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Polynesian Spiders[1]

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Due to war conditions in Europe, the author was unable to see the edited manuscript of this paper. Bishop Museum is publishing it in the best form possible under the circumstances, rather than withhold publication indefinitely.—EDITOR.

Through the kindness of Bernice P. Bishop Museum, I have been able to study an interesting collection of spiders found in various parts of Polynesia by E. C. Zimmerman during the Mangarevan Expedition in 1934. To this collection, made chiefly in the Austral Islands, the Society Islands, the Tuamotus, and Pitcairn Island, I have added some specimens collected in 1924 by E. H. Bryan, Jr. in the Phoenix Islands. This material consists of 46 species and 1 variety, of which 2 genera, 12 species and 1 variety are new. It is a valuable contribution to our knowledge of the spider fauna of the Pacific islands, especially that of Rapa, Marotiri, and the summits of Tahiti. It also adds much to our comprehension of some problems of biogeographic affinities of this region.

Spiders of Polynesia are found to fall into three main groups. The first, that of an archipelago, is rather uniform, there being no important differentiation of species between the separate islands. For instance, the remarkable thomisid, *Misumenops rapaensis* Berland, which has not been found outside of the Austral Islands, is common in Rapa, and is also found in Raivavae, Rurutu, and Tubuai of the same archipelago. Many other instances occur, and it may be said that endemism applies only to the group and not to each of the separate islands comprising that group. This endemism reaches 50 percent or more of the general fauna.

[1] Mangarevan Expedition publication 35.

Together with these endemics, there is a second, more widely distributed group of spiders which may be said to constitute a Polynesian, or even a Pacific fauna. This is true of some salticids—*Athamas whitmeei* Cambridge (Samoa, Tahiti, Marquesas, Fiji, Australs, Mangareva, Loyalty, Solomons, New Hebrides); *Mollica microphthalma* L. Koch (Tahiti, Hawaii, Marquesas, Rarotonga, New Caledonia) and one pholcid, *Pholcus ancoralis* L. Koch (Samoa, Tahiti, Marquesas, Australs, Tonga). Some extend westward even to the Asiatic region; for instance, the salticid, *Bavia aericeps* Simon (Philippines, Marianas, Hawaii, Samoa, Marquesas, Society Islands, Rarotonga and Australs).

A third element is represented by the cosmopolitan species. Their number does not exceed 10 in the Pacific, and, as their list is constant, it may be said that it is not increasing; they are distributed by man, but their extent is nearly fixed now.

Each collecting trip may be expected to modify our previous concepts of distribution, as results of the Mangarevan Expedition show. *Ariadna lebronneci* Berland, 1933, described from the Marquesas, where it was considered as endemic, is now known from Rapa and Marotiri. *Sandalodes calvus* Simon, 1902, described from Queensland, Australia, was found in the Marquesas, and is known also from Tahiti, Raiatea and Mangareva. *Theridion adamsoni* Berland, 1934, from Tahiti, exists also in Rapa, Raivavae and Marotiri. The genus *Hivaoa* Berland, 1935, is no longer localized in the Marquesas, but represented by two new species at Rapa. *Cyclosa tauraai* Berland, 1933, described from the Marquesas, was found in Tahiti. *Cyrtophora moluccensis* Doleschall, a common Malayan and west-Pacific spider, was supposed to extend no farther eastward than Tahiti, but one female was found in Henderson Island, near Pitcairn.

I wish to call attention to three points of special interest resulting from the study of this material. The first concerns the fauna of Rapa. This small and isolated island possesses an interesting fauna, richer than the other Austral Islands. Of about 20 species of spiders, many are Polynesian, related to those of Tahiti, or even those of the Marquesas. Zimmerman found many indigenous species of Coleoptera (Curculionidae) there. Spiders, however, although as well isolated, seem to have evolved less rapidly into distinct species. Five species are endemic to Rapa: *Trite rapaensis* Berland, *Theridion rapanae*

Berland, *Hivaoa phalangiops* Berland, *H. chamberlini* Berland, and *Paro simoni* Berland. Of these, *Trite rapaensis* is peculiar in showing affinities to the fauna of the west part of the Pacific, the genus *Trite* being, until now, limited to Australia, New Caledonia and New Zealand, a region whose affinities with Polynesia were very poor, if they even existed. Similarly, *Paro simoni* is allied to *Mynoglenes,* a genus known from New Zealand and the subantarctic islands. The fauna of Marotiri (Bass Island) is also of great interest. This group of small rocks is 50 miles east of Rapa and even more isolated (Murphy, J. C., photograph, National Geographic Mag. **48**: 367, Oct. 1925; Zimmerman, B. P. Bishop Mus., Occ. Papers **12**: 21, 1936). It is very remarkable that on these rocks the following spiders may be found: *Ariadna lebronneci* Berland, *Theridion adamsoni* Berland, *Ostearius melanopygius* Cambridge, *Lycosa tanna* Strand, *Australaena hystricina* Berland, *Pseudomaevia insulana* Berland. *Ariadna lebronneci* and *Theridion adamsoni* are also known from the Marquesas. *Australaena hystricina* and *Pseudomaevia insulana* are new forms, but another species of each of these genera is found in the mountains of Tahiti. *Ostearius melanopygius* is known from New Zealand and the St. Paul Islands, and from the north part of the Atlantic (England, Azores, Madeira, Portugal) where it is supposed to have been introduced. Its original country was most probably New Zealand and Marotiri.[2]

