arajuno 23.IV.1941, W. Clarke-Mac Intyre leg. (coll. American Entomological Institute, Gainesville; 1 ♀ specimen coll. R. Jussila, Paatinen).

*Holotype female.* Length about 3.0 mm. Head polished, distinctly narrowed behind compound eyes; malar space about 1.0 × width of mandible; clypeus moderately small, weakly convex, its apex

simple and truncate; genal carina joining base of mandible; occipital carina almost angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth very little shorter than upper tooth; maxillary palp long, reaching about to the front edge of propodeum; flagellum a little widened on its apex, with 21 segments, length-to-thickness ratios: 1st segment about 10.5, 2nd 9.2, 10th 2.0 and penultimate about 1.2. Groove of pronotum behind collar with a weak median dorsal longitudinal ridge; mesoscutum polished, with a median longitudinal groove that reaches from the front to its centre; notaulus strong, reaching about 0.7 the distance to scutellum; mesopleurum smooth and polished; sternaulus strong on front 0.75, absent on hind 0.25 (as in Fig. 3); postpectal carina complete; scutellum moderately polished and impunctate, its lateral carinae extending about 0.8 its length; propodeum (Fig. 5) polished and smooth, areola occurring, its length about  $2.0 \times$  its breadth. Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its lower 0.4, opposite. Length of hind femur about  $5.3 \times$  its width. Gastral tergites polished, median parts of postpetiole and 2nd tergite and apical part of 3rd tergite with weak fine sculpture; first tergite without dorsal carinae, length-to-width ratio of postpetiole about 1.0 and of 2nd tergite about 0.6. Ovipositor elongate and lanceolate.

Yellowish; brownish on teeth of mandibles, flagellum, 6th and 7th gastral tergites, apical part of 2nd tergite and ovipositor sheaths. Front wing with three poorly defined brownish areas, the largest below the brown stigma. Legs yellowish, more dark on hind tarsi.

The paratype female exactly resembles the holotype but it is somewhat bigger (length about 3.5 mm), the flagellar segments are a little shorter (ratios 11.5, 8.2, 2.0 and 1.1) and the gastral tergites somewhat stronger sculptured.

*Male.* Length about 3.0 mm. Head, thorax and gastral tergites resemble those of the female. Flagellum not broadened on its apex, with 20 segments, length-to-thickness ratios: 1st segment about 8.0, 2nd 6.7, 10th 3.8 and penultimate about 1.3. Length of hind femur about 5.2, of postpetiole 1.2 and of 2nd tergite about  $0.9 \times$  its width.

Yellowish; dark brown on frons, temples, occiput, teeth of mandibles and stigma of front wing;

brownish on flagellae and (in one specimen from Peru) on dorsal part of thorax. Gaster brown; yellowish on basal parts of 2nd and 3rd tergite, and apical ridges of tergites 1–6 (in one specimen of Ecuador 3rd tergite wholly yellowish). Legs yellowish.

*Lissaspis areolata* is quite similar to *L. argentina* and *brasiliensis* but differs from them most conspicuously by its distinctly longer propodeal areola and wholly yellowish thorax.

## 2. *Lissaspis argentina* sp. n.

Holotype ♂: Argentina, Berisso 8.XII.1965, 1 paratype ♀ and 2 paratype ♂♂ with same data, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville; 1 ♂ specimen coll. R. Jussila, Paattinen).

