

tibiae; first segment about one-third of its length shorter than the fourth, second and third equal in length.

Male.—More elongate and moderately slender. Elytra more gradually narrowed in apical third, apex more sharply ogival. Abdomen broadly but not strongly impressed in middle third of first three segments; fifth segment longer, equal to one-half the length of first segment. Legs more elongate and slender, notably the metacrura; meso- and metafemora moderately compressed, widest at about apical third, more elongate and two and one-sixth times as long as mesofemora, the latter and profemora equal in length. Metatibiae about one-third longer than the mesotibiae and the protibiae one-ninth shorter than the mesotibiae. Meso- and metatibiae more or less arcuate, notably the latter, subcylindrical, very gradually and but moderately widened to apex, not suddenly widened in apical third as in some of the other subspecies. Otherwise as in the female.

Measurements of types: Length 28-25 mm.; width 10-10 mm.

Holotype—Female, No. 3909, and allotype, male, No. 3910, in the author's collection, Museum of the California Academy of Sciences. A small series collected in Tulare County, California, by Mr. Ralph Hopping. Paratypes in Mr. Hopping's collection.

Sordida is to be recognized from typical *dentipes* Esch. by its very dull, sordid and alutaceous luster, the elytra are distinctly striate and the metacrura notably elongate, the metatibiae are more or less cylindrical and gradually wider in apical one-half. In *paradoxa* Blais. (syn. *montanus* Blais.) the elytra are shining and more coarsely striate, the punctures more or less impressed.

TWO NEW GENERA OF NORTH AMERICAN HEPTAGENIIDAE (EPHEMERIDA)

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Through the courtesy of Dr. McDunnough, I have recently been permitted to study many specimens of mayflies allied to the genus *Iron*, which were collected in Western Canada. Imagoes of both sexes and correctly associated nymphs of several species were included in the material, which was loaned to me from the Canadian National Collection. A study of these specimens, together with others in the Cornell University Collection, convinces me that two new genera are represented, which I designate respectively as *Ironodes* and *Ironopsis*.

The nymph of *Ironodes* was described and figured by Mrs. Seemann (Jour. Ent. and Zool. 19, 42, Pl. 4, 1927) as *Iron petulans*. As I have indicated in a previous paper, (Jour. N. Y. Ent. Soc. 41, 123, 1933) the imago described by Mrs. Seemann as that of *I. petulans* is in reality a *Rhithrogena*, and the species has been transferred to that genus. The nymph she figures is probably that of *Epeorus californicus* Bks., now placed in the genus *Ironodes*. Besides this species, the genus includes the genotype *nitidus* Etn., transferred from *Iron*, and three new species which are here described. The species *geminatus* Etn. is tentatively placed here, transferred from *Cinygma*.

The genus *Ironopsis* includes the genotype *grandis* McD., transferred from *Iron*, and the new species *permagnus*. Nymphal characters of the genus are drawn from the nymph of *grandis*, which has not been described previously. Specimens

of nymphs of this species were also loaned to me by Dr. McDunnough.

Genus **Ironopsis**^{des} gen. nov.

1927—Seemann—J. Ent. and Zool. 19; 42, Pl. 4, figs. 1, 2, 4, 5, 6, 7; nec. fig. 3 (as *Iron petulans*).

1933—Traver—J. N. Y. Ent. Soc. 41, 123 (as 'Nameless genus').

Eyes of male usually not contiguous apically. Posterior margin of head of female quite deeply emarginate. Fore leg of male slightly longer than body. Fore tibia fully $1\frac{1}{2}$ times as long as femur; tarsus about $1\frac{1}{2}$ times as long as tibia. Basal fore tarsal joint slightly longer than or subequal to second, which is subequal to third; fourth somewhat shorter than third, fifth about $\frac{1}{2}$ the length of fourth. In both sexes, hind tibia slightly shorter than femur. Hind tarsus 1-2 to 2-3 of tibia, in male; only 1-2 as long as tibia in female. Basal joint of hind tarsus slightly longer than or subequal to second; third and fourth progressively shorter; fifth equal to third and fourth combined. Claws dissimilar on all tarsi. Typical Heptagenine venation. Basal costal cross veins strong; stigmatic cross veins simple, quite numerous, somewhat aslant. Posterior branch of media in fore wing forms almost a right angle at its union with anterior branch.* Forks of radial sector in hind wing arise at about same point. Media of hind wing forked about 1-3 from base. Apical margin of forceps base of male imago quite regularly undulate. Second joint of forceps often more or less bowed. Penes usually separated almost to base; somewhat compressed, elongate, usually divergent apically, and varying much in appearance according to position. A series of small spines is present on ventral (or inner) surface of each division. Apical margin of subanal plate of female slightly emarginate.