The third case is represented by the summits of Tahiti. As observed by A. M. Adamson when he visited this island, Tahiti is not well known to entomologists, because little collecting has been done in mountains which are not easily accessible. Zimmerman collected above 1,500 meters and found interesting forms, chiefly a variety of *Pseudomaevia insulana* Berland (the typical form in Rapa), and *Australaena zimmermani* Berland (another species in Marotiri). The *Pseudomaevia,* if it belongs to this genus, is related to a form described from Lord Howe Island. The *Australaena,* however, is more curious for it belongs to the clubionids of the group Anyphaenae, which previously had no representative in the Pacific (very numerous in South America); this form, however, is more allied to the European genus *Any-*

[2] "It is possible that it was introduced by man to Marotiri. The Polynesians have for long been going from Rapa to Marotiri to fish and gather young sea birds and eggs for food. The species probably has been introduced to Rapa, but my brief stay there is not to be taken as adequate for a comprehensive survey of the spiders of the island. Our knowledge of the distribution of the spiders of these islands is based on inadequate collections."—E. C. Zimmerman.

phaena than to the American genera, but it shows a relation to America, where this group is characteristic.

The well known affinities between Australia and America were possibly established through a south Pacific route, there having been no proof of a passage via Polynesia. These spiders, however, may be one "temoin" of such a passage. The fauna of the summits of some high Polynesian islands, which may be peculiar and quite different from the fauna of the lowlands may thus be of great interest, as I have noted in my previous studies on the spiders of the Marquesas.

Family SICARIIDAE

Genus **SCYTODES** Latreille, 1804

1. Scytodes striatipes L. Koch.

Austral Islands: Rurutu, Aug. 28, 1934, one female; Tubuai, Mt. Taita, Aug. 1934, four females.

Rapa: south ridge of Mt. Perahu, July 13, 1934, one female.

Society Islands: Huahine, valley west of Mt. Tahateao, Sept. 20, 1934, one female.

A widespread species, known from nearly all the Pacific: Samoa, Fiji, Tonga, Tahiti, Loyalty Islands, Ellice Islands, and the Marquesas.

Family DYSDERIDAE

Genus **ARIADNA** Audouin, 1825

2. Ariadna lebronneci Berland, B. P. Bishop Mus., Bull. **114**: 43, figs. 1-5, 1935.

Rapa: Mangaoa Peak, alt. 300-500 m., July 2-6, 1934, three females.

Marotiri: three immature females.

This species was described from the Marquesas, where it is not rare in some of the islands, but is only found above 3,000 feet in the forest region. Until recently, it was the only *Ariadna* known from Polynesia, but there is a Hawaiian species *A. perkinsi* Simon, a species in Christmas Island, and some others in the outer limits of the Pacific: New Caledonia, Galapagos, Juan Fernandez. The genus is nearly cosmopolitan.

FAMILY OONOPIDAE

Genus **GAMASOMORPHA** Karsch, 1881

3. Gamasomorpha loricata L. Koch.

Austral Islands: Raivavae, Aug. 1934, one female.

Mangareva Islands: Mangareva, Agakau-i-tai, May 8, 1934, one female.

Pitcairn: June 14, 1934, two females.

The females of *Gamasomorpha* are not easily named with certainty. *G. loricata,* described from Samoa, is also known from Australia, Lord Howe Island, and the Marquesas; but all the specimens from these localities may not belong to the same species. The capture of males would decide the question, but only one was found in the Marquesas (Berland, B. P. Bishop Mus., Bull. **114**: 46, 1935).

4. Gamasomorpha minima, new species (fig. 1, *a*).

Characterized by the palp (fig. 1, *a*); the bulb is whitish, well separated from the tarsus, ovoid, prolonged by a cylindrical portion, which bears a short stylus. General color pale yellow; sternum broad, as broad as long. Length, 1.5 mm.

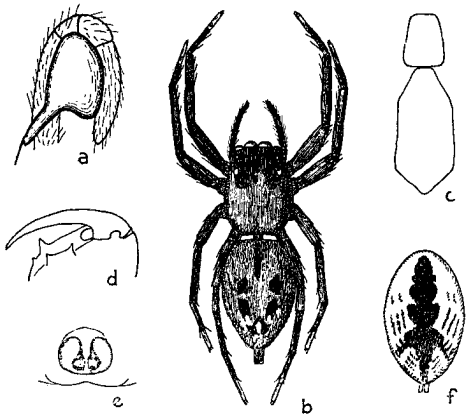

FIGURE 1.—*Gamasomorpha minima,* n. sp.: **a,** bulb seen from outside; *Pseudomaevia insulana,* n. sp.: **b,** female × 2.5; **c,** sternum and labium; **d,** chelicera; **e,** epigyn. *Pseudomaevia insulana aorai,* n. var.: **f,** dorsal view of abdomen.

Phoenix Islands: Canton Island, March 17, 1924, E. H. Bryan, Jr., one male (holotype), one female; Enderbury Island, March 11, 1924, Bryan, one male, one female.

The male is very different from that of *G. loricata,* found once in the Marquesas, so I am obliged to consider this species as new. *G. loricata,* found in some parts of the Pacific, is the commoner of the two species.

FAMILY THOMISIDAE

Genus **MISUMENOPS** F. Cambridge, 1900

5. Misumenops rapaensis Berland, Soc. ent. France, Ann. **103**: 329, figs. 9-13, 1934.

Austral Islands: Raivavae, Aug. 1934, male, females, young; Rurutu, Aug. 1934, females, young; Tubuai, Mt. Taita, six females.

Rapa: south slope of Mt. Tepiahu, July 16, 1934, alt. 400-600 ft., one female, subadult; near Area, June 30, 1934, males, females; Morongota, July 11, 1934, alt. 500-900 ft., males, females.

This pretty spider, a large *Misumenops* with characteristic markings on the back of the abdomen, is fairly common in Rapa and seems to extend to many of the islands of the Austral group.