*Holotype male.* Length about 3.0 mm. Head polished, strongly narrowed behind compound eyes; malar space about  $0.9 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina very little curved angular on middle part (Fig. 8), mandible moderately tapered to apex, its lower tooth shorter than upper tooth; maxillary palp reaching the base of middle coxa; flagellum not widened on its apex, with 22 segments, length-to-thickness ratios: 1st segment about 5.5, 2nd 3.5, 10th 2.4 and penultimate about 1.3. Groove of pronotum behind collar with an indistinct median dorsal longitudinal ridge; mesoscutum polished, not punctate, with a median longitudinal groove that reaches from near the front to its centre; notaulus reaching about 0.7 the distance to scutellum; mesopleurum smooth and polished; sternaulus strong on front 0.75, absent on hind 0.25 (as in Fig. 3); postpectal carina complete; scutellum moderately convex, polished and impunctate, its lateral carinae extending about 0.8 its length; propodeum polished, areola occurring, its length about  $1.2 \times$  its breadth (cf. Fig. 4). Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its lower 0.4, weakly postfurcal (cf. Fig. 10). Length of hind femur about  $5.1 \times$  its width. Gastral tergites polished; centre of postpetiolus, 2nd and 3rd tergite very weakly longitudinally striated; first tergite without median dorsal carinae; length-to-width ratios of postpetiole

about 1.15 and of 2nd tergite about 0.95. Ovipositor elongate and lanceolate.

Yellowish; brownish yellow on frons and apical half of mesopleurae, brown on frons, temples, occiput, teeth of mandibles, flagellae and stigma of front wings. Gaster brown; yellow on apical ridges of tergites 1–6. Legs yellowish.

The paratype males exactly resemble the holotype.

*Female.* Length about 3.5 mm. Head, thorax and gastral tergites resemble those of the male but the head is strongly narrowed behind compound eyes and the propodeum with weak longitudinal striae, and the striae of the 2nd and 3rd tergites are somewhat stronger. Flagellum a little broadened on its apex, with 22 segments, length-to-thickness ratios: 1st segment about 5.7, 2nd 5.4, 10th 1.7 and penultimate about 1.0. Length of hind femur about 5.3, of postpetiole 0.8 and of 2nd tergite about  $0.6 \times$  its width.

Orange yellow; brown on frons, temples, occiput, teeth of mandibles, flagellae, mesoscutum, scutellum, postscutellum and stigma of front wings. Gaster brown; yellowish on base and apical ridge of tergites 1–3; tergites 4–6 and ovipositor sheaths dark brown. Legs yellowish.

*Lissaspis argentina* resembles *L. brasiliensis* but the occipital carina is more angular on its middle part, the lateral carinae of the scutellum shorter and the nervellus of the hind wings more postfurcal.

### 3. *Lissaspis brasiliensis* sp. n.

Holotype ♀ and one paratype ♂: Brazil, Quatro Barros near Curitiba 5.II.1966, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville).

*Holotype female.* Length about 4.7 mm. Head polished, strongly narrowed behind compound eyes; malar space about  $0.7 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina curved angular on middle part (Fig. 9), mandible moderately tapered to apex, its lower tooth shorter than upper tooth; maxillary palp reaching the base of middle coxa; flagellum a little widened on its apex, with 22 segments, length-to-thickness ratios: 1st segment about 2.0, 2nd 3.0, 10th 1.7 and penultimate about

1.2. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, impunctate, with a median longitudinal groove that reaches from near the front to its centre; notaulus reaching about 0.6 the distance to scutellum; mesopleurum smooth and polished, sternaulus strong on front 0.65, absent on hind 0.35, postpectal carina complete; scutellum moderately convex, polished and impunctate, its lateral carinae extending to its apex; propodeum (Fig. 6) polished, with weak longitudinal striae, areola occurring, its length about  $1.4 \times$  its breadth. Areolet of front wing pentagon but second intercubitus absent; nervellus of hind wing intercepted near its lower 0.4, weakly antefurcal (Fig. 11). Length of hind femur about  $5.4 \times$  its width. Gaster tergites polished, centre of postpetiole, 2nd and 3rd tergite weakly longitudinally striated; first tergite without median dorsal carinae; length-to-width ratio of postpetiole about 0.9 and of 2nd tergite about 0.65. Ovipositor elongate and lanceolate.