The two-tailed nymph is much like that of *Iron*, but differs in important details. Frontal margin of head slightly emarginate at median line; densely fringed with hairs. Labrum $1\frac{1}{2}$ to 2 times as wide as long; frontal margin widely emarginate in median area; antero-lateral angles very slightly rounded, lateral margins sloping toward base. Inner canine 3-4 to 7-8 as long as outer one; a few hairs in lacinial region. Upper surface of mandible slopes sharply from base of canines to molar surface. A thickened area below molar surface, subparallel to it. Galea-lacinia of maxilla shaped much as in *pulchellum*-group of *Stenonema*, but with a fringe of long hairs along margin next to palp and on upper margin; *no triad of stout spines at tip*, only a few slender straight spines. Glossae of labium slightly concave on their inner margin, strongly convex on outer margin. Median portion of hypopharynx much narrower than either lateral portion, likewise considerably shorter. Pronotum emarginate on frontal margin, lateral margins slightly expanded; an emargination on posterior margin at median line and a smaller one on each side just within postero-lateral angle. *A transverse ridge on pronotum*, one-third of distance from anterior margin, in dorsal area; posterior two-thirds of this sclerite on a higher level than anterior portion. Femoral flange rather short and blunt. Claws with pectinations near apex. Very short blunt postero-lateral spines on gill-bearing segments, none on apical segments. *A row of submedian spines* on each side of tergites 1-9, on posterior margins; each spine arises about one-third from anterior margin. Lamellate portions of gills rather small, obovate; first pair smallest, seventh pair only

*Venation according to Tillyard, 1923.

slightly larger, intermediate pairs largest.

Genotype—*Iron nitidus* Eaton.

***Ironodes arctus* sp. nov.**

Length: Body 9; wing $9\frac{1}{2}$ mm.

Thorax darker red-brown than in allied species; abdominal segments reddish instead of yellowish brown.

Male imago (pinned).—Eyes unusually large for members of this genus; contiguous apically. Head purple-brown. Thorax dark red-brown, mesonotum darker, almost black-brown. Paler red-brown areas on pleura, between wing roots and bases of legs. Depressions on each side of scutella blackish brown. Forelegs reddish brown; femur with yellowish tinge. Apex of fore tibia blackish, likewise tarsal joinings; tarsus deep smoky. Middle and hind legs paler red-brown, with tinge of yellow; tarsi deep smoky; joinings and claws darker. Wings hyaline, venation dark red-brown; stigmatic area *not* brown-tinged. Six to 7 basal costal cross veins; about 9 stigmatic veins, simple, almost straight.

Abdominal segments 2-7 semi-hyaline, light red-brown; the anterior fourth of each segment whitish hyaline, except on sternite 7, so that abdomen appears distinctly banded. Pleural fold red-brown. Posterior margins not noticeably darker or more opaque than preceding area, except very slightly on dorsal portions of tergites. Segments 8-10 opaque, darker red-brown. Tails dark red-brown. Penes as in fig. 3; more slender than in *lepidus* n. sp., and with no such subapical spine as in that species. Second joint of forceps much as in *nitidus* Etn., less curved apically than in *lepidus*. Two small spine-like structures between bases of penes may be artifacts.

Holotype—Male imago (pinned); Winchuck River, Brookings, Oregon, Sept. 9, 1934; No. 3878 in the Canadian National Collection.

Paratype—Male imago (pinned) same data; also in Canad. Nat. Collection.

***Ironodes flavipennis* sp. nov.**

Length; body 9-10; wing 12-13 mm.

A dark brown species; wings distinctly amber-tinted in female, very faintly so in male.