6. Misumenops melloleitaoi, new name.

Misumenops pallida Berland, B. P. Bishop Mus., Bull. **113**: 98, figs. 1-5, 1935.

Dr. Mello-Leitao kindly wrote me that *pallida* was preoccupied in *Misumenops.* I am glad to name this species in honor of the distinguished Brazilian arachnologist.

FAMILY SALTICIDAE

The salticids are rather numerous in the Pacific. In addition to some very common Polynesian species, such as *Bavia aericeps, Thorellia ensifera, Athamas whitmeei,* the Mangarevan Expedition collected some new species of great interest. Among these, the group Fissidentati is the most abundantly represented; the Pluridentati, so common in Africa, are scarce.

Genus **BAVIA** Simon, 1877

7. Bavia aericeps Simon.

Austral Islands: Raivavae, Aug. 1934, males, females, young.

Society Islands: Tahiti, Aru, March 6, 1934, one male; Bora-

bora, Mt. Pahio, Oct. 13, 1934, one female; Raiatea, Oct. 5, 1934, one male.

Known from the Philippines, Malaya, Marianas, Samoa, Funafuti, Hawaii, and the Marquesas.

Genus **THORELLIA** Keyserling, 1882

8. Thorellia ensifera (Thorell).

Austral Islands: Raivavae, Aug. 1934, females, young; Tubuai, Tapapatauai, Aug. 19, 1934, one male, young; Murivai, Aug. 16, 1934, one female, without locality, Aug. 1934, two females; Rurutu, Aug. 30, 1934, three females; Maria, Sept. 6, 1934, two females.

Rapa: entire island, common.

Society Islands: Meetia, June 13, 1934, one female; Raiatea, Oct. 6, 1934, females.

Mangareva Islands: Mangareva, May 24, 1934, males, females, young; Taraururoa, May 28, 1934, males, females.

Tuamotus: Anaa, May 13, 1934, females; Hao, May 19, 1934, females.

Pitcairn: June 14, 1934, two males, young.

Henderson Island: June 1934, one male, one female.

This species is probably the commonest salticid in the Pacific. Recorded from Malaya, the Marquesas, and Marshall Islands.

Genus **ATHAMAS** Cambridge, 1877

9. Athamas whitmeei Cambridge.

Austral Islands: Rurutu, Aug. 30, 1934, one male, one young.

Society Islands: Tahiti, one male.

Mangareva Islands: Mangareva, Agakau-i-tai, May 8, 1934, one male.

Described from Samoa, this small, pretty salticid is fairly common in Polynesia; known also from the Loyalty Islands.

Genus **PSEUDOMAEVIA** Rainbow, 1920

10. Pseudomaevia (?) insulana, new species (fig. 1, *b-e*).

Female (fig. 1, *b*). Color: cephalothorax very dark, castaneous, the head black; chelae, labium, maxillae, legs dark castaneous and without rings, the tarsi pale yellow; abdomen grayish on the back with testaceous spots, in the posterior part, two series each of three brown spots (fig. 1, *b*), the ventral face testaceous,

the median part grayish; spinnerets grayish. Eyes: the group wider than long, the eyes of the second row nearer to the anterior than to the posterior eyes, first row recurved by the upper margin, the lateral eyes do not reach the median; clypeus nearly wanting. Chelae (fig. 1, *d*), anterior margin with two teeth, the superior larger, posterior margin bearing a large carina with acute angles. Sternum long and narrow (fig. 1, *c*), very narrow in the anterior part, labium nearly as long as the half of the sternum. Legs rather short, strong, tibiae I with 3-3 spines, tibiae II, with 2-2. Epigyn (fig. 1, *e*). Total length 9 mm., cephalothorax, length 4 mm., width 3 mm.

Marotiri, July 22, 1934, one female (holotype), four females (paratypes), young.

10a. Pseudomaevia insulana var. **aorai,** new variety (fig. 1, *f*).

Differs from *insulana* chiefly by the pattern of the abdomen (fig. 1, *f*), by the dark rings on the legs, and by the broader sternum, a little less than twice as long as broad.

Society Islands: Tahiti, Mt. Aorai, alt. 1,500-1,800 m., Sept. 15, 1934, one female (holotype), four females (paratypes).

This spider apparently belongs to the group *Maeviae,* which is chiefly known from North America, where it is abundantly represented in the north; it has the same type of very narrow sternum, and labium. Formerly many Australian salticids were named *Maevia,* but it was recognized afterwards that this was not correct, this genus being limited to North America. Recently, Rainbow described the genus *Pseudomaevia* from Lord Howe Island with which the spiders I describe here agree fairly well. I cannot separate the salticids collected in the mountains of Tahiti from those of Marotiri; they have the same form of carapace, the same disposition of eyes, the same chelae, with the characteristic tooth on the hind margin, the epigyn is nearly identical; the only differences are in the pattern, especially the markings of the abdomen (fig. 1, *f*), and in the slightly broader sternum. The five Tahitian specimens seem to present a greater variability among themselves than those of Marotiri.

Genus **TRITE** Simon, 1885

11. Trite rapaensis, new species (fig. 2, *a-g*).

Male. Color: carapace dark castaneous, fast [almost ?] black, the middle of the thorax clearer; chelae, maxillae, labium castaneous; sternum brown; legs pale yellow, the first pair castaneous, all the legs with different brown rings (fig. 2, *a*); back of abdomen with a median clear stripe, margins dark and sinuous, ventral side white, with a median brown stripe reaching the spinnerets and mottled with white spots arranged in longitudinal rows. Hairs not very numer-

ous, no scales, some white hairs on the thoracic part of the carapace. Chelae with a large tooth on the hind margin (fig. 2, *b*), the superior angle of it prolonged like a beak, on the anterior margin two small teeth and, near the insertion of the claw, a large round carina (fig. 2, *d*). Sternum and labium (see fig. 2, *e*). Legs I-II-IV-III, the first stronger, their tibiae with 2-2-2 spines, metatarsi with 2-2, legs III and IV with only few spines; palp and bulb (see fig. 2, *f*). Total length 6.2 mm., carapace, length 3 mm., width 2.5 mm. Female abdomen uniformly dark without pattern on the back; tooth of the posterior margin not beaklike (fig. 2, *c*); epigyn (fig. 2, *g*).