Orange yellow; brown on frons, temples, occiput, teeth of mandibles, flagellae, mesoscutum, scutellum and postscutellum. Front wings with two poorly defined brownish areas, larger below the dark brown stigma. Gaster brown, yellowish on base and apical ridge of tergites 1–3; tergites 4–6 and ovipositor sheaths brown. Legs yellowish.

*Male.* Length about 3.2 mm. Head, thorax and gaster resemble that of the female but the head is not so strongly narrowed behind the compound eyes and the longitudinal striae are weaker. Flagellum not broadened on its apex, with 22 segments, length-to-thickness ratios: 1st segment about 5.25, 2nd 4.5, 10th 2.75 and penultimate about 1.5. Length of hind femur about 4.7, of postpetiole 1.3 and of 2nd tergite about  $0.3 \times$  its width.

Yellowish, brown on temples, occiput, face, teeth of mandibles, flagellae, mesoscutum, scutellum, postscutellum, propodeum and stigma; yellowish brown on mesopleurae. Gaster brown: yellowish on apical ridges of tergites 1–5. Legs yellowish; hind femora, tibiae and 5th segment of hind tarsi darker.

*Lissaspis brasiliensis* is obviously very closely related to *L. argentina* but its occipital carina is more curved on its middle part, the lateral carinae of its scutellum distinctly longer and the nervellus of its hind wing more antefurcal.



4. *Lissaspis exigua* sp. n.

Holotype ♂: Brazil, Teresópolis 12.III.1966, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville).

*Female unknown.*

*Holotype male.* Length about 3.0 mm. Head polished, narrowed behind compound eyes; malar space about  $0.5 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina curved angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp long, reaching about to the middle coxa; flagellum not widened on its apex, with 21 segments, length-to-thickness ratios: 1st segment about 8.0, 2nd 5.6, 10th 4.0 and penultimate about 2.0. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, impunctate, with a distinct longitudinal groove that reaches from near the front to its centre; notaulus strong, reaching about 0.5 the distance to scutellum; mesopleurum smooth and polished; sternaulus strong on front 0.7, absent on hind 0.3 (as in Fig. 3); postpectal carina narrowly interrupted in front of each middle coxa; scutellum moderately convex, polished and impunctate, its lateral carinae extending all its length; propodeum polished, somewhat rugged, areola absent (as in Fig. 1). Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its middle, postfurcal (as in Fig. 10). Length of hind femur about  $6.0 \times$  its width. Gastral tergites smooth and polished, postpetiole somewhat rugged, first tergite without median dorsal carinae; length-to-width ratio of postpetiole about 1.25 and of 2nd tergite about  $0.9 \times$  its width.

Dark brown; yellowish on scapes, 1st flagellar segment, mandibles (except for brown teeth), maxillary palp, pronotum, apical part of petiole, tergites 2–3, and apical ridges of postpetiole and tergites 2–3. Legs yellowish, darker on hind femora and apex of hind tibiae.

*Lissaspis exigua* is rather similar to *L. laevigata* but differs in that it has an intercepted postpectal carina, postfurcal nervella and a partly dark brown thorax.

5. *Lissaspis flagellata* sp. n.

Holotype ♀ and one paratype ♀: Brazil, Teresópolis 12.III.1966, and 2 paratype ♂♂ from the same locality 13–14.III.1966, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville).