Male imago (pinned).—Head dark red-brown, paler and semi-hyaline along frontal margin; deep red shading on vertex and around bases of ocelli. Eyes large, almost contiguous apically. Thoracic notum and sternum blackish brown with deep reddish tinge; pleura slightly paler red-brown. A conspicuous creamy patch anterior to base of fore wing, containing a narrow reddish streak. Near anterior end of this patch and above fore coxa, a distinct red spot. A smaller creamy patch anterior to base of hind wing. A reddish oblique line anterior to base of middle leg; all coxae with faint reddish shading. Foreleg blackish brown with olive shading; femur somewhat paler than tibia and tarsus, tinged with reddish brown. Femora of middle and hind legs greenish yellow; tibiae dull olive with smoky tinge; tarsi deep smoky, almost blackish. Wings hyaline; venation very dark brown, except longitudinal veins of costal margin, which are amber-brown. Stigmatic area tinged with smoky brown; remaining portion of costal margin rather faintly amber-tinged; remainder of wing even more faintly tinted with very pale amber.

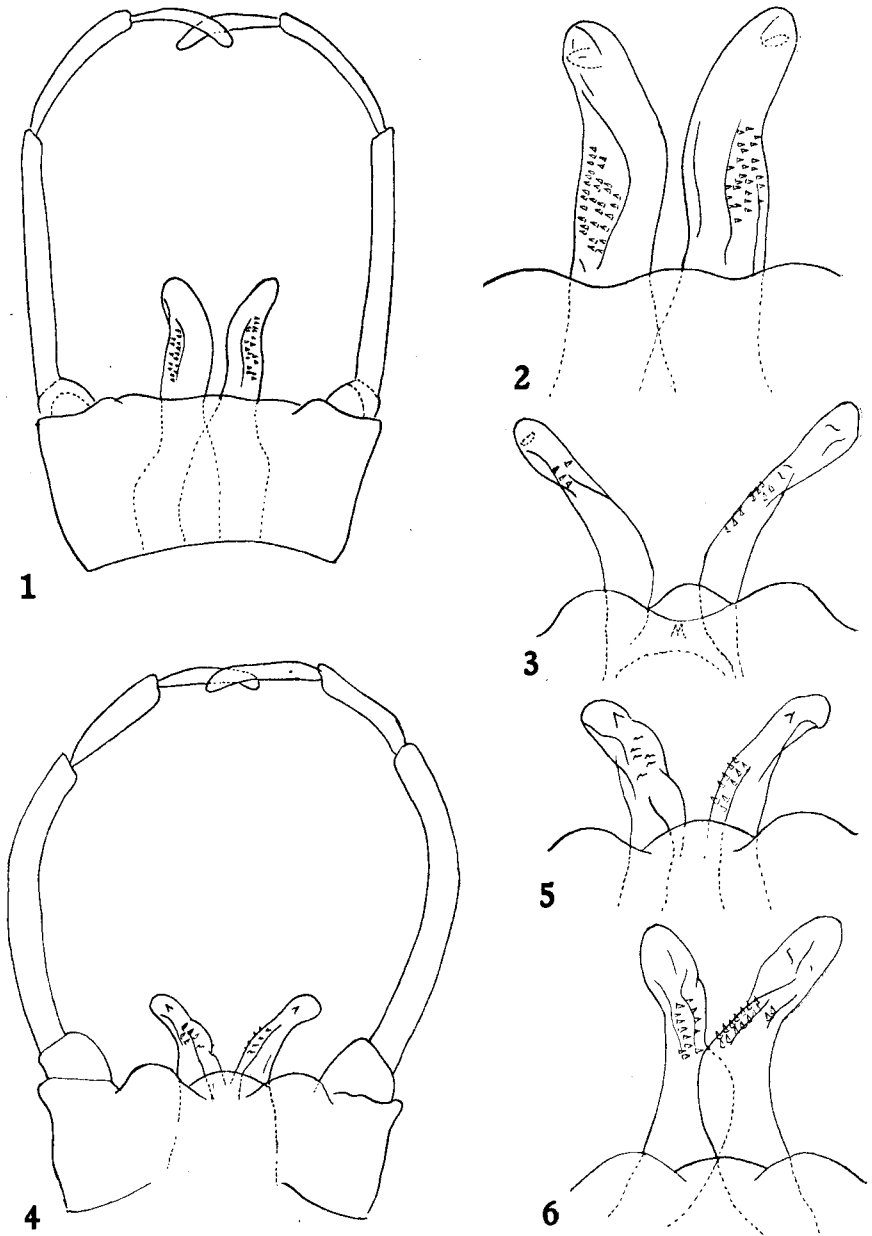


Fig. 1—Male genitalia of *Ironopsis permagnus* n. sp. Fig. 2—Enlarged penes of same. Fig. 3—Penes and apical margin of forceps base of *Ironodes arctus* n. sp. Fig. 4—Male genitalia of *Ironodes lepidus* n. sp. Fig. 5—Enlarged penes of same. Fig. 6—Penes and apical margin of forceps base of *Ironodes flavipennis* n. sp.