Rapa: Mangaoa Peak, alt. 300-400 m., July 6, 1934, one male (holotype); Mt. Perahu, alt. 500-800 ft., July 24, 1934, males, females, young.

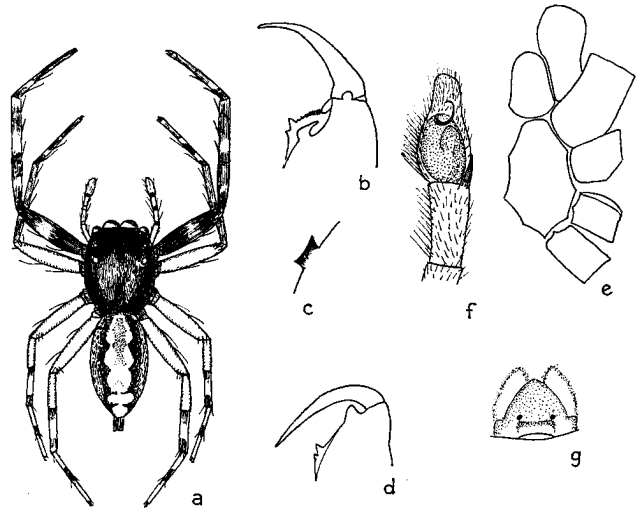

FIGURE 2.—*Trite rapaensis,* n. sp.: **a,** male × 2.5; **b,** male chelicera, posterior side; **c,** female, tooth of the posterior margin; **d,** male, chelicera, front side; **e,** sternum, mouthparts, coxae; **f,** male, pedipalp and bulb; **g,** female, epigyn.

The genus *Trite,* with the closely allied genus *Opisthoncus,* has been known only from New Zealand and New Caledonia in the west of the Pacific. Its presence in Rapa is interesting and shows some extension of the canac [Pacific ?] fauna to the east across the southern Pacific region.

Genus **SANDALODES** Keyserling, 1883

12. Sandalodes calvus Simon, Berland, B. P. Bishop Mus., Bull. **114**: 55, figs. 22-26, 1935; Bull. **113**: 100, 1935.

Society Islands: Tahiti, Vairoa, March 20, 1934, one male, one female; Mt. Aorai, alt. 1,200-1,500 m., one female; Raiatea, Oct. 5, 1934, Sept. 13, 1934, some females; Moorea, Mt. Teaharoa, alt. 500-700 m., Sept. 25, 1934, one female.

Mangareva Islands: Mangareva, May 23, 1934, one male.

The genus *Sandalodes* is known from India, Celebes and Australia. Several species occur also in Hawaii and in the Marquesas.[3] Unlike most of the species of the genus, *S. calvus* is not localized, but dispersed throughout the whole Pacific. Described from Australia, it was found later in the Marquesas and in the Society Islands, to which localities is now added Mangareva. This species seems to be subject to actual dispersal, whereas, the others are strictly localized.

Genus **MOLLICA** Peckham, 1901

13. Mollica microphthalma L. Koch.

Austral Islands: Raivavae, Aug. 1934, one female, one young; Rurutu, Aug. 29, 1934, one male.

Rapa: Area, July 1934, one male; Morongota, July 11, 1934, one female.

Society Islands: Moorea, Sept. 26, 1934, one female, one young.

Known also from New Caledonia, Loyalty Islands, Tahiti, Hawaii, and Rarotonga.

Genus **PLEXIPPUS** C. Koch, 1850

14. Plexippus paykulli Audouin.

Austral Islands: Rurutu, Aug. 28, 1934, one male.

Mangareva Islands: Mangareva, May 24, 1934, some females and young.

A cosmopolitan species.

Family CLUBIONIDAE

Genus **AUSTRALAENA,** new genus

Belonging to the group Anyphaenae and very near *Anyphaena.* Tracheal spiracle nearer to the epigastrium than to the spinnerets; chelae bearing on the anterior margin 4 or 5 teeth, on the hind margin a row of 3 to 5 small teeth followed by a series of minute ones.

[3] *Sandalodes nigrescens,* a species I described in 1933 (B. P. Bishop Mus., Bull. 114:59, figs. 36-38, 1935) is in reality a very dark form of the cosmopolitan species *Plexippus paykulli* Audouin; therefore its name is now *Plexippus paykulli* var. *nigrescens* Berland.

Genotype: *Australaena hystricina,* new species.

The genus *Australaena* belongs to the group Anyphaenae, considered by some authors as a separate family. These spiders, except for the position of the hind spiracle, resemble the genus *Clubiona;* they are characteristic of the South American fauna, where they are represented by numerous genera and species; outside South America they are known by the genus *Anyphaena,* common in North America and in Europe. Until now, no spider of this group had been found in the Pacific, and the fact is of great importance for the comprehension of the Pacific fauna. It is worthy of remark that not only was a species found at Marotiri, but another one in the mountains of Tahiti.