*Holotype female.* Length about 4.0 mm. Head polished, distinctly narrowed behind compound eyes; malar space about  $0.7 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina curved angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp long, reaching about to the middle of mesosternum; flagellum a little widened on its apex, with 20 segments, length-to-thickness ratios: 1st segment about 12.3, 2nd 10.0, 10th 2.3 and penultimate about 1.25. Groove of pronotum behind collar with a weak median dorsal longitudinal ridge; mesoscutum polished, impunctate, with a median longitudinal groove that reaches from the front to its centre; notaulus strong, reaching about 0.6 the distance to scutellum; mesopleurum (Fig. 3) smooth and polished; sternaulus strong on front 0.7, absent on hind 0.3; postpectal carina narrowly interrupted in front of each middle coxa; scutellum moderately convex, polished and smooth, its lateral carinae extending about 0.8 its length; propodeum polished and impunctate, areola absent (as in Fig. 1). Areolet of front wing pentagon but second intercubitus absent; nervellus of hind wing intercepted near its lower 0.3, somewhat postfurcal (as in Fig. 10). Length of hind femur about  $5.0 \times$  its width; gastral tergites polished, postpetiole and 2nd tergite with very weak and fine longitudinal sculpture; first tergite without median dorsal carinae; length-to-width ratios of postpetiole about 1.1 and of 2nd tergite about 0.8. Ovipositor elongate and lanceolate.

Pale yellow; brown to brownish on flagellum, teeth of mandibles, stigma, tergites 1–6 (sides of postpetiole, apical part of 2nd tergite, 3rd nearly wholly, and 5th and 6th wholly) and ovipositor sheaths. Front wing without brownish areas. Legs yellowish, brown on apex of hind femora, base of hind tibia, and 5th tarsal segment.

The paratype female resembles the holotype but the 3rd and the 4th tergites wholly yellowish and the following tergites brownish yellow.

*Male.* Length 3.5–4.0 mm. Head, thorax and gastral tergites resemble those of the female. Flagellum not broadened on its apex, with 23 segments, length-to-thickness ratios: 1st segment about 10.0, 2nd 7.3, 10th 4.6 and penultimate about 2.0. Length of hind femur about 5.5, of postpetiole 1.6 and of 2nd tergite about  $1.2 \times$  width.

Brown; yellowish brown on face and basal and apical parts of propodeum; yellowish on scapes, pronotum, and base and apical ridge of tergites 1–3. Legs brownish yellow; hind coxae yellow except for brown apex; brownish on base and apex of hind femora and tibiae (the hind tarsal segments can also be brownish except for their yellowish apices).

*Lissaspis flagellata* nearest resembles *L. longistriata* but the flagellar segments are distinctly longer, the propodeum polished and impunctate and the wings wholly clear.

#### 6. *Lissaspis inca* sp. n.

Holotype ♀: Peru, Machu Picchu 1.XII.1965 and 4 paratype ♂♂ 29.XI.–2.XII.1965 from the same locality, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville; 1 ♂ coll. R. Jussila, Paattinen).

*Holotype female.* Length about 4.5 mm. Head polished, distinctly narrowed behind compound eyes; malar space about  $0.9 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining nearly the base of mandible; occipital carina curved angular on middle part (as in Fig. 8), mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp long, reaching about to base of middle coxa; flagellum widened on its apex, with 24 segments, length-to-thickness ratios: 1st segment about 7.5, 2nd 7.1, 10th 1.5 and penultimate about 1.0. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, not punctured, with a shallow but distinct longitudinal groove that reaches from near the front to its centre; notaulus strong, reaching about 0.6 the distance to scutellum; mesopleurum (Fig. 2) smooth and polished, wrinkled on its dorsal part and around sternaulus; sternaulus with two frontal branches, the upper reaching about 0.7 and the under about 0.4 the length of mesopleurum; post-

pectal carina narrowly interrupted in front of each middle coxa; scutellum moderately convex, polished and impunctate, its lateral carinae extending about 0.8 its length; propodeum polished and smooth, median longitudinal carinae and areola absent (as in Fig. 1). Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its lower 0.3, ante-furcal (as in Fig. 11). Length of hind femur about  $5.7 \times$  its width. Gastral tergites polished, first tergite without median dorsal carinae; length-to-width ratio of postpetiole about 0.8 and of 2nd tergite about 0.7. Ovipositor elongate and lanceolate.