Abdominal segments 2-7 semi-hyaline, dark brown with faint red-brown tinge. Anterior margins slightly paler, more yellowish (not true of paratype). Posterior margins opaque, deeper brown. Pleural fold narrowly dark brown. Segments 8-10 opaque; somewhat deeper brown than preceding portions. Sternite 9 brighter red-brown. Tails and genitalia deep black-brown. Penes as in fig. 6; somewhat smaller than in *nitidus* Etn., the small ventral spines rather less numerous and much less conspicuous. Second joint of forceps slightly more bowed in middle region than in *nitidus*.

Female very similar to male, except as noted. Head yellowish brown on frontal and posterior margins, elsewhere quite bright red-brown with distinct red tinge. Wings quite uniformly tinted with rather deep greenish amber. Red markings on pleura more prominent, consisting of red spot above fore coxa and similar red spots anterior to middle and hind coxae. Abdominal segments 2-6, and basal portion of 7, blackish brown (probably semi-hyaline after eggs are discharged). Segments 8-10, and apical portion of 7, paler red-brown; lateral margins of tergites may have yellowish tinge. A narrow dark area usually remains in mid-dorsal area and above the pale lateral margin. Tails blackish brown at base, somewhat paler smoky brown beyond. Body 9½-10, wing 14-15 mm.

Holotype—Male imago (pinned)—Summerland, B. C., May 5, 1933 (A. N. Gartrell); No. 3877 in Canadian National Collection.

Allotype—Female imago (pinned)—Summerland, B.C., May 16, 1933 (A. N. Gartrell); in Canadian National Collection.

Paratypes—10 males imagoes, 20 female imagoes; Summerland, B. C.; May 3-16, June 4-13, 1933; Apr. 9-30, May 11-30, 1934; Oliver, B. C., May 29, 1934; Keremeos, B. C., July 14-28, 1934; Peachland, B. C., July 4, 1934 (A. N. Gartrell). 8 males, 18 females, in Canadian National Collection; 2 males, 2 females, in Cornell Collection, No. 1370, 3-6.

Body of nymph very deep red-brown, almost blackish brown, dorsally. Legs concolorous with body, all joints equally dark; a whitish mark in basal portion of each femur, consisting of a triangular area joined to base by a narrow line. Median line of thorax narrowly creamy; indistinct pale markings on mesonotum. Faint traces of pale submedian lines on abdominal tergites, in line with submedian apical spines; most distinct on 10, convex, the curved portion turned toward median line. Thoracic sternum creamy; brownish areas on median and posterior portions of pro- and mesosterna. Abdominal sternites yellowish. 8 and 9 pale red-brown; lateral red-brown streaks on each, near pleura fold; anterior margins and oblique submedian streaks indistinctly darker. Gills largely purplish black; a paler streak just inside anterior margin; tracheae indistinct.

***Ironodes lepidus* sp. nov.**

Length: Body 8-9; wing 9-9½ mm.

Quite similar to *nitidus* Etn., but smaller; a small spine-like structure is present near apex of each division of penes.

Male imago (pinned)—Head pale red-brown in frontal portion; a very narrow creamy line below base of antenna; area around bases of antennae and ocelli, and vertex of head, quite bright red-brown. Thorax red-brown with tinge of olive. Narrow yellowish streaks anterior to fore wing, below wing bases,

and above bases of middle and hind legs. Very narrow blackish oblique line posterior to each coxa; apical margins of coxae and trochanters deep red-brown. Pronotum shaded with smoky brown. Legs light red-brown; tarsi smoky, or shaded with olive brown. Apex of fore tibia, tarsal joinings and claws somewhat darker. Wings hyaline; venation dark red-brown. Stigmatic area with pale brownish tinge. About 7 basal costal cross veins; 4 or 5 between bulla and stigma; 10 to 11 stigmatic veins, simple and very slightly aslant.