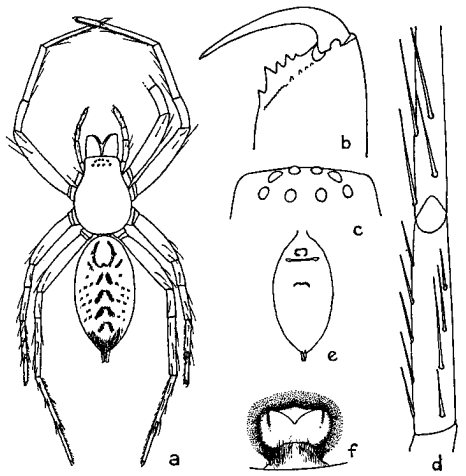

FIGURE 3.—*Australaena hystricina,* n. sp.: **a,** female × 2; **b,** female, chelicera, posterior side; **c,** female, eyes; **d,** female, tibia and metatarsus, inferior side; **e,** female, ventral side of abdomen; **f,** epigyn.

15. **Australaena hystricina,** new species (fig. 3, *a-f*).

Female. Color: carapace, chelae, labium, legs, pale yellow; sternum, coxae and inferior side of femora, testaceous; abdomen grayish with darker spots (fig. 3, *a*), ventral side grayish; hairs on tegument, and also other erected [?], black, numerous on the carapace and the anterior side of chelae; scopulae particularly strong on tarsus, metatarsus, and a part of the tibiae of legs II. Eyes, median anterior a little smaller than the others (fig. 3, *c*), separated from each other by less than their diameter, and still less from the lateral anterior, 2d row procurved; chelae slightly geniculate, anterior margin with 5 teeth, one of them stronger (fig. 3, *b*), posterior margin with 4 small teeth, and a series of very

small teeth. Legs (I mutilated), spines of tibia and metatarsus II (see fig. 3, *d*); abdomen, ventral side (see fig. 3, *e*); epigyn (see fig. 3, *f*). Total length 10 mm., carapace, length 4.5 mm., width 3 mm.

Marotiri, July 22, 1934, one female (holotype).

16. Australaena zimmermani, new species (fig. 4, *a-d*).

Very near *A. hystricina;* differs by the pattern, the epigyn (fig. 4, *d*), the teeth of the chelae (fig. 4, *b*), the eyes, the median anterior being larger than the lateral (fig. 4, *c*). Total length 11 mm., carapace, length 4.4 mm., width 2.8 mm.

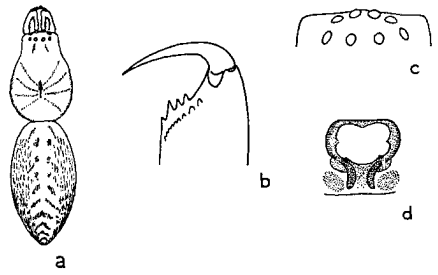

FIGURE 4.—*Australaena zimmermani*, n. sp.: **a**, female × 2; **b**, chelicera, posterior side; **c**, female, eyes; d, epigyn.

Society Islands: Tahiti, Mt. Aorai, alt. 1,500-1,800 m., Sept. 13, 1934, one female (holotype), one female (paratype).

Genus **CLUBIONA** Latreille, 1804

17. Clubiona samoensis Berland, Insects of Samoa 8(2): 65, figs. 56-62, 1929; B. P. Bishop Mus., Bull. **113**: 101, 1935.

Rapa: Area, June 30, 1934, one male.

The male is characterized by a longitudinal crest along the side of the chelae. This species was described from Samoa, where it occurs with *C. alveolata,* which, however, is nearly double in length. It is known also from Tahiti.

18. Clubiona alveolata L. Koch, Die Arachn. Austral. Bd. **1**: 421, 1873; Berland, B. P. Bishop Mus., Bull. **114**:51, 1935.

Austral Islands: Raivavae, Aug. 1934, one female, one young; Tubuai, Mt. Taita, Aug. 1934, one male.

Described from Samoa; also known from the Marquesas.

FAMILY SPARASSIDAE

Genus **HETEROPODA** Latreille, 1804

19. Heteropoda nobilis L. Koch.

Heteropoda nobilis (male) + *H. suspiciosa* (female) (L. Koch), Die Arachn. Austral. Bd. **1**: 664, 665, pl. 54, figs. 2, 3, 1875.

Austral Islands: Raivavae, Aug. 1934, three young; Rurutu, Sept. 2, 1934, one female; Tubuai, Aug. 1934, some young.

Rapa: Mt. Tepiahu, July 1934, alt. 400-600 ft., one female, one young; Maitua, July 10, 1934, alt. 400-700 ft., two females subadult, some young; Area, July 1, 1934, one female, some young; Morongota, July 11, 1934, females, young.

This species is very similar to the cosmopolitan species *Heteropoda regia,* but easily recognized by the copulatory organs. It is known only from Polynesia—Samoa, Society Islands, Marquesas, and Austral Islands. The two species may be found together, as in some of the Marquesas Islands. *H. regia,* however, is a domestic species, and is found chiefly in houses.

20. Heteropoda regia Fabricius.

Pitcairn: June 14, 1934, one young, determination not certain.

FAMILY PHOLCIDAE

Genus **PHOLCUS** Walckenaer, 1805

21. Pholcus ancoralis L. Koch, Die Arachn. Austral. Bd. **1**: 287, pl. 24, fig. 2, 1872.

Austral Islands: Rurutu, Aug. 28, 1934, one female; Tubuai, Mt. Taipo, Aug. 1934, one female.

Rapa: Area, July 1, 1934, one female.

Society Islands: Tahiti, March 20, 1934, one male; Moorea, Sept. 24, 1934, two females.

Known from Samoa, Marquesas, and Tahiti.

Genus **HOLOCNEMINUS,** new genus

Near the European genus *Holocnemus,* and also near *Pholcus;* eyes of the lateral groups separated between themselves; sternum broader than long (fig. 5, *d*); coxae IV largely separated by more than their width; chelae with a peculiar stridulating organ on the external side (fig. 5, *c*); tarsus of palp strongly dilated (fig. 5, *e*).