Black; brown on flagellae; brownish on teeth of mandibles and stigmatae; brownish orange or yellowish orange on scapes, mandibles, dorsal parts of propleurae, dorsal corner of mesopleurae, mesoscutum and scutellum; maxillary palpi whitish. Legs yellowish. Gastral tergites brownish; petiole blackish; yellowish on apical parts of 1st and 2nd tergite; ovipositor sheaths brown.

*Male.* Length 4.5–5.0 mm. Head, thorax and gastral tergites resemble those of the female but mesopleurae without wrinkling, sternauli normal, and propodeum dorsally with longitudinal wrinkles. Flagellum not broadened on its apex, with 29 segments, length-to-thickness ratios: 1st segment about 8.3, 2nd 6.3, 10th 3.6 and penultimate about 2.0. Length of hind femur about 5.0, length-to-width ratio of postpetiole 1.3 and of 2nd tergite about 0.9.

Yellowish; brown on flagellae, teeth of mandibles, dorsal part of thorax and stigma. Legs yellowish; brownish blotches on hind coxae. Gastral tergites dark brown; blackish on petiole; yellow on basal ridge of tergite 2 and apical ridges of tergites 1–7.

*Lissaspis inca* resembles *L. laevigata* but its postpectal carina is narrowly interrupted and the thorax  $\pm$  black. The female is easily recognizable by its sternaulus with two frontal branches.

#### 7. *Lissaspis laevigata* Townes, 1969

*Lissaspis laevigata* Townes 1969: 10, ♂♀.

Holotype ♀: Peru, Avispas IX.1962, Luis Peña leg.; one paratype ♂ with some data; 2 paratype ♂♂: Peru, Quincemil near Marcapata IX.1962, Luis Peña leg.; one ♀: Mexico, Metate Oax., 85.5 km SW of Tuxtepec 17.X.1963,



H. and M. Townes leg. (coll. American Entomological Institute, Gainesville; 1 ♂ coll. R. Jussila, Paattinen).

*Female* (Fig. 1). Length 4.0–4.2 mm. Head polished, distinctly narrowed behind compound eyes; malar space about  $0.8 \times$  width of mandible; clypeus moderate small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina somewhat angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth shorter than upper tooth; maxillary palp long, reaching about to base of middle coxa; flagellum a little widened on its apex, with 25–27 segments; length-to-thickness ratios: 1st segment about 8.0–8.5, 2nd 6.9–7.3, 10th 1.5–1.75 and penultimate about 1.2. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, impunctate, with a median longitudinal groove that reaches from near the front to its centre; notaulus strong, reaching about 0.6 the distance to scutellum; mesopleurum smooth and polished; sternaulus strong on front 0.7–0.8, absent on hind 0.2–0.3 (as in Fig. 3); postpectal carina complete; scutellum moderately convex, polished and impunctate, its lateral carinae extending about 0.8 its length; propodeum polished and smooth, median longitudinal carinae and areola absent (Fig. 1). Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its lower 0.3–0.4, antefurcal (Fig. 1). Length of hind femur about  $4.6 \times$  its width. Gastral tergites polished and shining, not punctate or striated; first tergite without median dorsal carinae; length-to-width ratio of postpetiole 0.85–0.9 and of 2nd tergite about 0.8.

Pale yellow; brownish on flagellae, teeth of mandibles, central parts of tergites 2–3 and apex of ovipositor sheaths. Front wing with three brownish areas, the largest below the dark brown stigma. Legs pale yellow.

*Male*. Length about 4.0 mm. Head, thorax and gastral tergites resemble those of female. Flagellum not broadened on its apex, with 30 segments, length-to-thickness ratios: 1st segment about 7.7, 2nd 6.0, 10th 3.5 and penultimate about 1.5. Length of hind femur about 5.0, of postpetiole 1.3 and of 2nd tergite about 1.0.