Abdominal segments 2-7 semi-hyaline; yellowish brown with slight olive tinge. Anterior margins narrowly pale hyaline, on tergites and sternites, producing an indistinct banded appearance. Posterior margins narrowly opaque; a blackish area on this margin, in dorsal portion of each tergite. Tracheae outlined in brownish black; the main trunk forms a continuous dark wavy line along pleural fold. Segments 8-10 opaque, slightly deeper in color than preceding segments, and with a reddish tinge; pleural fold narrowly creamy. Tails and genitalia reddish to live brown. Penes as in figs. 4 and 5; near apex of each division is a small spine-like structure, not present in any other species of this genus. Numerous small spines on ventral surface, as usual.

Specimens in alcohol differ as indicated. Thorax darker red-brown; yellow markings less distinct, blackish pencillings more pronounced. Fore tarsus yellowish. Pale anterior margins of abdominal segments less conspicuous.

Holotype—Male imago (pinned); Silver Canyon, White Mts., Calif.; May 10, 1926 (J. O. Martin); in collection of California Academy of Science.

Paratypes—8 male imagoes (6 pinned); same data. 4 in collection of Calif. Acad. of Science; 4 in Cornell University collection, No. 1335. 3-6.

Genus *Ironopsis* gen. nov.

Eyes of male large, contiguous apically. Posterior margin of head of female somewhat emarginate. Posterior margin of pronotum deeply excavated in median area. Foreleg of male considerably longer than body. Femur about $\frac{3}{4}$ as long as tibia. Basal fore tarsal joint subequal to second; 3rd slightly longer than 2nd; 4th subequal to 2nd; 5th about $\frac{1}{2}$ as long as 4th. In both sexes, basal tarsal joint of third leg subequal to 2nd; 3rd and 4th joints subequal. shorter than 2nd; 5th equal to 2nd and 3rd combined. Claws dissimilar on all tarsi. Typical Heptagenine venation. Stigmatic cross veins more or less strongly anastomosed, forming two distinct rows of cells in *permagnus* n. sp. A rather long intercalary may be present in between Cu_1 and first set of paired intercalaries. Forks of radial sector in hind wing arise at about the same point. Apical margin of forceps base in male imago with rounded lateral projections, or more regularly undulate. Penes rod-like, divergent apically, bearing a cluster of small spines on ventral surface some distance below apex. Apical margin of subanal plate of female with a V-shaped median cleft.

Nymph very similar to that of *Iron* (*longimanus* group). Frontal margin of head very slightly emarginate at median line. Canines wider and blunter than in *Iron*; a row of hairs on each mandible, in lacinial region. Two thickened portions on each mandible, below molar region; one parallel to this region, the lower one at right angles to molar surface. Glossae of labium somewhat conical, divergent apically. A triad of stout spines at tip of galea-lacinia, as in *Iron*. Labrum deflexed; its antero-lateral angles angulate, not rounded as in *Iron*;

lateral margins slope inward toward base; frontal margin almost straight, very slightly emarginate at median line. Three lateral pectinations near apex of each claw. Antero-lateral margins of pronotum rounded. Extensions of postero-lateral margins of abdominal segments very short and blunt, much less developed than in any known species of *Iron*. A prominent ridge of rather long hairs is present along mid-dorsal line of all tergites. Gills of first pair very large; anterior lobes greatly expanded, meeting beneath body of nymph. Gills of seventh pair also meet beneath body. Intermediate pairs very well developed, much as in *Iron*. Tails two.

- Genotype—*Iron grandis* McDunnough.

***Ironopsis permagnus* sp. nov.**

Length: Body 13-15; wing 17-19 mm.

Larger than *grandis* McD., and with darker mesonotum; spining on ventral surface of each division of penes much more extensive.

Male imago—Head deep brown; no dark band on frontal margin, but black shading around bases of antennae and on each side of median carina. Thorax almost unicolorous black-brown. A single short black streak anterior to wing roots, along lateral margin of mesonotum, but no indication of a second dark streak extending down to base of foreleg, as in *grandis*. Area anterior to wing root paler, often yellowish, as in *grandis*. Fore femur black-brown, pale brown at extreme base. Fore tibia and tarsus very deep red-brown, almost blackish. Middle and hind legs light red-brown; femora shaded extensively with blackish; tarsi slightly deeper in color than tibiae. Coxae and trochanters of all legs tipped with blackish. Wings hyaline. Costa, subcosta and radius yellowish at extreme base, as is the costa also in its apical third; remaining portion of these veins dark reddish to purplish brown, thickened. Other longitudinal veins finer, pale reddish brown; cross veins somewhat finer than longitudinals, yellowish to light red-brown. 11 to 12 basal costal cross veins, very faint; humeral cross veins pale. Stigmatic area faintly brown-stained; cross veins much anastomosed. All veins of hind wing fine, pale.