It is rare to have to describe a new genus in the family Pholcidae, but this small spider comes into no known genus. It is closely allied to the Mediterranean genus *Holocnemus,* chiefly by the curiously swollen tarsus of the palp, resembling an unripe bulb (though our specimen is doubtless a female) and by the stridulating organ (fig. 5, *c*). This organ exists also in *Holocnemus,* but the stripes are finer and more numerous.

22. Holocneminus piritarsis, new species (fig. 5, *a-f*).

Female. Color: carapace yellow with some small brown spots on the sides, and oblique and longitudinal brown stripes; clypeus with brown spots; labium yellow; sternum darker, castaneous; legs yellow with brown rings near the summit of femora and tibiae, and also on the patellae; abdomen testaceous, the epigastric scutum darker. Carapace and abdomen (fig. 5, *a*), the clypeus strongly projected toward the front; chelae bearing on the side a series of 5 or 6 little holes representing most probably a stridulating organ, but the corresponding small spine on the trochanter of the pedipalp is not easily seen. Chelae (fig. 5, *b*) with a strong angular tooth. Legs rather short, being only twice as long as the body; pedipalp strongly enlarged in the last parts, chiefly the tarsus (fig. 5, *e*) which resembles a male bulb not entirely mature (before the last moult). Abdomen, fig. 5, *a, f*. Total length 3 mm.

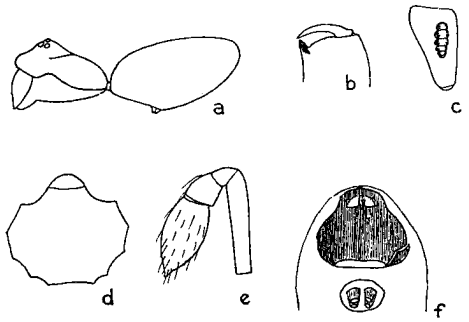

FIGURE 5.—*Holocneminus piritarsis,* n. sp.: **a,** female, side view; **b,** female. chelicera, anterior side; **c,** female, chelicera, lateral view, with stridulating apparatus; **d,** sternum and labium; **e,** female, pedipalp; **f,** female, abdomen, ventral side.

Austral Islands: Rurutu, Aug. 1934, one female (holotype).

FAMILY THERIDIIDAE

Genus **RHOMPHAEA** L. Koch, 1872

23. Rhomphaea cometes L. Koch, Die Arachn. Austral., Bd. **1**: 290, pl. 24, fig. 3, 1872. Berland, Insects of Samoa 8(2): 45, 1929.

Society Islands: Moorea, Sept. 24, 1934, one male; Huahine, Sept. 20, 1934, one female.

This very slender, nearly filiform spider was known only from Samoa.

Genus **ARGYRODES** Simon, 1864

24. Argyrodes gibbosus Lucas.

Austral Islands: Raivavae, Aug. 1934, one male; Rurutu, Aug. 1934, one female.

Despite some minor differences, I am rather sure that this spider is the same as the Mediterranean species (*A. argyrodes*), found in southern Europe, nearly all of Africa and Asia, and Hawaii in the Pacific. The male has a bulb quite similar to that of specimens I collected in Corsica, but there is a little difference in the form of the head, the lower lobe being more separated from the superior lobe. In the female, the black stripe dividing the silver spot on the back of the abdomen reaches the spinnerets, generally it is limited to the back, not reaching the hind part of the abdomen.

25. Argyrodes samoensis Cambridge.

Society Islands: Tahiti, alt. 1,200-1,500 m., one female; Moorea, Sept. 1934, one female.

Described from Samoa, this spider is also known from New Caledonia and the New Hebrides.

Genus **THERIDION** Walckenaer, 1805

26. Theridion rapanae, new species (fig. 6, *a-f*).

Male. Color: carapace, chelae, mouth parts, sternum, legs uniformly light brown, the sides of the carapace and of the sternum more or less gray; abdomen grayish mixed with whitish, chiefly on the sides and on the front part of the ventral face; ventral scutum brownish, as well as the spinnerets. Eyes: front row right, the median eyes are the smallest of all, second row procurved; group of the median eyes as wide as long, narrower in front, median anterior separated by about half their diameter, the posterior median by a little less than their diameter, median of the two rows by about the diameter of the anterior medians. Chelae each bearing on their front face a small protuberance near the base. Sternum convex, broad in front, a little longer than wide, separating the coxae IV by less than their width. Abdomen long (fig. 6, *a*) about twice as long as broad, its dorsal line a little concave in the middle; a long scutum in the front part of the ventral face, the posterior line of this scutum bears a little tooth in the middle; anteriorly the abdomen is prolonged in two lobes, probably representing

a stridulating organ (fig. 6, *c*). Pedipalp and bulb (fig. 6, *d*). Total length 2 mm. Female, like the male, but abdomen shorter and broader, with a dorsal pattern (fig. 6, *e*), epigyn (fig. 6, *f*); total length 2.3 mm.

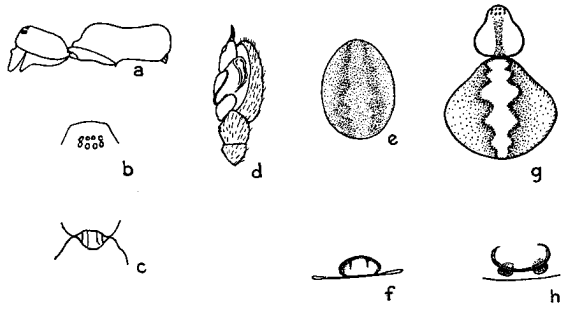

FIGURE 6.—*Theridion rapanae:* **a,** male × 7.5, lateral view; **b,** male, eyes; **c,** male, posterior part of carapace and anterior part of abdomen; **d,** male, pedipalp and bulb; **e,** female, dorsal side of abdomen; **f,** female, epigyn. *Theridion paumotui:* **g,** female × 7.5; **h,** epigyn.