The colouring resembles that of the females but the upper side of the head and the thorax is sometimes brown. Wings clear, tinged with yellowish brown; front wing with 3 large, poorly defined brownish areas, the largest below stigma, the others at the wing tip and at the basal vein. Gastral tergites brown, petiole and margins of each tergite yellowish brown.

lowish brown; front wing with 3 large, poorly defined brownish areas, the largest below stigma, the others at the wing tip and at the basal vein. Gastral tergites brown, petiole and margins of each tergite yellowish brown.

#### 8. *Lissaspis longistriata* sp. n.

Holotype ♀: Peru, Quincemil near Marcapata 20–30.X.1962, Luis Peña leg; paratype ♀ with same data; 2 paratype ♂♂: Venezuela, San Esteban near Puerto Cabello 1–20.XII.1939, P. J. Anduze leg. (coll. American Entomological Institute, Gainesville).

*Holotype female*. Length about 5.0 mm. Head polished, distinctly narrowed behind compound eyes; malar space about  $0.8 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina curved angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp long, reaching about to base of middle coxa; flagellum somewhat widened on its apex, with 24 segments, length-to-thickness ratios: 1st segment about 9.5, 2nd 9.1, 10th 3.0 and penultimate about 1.0. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum polished, impunctate, with a median longitudinal groove that reaches from near the front to its centre; notaulus strong, reaching about 0.65 the distance to scutellum; mesopleurum smooth and polished; sternaulus strong on front 0.7, absent on hind 0.3 (as in Fig. 3); postpectal carina complete; scutellum moderately convex, polished and impunctate, its lateral carinae extending about 0.8 its length; propodeum (Fig. 7) polished, with longitudinal striae between lateral longitudinal carinae, median longitudinal carinae and areola absent. Areolet of front wing pentagon but the second intercubitus absent; nervellus of hind wing intercepted near its lower 0.3, antefurcal (as in Fig. 11). Length of hind femur about  $5.0 \times$  its width. Gastral tergites polished, 1st to 3rd longitudinally striated; first tergite without median dorsal carinae, length-to-width ratio of postpetiole about 1.0 and of 2nd tergite about 0.55. Ovipositor elongate and lanceolate.

Pale yellow; brown or brownish on flagellae, teeth of mandibles, tergites 1–3 and ovipositor

sheaths. Front wing with four poorly defined brownish areas, the largest below the dark brown stigma. Legs pale yellow; brown on apex of hind coxae.

The paratype female resembles the holotype but whitish on genae, mesosternum and three first tergites; brown on tergites 1–3 and 6.

*Male.* Length about 4.0 mm. Head, thorax and gastral tergites resemble those of female. Flagellum not broadened on its apex, length-to-thickness ratios: 1st segment about 7.6, 2nd 5.6 and 10th about 3.2. Length of hind femur about 4.7, of postpetiole 1.1 and of 2nd tergite about  $0.8 \times$  width.

The colouring resembles that of the female but every tergite has a brownish area or they are wholly brownish, and the front wings are wholly clear.

*Lissaspis longistriata* nearest resembles *L. laevigata* but it can be recognised most easily by its longitudinally striated propodeum.

#### 9. *Lissaspis obscura* sp. n.

Holotype ♂: Argentina, Horco Molle of Tucumán I.I.1966 and one paratype ♂ from the same locality 28.XII.1965, H. and M. Townes leg. (coll. American Entomological Institute, Gainesville).

*Female* unknown.

*Holotype male.* Length about 3.0 mm. Head polished, narrowed behind compound eyes; malar space about  $0.5 \times$  width of mandible; clypeus moderately small, weakly convex, its apex simple and truncate; genal carina joining base of mandible; occipital carina curved angular on middle part (as in Fig. 8); mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp reaching near to base of middle coxa; flagellum not widened on its apex, with 20 segments, length-to-thickness ratios: 1st segment about 7.6, 2nd 5.5, 10th 2.5 and penultimate about 1.2. Groove of pronotum behind collar with a median dorsal longitudinal ridge; mesoscutum with some shallow pits, median longitudinal groove reaches from near the front to the centre; notaulus strong, reaching about 0.6 the distance to scutellum; mesopleurum smooth and polished, above sternaulus longitudinally striated; sternaulus rather shallow on front 0.7, absent on hind 0.3