Abdominal tergites largely yellowish to olive brown. Tergites 2 and 3 largely occupied by large somewhat rectangular blackish brown patches, which leave all margins and a narrow median line pale. Dark central areas on tergites 4 and 5 more restricted, the margins quite irregular; wider pale lateral areas next to pleural fold, antero-lateral margins also pale, but mid-dorsal pale line more or less obscured. Tergites 6-8 with a black-brown median triangle, based on anterior margin, its apex extending backward along median line about $\frac{3}{4}$ the length of each tergite, leaving large triangular postero-lateral areas pale except for a small rounded brown mark on each, above and slightly anterior to the spiracular area. Lateral extensions from the median triangle may reach to this dark mark. Tergites 9 and 10 more reddish brown, the anterior margins narrowly black; a black lateral spot on 9 above pleural fold; median line and median areas of posterior margin of 10 blackish. Sternites olive brown; basal ones shaded with reddish brown. Intermediate sternites with a rounded smoky spot near each antero-lateral angle, the two spots on each sternite connected by a smoky transverse band across the anterior portion. Sternite 8 shaded with red-brown; 9 deeper red-brown, but posterior and postero-lateral margins greyish.

Pleural fold greyish on all segments. Tails deep red-brown, almost black-brown at base, joinings narrowly paler. Forceps deep red-brown, apical joints rather paler; penes light red-brown. Many small spines on ventral surface of each division of penes, as in figs. 1 and 2.

Holotype—Male imago; Cloud Cap Inn, Mt. Hood, Oregon, Aug. 20, 1927; Prof. H. A. Scullen. No. 1334.1 in Cornell University collection.

Paratypes—4 male imagoes, same data. No. 1334.3-6 in Cornell University collection.

Distinguished from *grandis* McD. as indicated above.

SPIDERS FROM THE LAC ST. JEAN REGION OF QUEBEC

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A week's vacation in the delightful Lac St. Jean country netted an interesting list of spiders. No attempt was made to make a general collection. We were primarily interested in the Linyphiidae and collected mostly by sifting moss and forest litter.

At Bagotville we sifted moss on the wooded cliffs overlooking Ha-Ha Bay and in a little marecage nearby. These specimens are dated July 26, 1934.

Dictynidae.

Callioplus euoplus B. & C., 2 ♀.

Gnaphosidae.

Zelotes ater Hentz (*subterraneus* Koch) 1 ♂

Theridiidae.

Theridion sexpunctatum Em., 1 ♀

Linyphiidae

Bathyphantes nigrinus West., 2 ♀

Lepthyphantes alpina Em. 2 ♀ (formerly under *Bathyphantes*)

Lepthyphantes zebra Em. 1 ♀ (formerly under *Bathyphantes*)

Linyphia marginata C. Koch. 1 ♀

Microneta persoluta Cambr., 1 ♀

Ceraticelus fissiceps Cambr., 2 ♂ 4 ♀

Ceraticelus laetabilis Cambr., 1 ♂ 7 ♀

"*Lophocarenum*" *bicarinatum* Em. 3 ♂ 3 ♀

We append a new description and figures of this interesting species.

Cochlembolus pallidus Em., 1 ♀

Grammonota pictilis Cambr. 4 ♀

"*Tmeticus*" *truncatus* Em., 1 ♂ 2 ♀

"*Tmeticus*" *bidentatus* Em., 10 ♀

"*Tmeticus*" *montanus* Em., 6 ♂ 10 ♀

Tapinocyba simplex Em., 7 ♀

The tide at Ha-Ha Bay at Bagotville has a range of about seventeen feet. While collecting under stones far below high tide we found a considerable number of adult females accompanied by their egg cocoons, belonging to the genus *Erigone* s. s. In one case the spider was actually engaged in spinning the cocoon. No males were found. The tide began to come in and we were forced to abandon the search, hoping to return later. The only opportunity we had to