Rapa: July 7, 1934, one male (holotype), one female (allotype).

27. Theridion tepidariorum C. Koch.

Rapa: July 1934, some young specimens.

A cosmopolitan species, living in Europe, chiefly in hothouses; already known from different parts of the Pacific—New Zealand, Norfolk, Hawaii, and Easter Island where it is common.

28. Theridion adamsoni Berland, B. P. Bishop Mus., Bull. **113**: 102, figs. 6-9, 1934.

Austral Islands: Raivavae, Aug. 1934, two females.

Rapa: July 1934, five females.

Marotiri, July 22, 1934, one female.

Described from Tahiti. There are some individual differences, chiefly in the pattern, the spot on the sternum, and the spots on the abdomen which are more or less developed.

29. Theridion paumotui, new species (fig. 6, *g, h*).

Female. Color: carapace light brown with a gray median stripe not quite reaching eyes, the sides brown; mouth parts, light brown, sternum light brown with a gray stripe having the form of a V, the summits of which reach the margin in front of coxae II; legs light brown, with nearly indistinct gray rings in the middle and at the summit of tibiae; abdomen gray with a dorsal stripe (fig. 6, *g*). Eyes, first row procurved, its eyes equal, separated between themselves by a little less than their diameter; second row procurved, its eyes separated by half their diameter; group of median eyes as long as broad, a little broader in

front. Sternum as broad as long, separating the coxae IV by less than their width. Abdomen broader than long, and also higher than long, its dorsal line regularly convex. Epigyn (fig. 6, *h*). Total length 2 mm.

Tuamotus: Henderson (Elizabeth) Island, June 17, 1934, one female (holotype).

Family ARGIOPIDAE

Genus **OSTEARIUS** Hull, 1910

30. Ostearius melanopygius Cambridge.

Linyphia melanopygia Cambridge, Zool. Soc. London, Proc., 696, pl. 53, fig. 13, 1879.

Tmeticus nigricauda Cambridge, Dorset Nat. Hist. Club, Proc. **28**: 141, pl. A, B, figs. 35-41, 1907.

Marotiri, July 22, 1934, one male, two females.

This little spider has a curious distribution. Described from New Zealand, it was afterwards established that it is identical with *Tmeticus nigricauda,* a British species. It is actually known from two regions, a north Atlantic one—England, Azores, Portugal, Madeira; and a subantarctic one—St. Paul Island, New Zealand, and now Marotiri. Its original home is presumed to be New Zealand; most probably it was introduced into England, Portugal, and the Atlantic islands; but it seems to be indigenous to St. Paul, where it exists as far as 1900 [was found as late as 1900 ?], and to Marotiri where possibilities for artificial introduction are rare. The actual localities in the south may be the remnants of an ancient antarctic continent, from where this spider was recently transported to Europe by maritime traffic. (For this spider, see Berland, 1940 [?].)

Genus **HIVAOA** Berland, 1935

Hivaoa, Berland, B. P. Bishop Mus., Bull. **142**: 50, 1939.

This genus, belonging to the group Pachygnatheae, was described from the Marquesas, where it is represented by three species: *H. argenteoguttata* Berland, 1935, *H. hirsutissima* Berland, 1935 and *H. nigromaculata* Berland, 1933. It is near *Dyschiriognatha* of which I described one species from Samoa. It is interesting to see that it also exists at Rapa. All five species have in common the form of the bulb, the disposition of the epigastral line, and the presence on the head of a protuberance bearing the median eyes, the posterior ones

being generally larger. They differ chiefly by the color and the pattern, and one, *H. hirsutissima,* is peculiar in bearing erect spines on the legs.

31. Hivaoa phalangiops, new species (fig. 7, *a-d*).

Female. Color: carapace reddish brown with a median brown stripe and a similar one on each side, narrower than the light part, the sides also brown, the head tubercle black; chelae and sternum brown, mouthparts light brown, darker in the base; legs brown with many darker rings, chiefly on the patellas I and II, a subapical one on femora I and II, and metatarsi I, II entirely brown; abdomen with a large dorsal black spot, a horseshoe-shaped white stripe (fig. 7, *c*) and a median group of four small white spots; below grayish. Eyes, the median posterior very large, borne on a protuberance of the head (fig. 7, *a*). Chelae, front face, convex; anterior margin with three largely separated teeth, posterior margin with two (fig. 7, *b*). Legs (fig. 7, *a*), tibiae and metatarsi I, II a little curved, with small dressed hairs, but without spines. Abdomen oval, on its ventral face (fig. 7, *d*) the genital ridge much advanced towards the middle and well separated from the pulmonary spiracles, the tracheal spiracle also separated from the spinnerets, nearly as far from these as from the genital orifice. Total length 2.9 mm.

Rapa: Mt. Perahu, alt. 400-500 m., July 21, 1934, one female (holotype).