(as in Fig. 3); postpectal carina complete; scutellum moderately convex, polished, impunctate, its lateral carinae extending about 0.2 its length; propodeum polished and smooth; median longitudinal carinae and areola absent (as in Fig. 1). Areolet of front wing pentagon but second recurrent vein absent; nervellus of hind wing intercepted near its lower 0.35, antefurcal (as in Fig. 1). Length of hind femur about  $5.5 \times$  its width. Gastral tergites polished and shining, not punctate or striated; first tergite without median dorsal carinae; length-to-width ratio of postpetiole about 1.2 and of 2nd tergite about 1.1.

Black; brown on scapes, teeth of mandibles and stigma of front wings; yellowish on mandibles, hind corner of pronotum and tegulae. Legs pale yellow; brownish on hind coxae, hind tibiae (except for base) and hind tarsi.

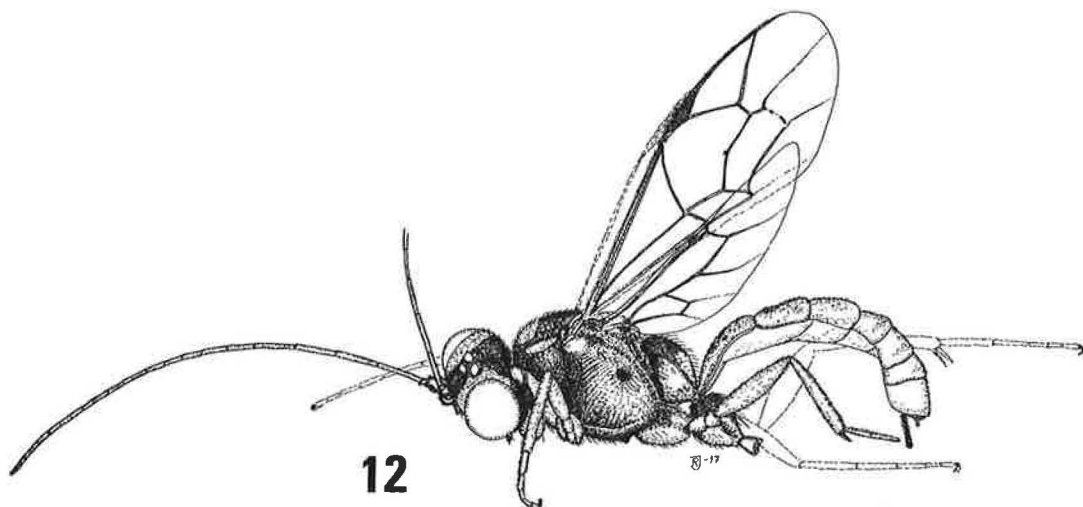
The paratype male exactly resembles the holotype.

*Lissaspis obscura* may easily be recognised by the very short lateral carinae of its scutellum.

#### *Singalissaspis* gen. n.

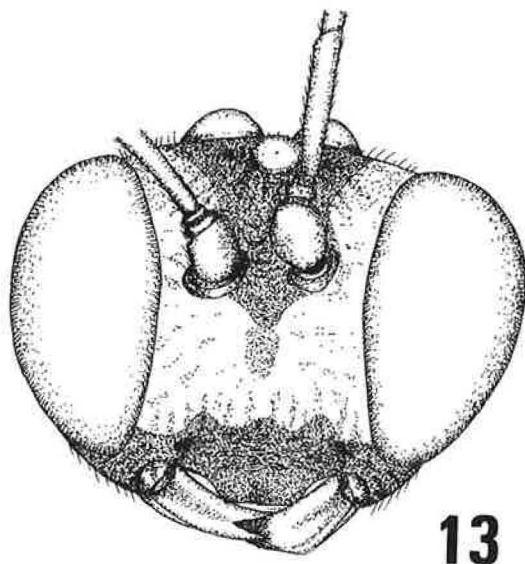
Type species: *Singalissaspis tricolor* sp. n., monobasic.

Body moderately stout. Head distinctly narrowed behind compound eyes; clypeus of moderately size, in profile almost flat, its apical margin rounded, genal carina joining base of mandible, occipital carina curved angular on its middle part; mandible moderately tapered to apex, its lower tooth a little shorter than upper tooth; maxillary palp not elongate; apical truncation of scape very oblique; flagellum not widened on its apex; occiput with a longitudinal median groove. Mesoscutum polished, with punctures between notauli and shallow transversal wrinkles elsewhere, with a distinct longitudinal groove and strong notaulus reaching about 0.65 the distance to scutellum; mesopleural impression that is just below speculum consisting of an isolated pit which is some distance in front of mesopleural suture; sternaulus strong on front 0.6, absent on hind 0.4; postpectal carina complete; scutellum without lateral carinae; propodeum without median longitudinal carinae and areola but the other carinae distinct. First intercubitus of front wing shorter than the section of cubitus between first intercubitus and second re-



current vein, radius and intercubitus somewhat broken, second intercubitus absent, second recurrent vein with two bullae; nervellus of hind wing strongly antefurcal. Tergite 1 without median longitudinal carinae, stigma near its middle part.

*Singalissaspis* most resembles *Lissaspis* by the base of the mandible reaching genal carina and the distinct median longitudinal grooves of the occiput and the mesoscutum. But its maxillary palp is distinctly shorter, the flagellum of equal thickness, the mesoscutum partly punctured and wrinkled and the areolet of the front wing only indistinctly formed (see the key of the genera and Figs. 1 and 12).



*Singalissaspis tricolor* sp. n.

Holotype ♀: Singapore, Bukit Brown Chinese Cemetery 6.IX.1994 from a tropical rain forest, R. Jussila leg. (coll. R. Jussila, Paattinen).

*Holotype female* (Fig. 12). Length about 6.0 mm. Face (Fig. 13), vertex and temple weakly polished, with moderately sparse but rather large punctures and furrows; malar space about  $0.9 \times$  width of mandible; occiput smooth and shining; flagellum with 23 segments, length-to-thickness ratios: 1st segment about 8.5, 2nd 7.7, 10th 5.5 and penultimate about 2.0. Groove of pronotum behind collar with an indistinct dorsal longitudinal ridge; mesopleurum polished, with large punctures, and in its middle part with wrinkles; scutellum mod-

Figs. 12–13. *Singalissaspis tricolor* sp. n. 12: Whole insect; 13: Face.

erately convex, subpolished, with large but shallow punctures; propodeum polished, with moderately sparse but large and shallow punctures and wrinkles. Nervellus of hind wing intercepted near its lower 0.2. Length of hind femur about  $4.3 \times$  its width. Gastral tergites polished with moderately sparse but rather large punctures; length-to-width ratio of postpetiole about 0.9 and of 2nd tergite about 0.7; length of ovipositor sheath about  $0.3 \times$  hind femur.

Head and thorax black; yellowish brown on flagellae; brownish yellow on mandibles (except

for dark brown teeth); yellow on face, temporal orbits (Fig. 13), scapes, maxillary palpi, around notauli, on collar, caudal ridge of pronotum, dorso-apical corner of mesopleurum, scutellum, post-scutellum, metapleurum and apical part of propodeum. Gaster orange; yellow on postpetiole; yellowish from apical ridges of tergite 2 to apex; stigmatae and ovipositor sheath black. Front and middle legs yellow, middle femora, and front and middle tibiae and tarsi darker; hind legs orange, yellow on coxae and trochantera, black on basal parts of coxae, and apex of tibiae and tarsi.

*Male* unknown.

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