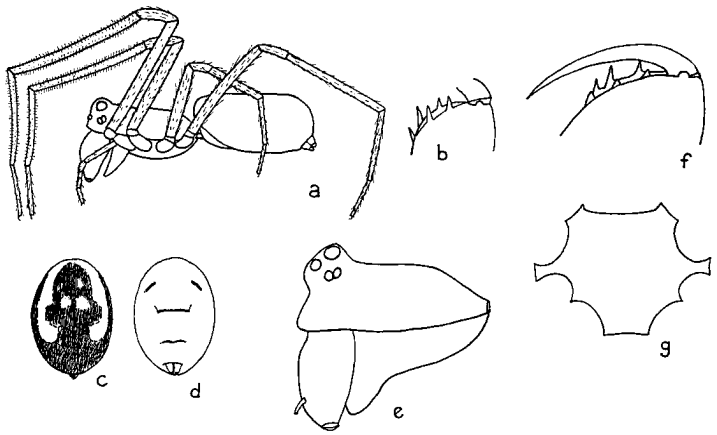

FIGURE 7.—*Hivaoa phalangiops,* n. sp.: **a,** female × 7.5; **b,** chelicera, posterior side; **c,** female, dorsal view of abdomen; **d,** female, ventral view of abdomen. *Hivaoa chamberlini,* n. sp.: **e,** female, carapace, lateral view; **f,** female, chelicera, posterior side; **g,** female, sternum.

32. Hivaoa chamberlini, new species (fig. 7, *e-g*).

Female. Color: carapace castaneous with a brown margin; chelae, mouth parts, sternum dark castaneous; legs yellow; abdomen grayish with silver plates, as in *Leucauge.* Carapace with a cephalic protuberance bearing the median eyes

(fig. 7, *e*), clypeus sloped towards the front above the chelae. Eyes: median posterior larger than lateral, median anterior smaller than the lateral anterior, about one half of the posterior. Chelae (fig. 7, *f*) with three long and acute teeth on the front margin, three smaller on the posterior margin, a strong apophysis on their anterior face, not very far from the claws (fig. 7, *e*). Sternum convex, very broad (fig. 7, *g*) prolonged between the coxae II and III in a chitinous part that joins the carapace laterally. Legs without spines. Abdomen oval, short, nearly as long as broad. Total length, 2.8 mm.

Rapa: July, 1934, one female (holotype).

Named in honor of Ralph V. Chamberlin, American arachnologist.

Genus **TETRAGNATHA** Latreille, 1804

33. Tetragnatha keyserlingi Simon.

Tetragnatha mandibulata L. Koch, non Walckenaer.

Rapa: one female.

Austral Islands: Raivavae, one male, one female.

Society Islands: Tahiti, two males, one female; Moorea, two females.

Common in Polynesia. The true *T. mandibulata* Walckenaer is found chiefly in the west of the Pacific—Carolines, Marianas, Philippines, etc. *T. keyserlingi* has a rather short and cylindrical abdomen. It is known from Fiji, Samoa, and Tonga.

34. Tetragnatha nitens Audouin.

Society Islands: Tahiti, March 29, 1934, one female.

This Mediterranean species extends toward the east to the Pacific and even to the Marquesas.

35. Tetragnatha huahinensis, new species (fig. 8, *a-d*).

Female. Color: light brown, the margin and two stripes darker, labium brown, sternum light testaceous, the margin gray; abdomen gray with little silver plates on the sides and, in the posterior half, 2 rows of 4 small brown spots (fig. 8, *b*). Eyes, the two rows recurved, the 1st a little more, eyes nearly equal, the anterior lateral a little smaller, the lateral of the two rows a little farther from each other than the median. Chelae with a strong protuberance near the claw (for the teeth, see figure 7, *c, d*). Abdomen long, about ten times as long as wide. Total length, 12 mm. (without the chelae).

Society Islands: Huahine, Mt. Turi, alt. 600-700 ft., Oct. 1, 1934, one female (holotype).

Many species of *Tetragnatha* are already known from the Pacific, some of which are not easily recognized; but I think that *T. huahinensis* is well characterized by the length of the abdomen and by the peculiar form of the chelae.

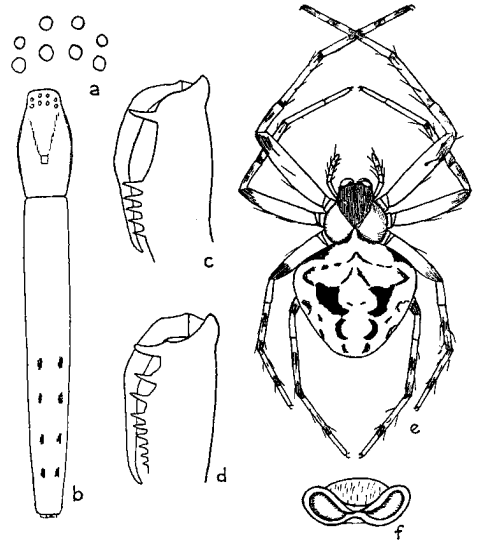

FIGURE 8.—*Tetragnatha huahinensis:* **a,** female, eyes; **b,** female, dorsal view; **c,** female, chelicera, anterior side; **d,** female, posterior side. *Araneus nigropunctatus* L. Koch: **e,** female × 2.5; **f,** epigyn.

Genus **LEUCAUGE** White, 1841

36. Leucauge granulata Walckenaer.

Society Islands: Tahiti, March 20, 1934, males, females.

37. Leucauge tuberculata Keyserling.

Austral Islands: Rurutu, Aug. 27, 1934, two young.

Genus **CYCLOSA** Menge, 1866

38. Cyclosa tauraai Berland, B. P. Bishop Mus., Bull. **114**: 67, figs. 53, 54, 1935.

Society Islands: Tahiti, Mt. Aorai, alt. 1,500-1,800 m., Sept. 15, 1934, one female.

This species, described from the Marquesas, seems to agree perfectly with the Tahitian specimens. It is worthy of comment that in both archipelagoes this spider was found only in the mountains: 1,000 meters in the Marquesas and over 1,500 meters in Tahiti. Certainly, the fauna of the summits in the Pacific seems very different from that of the low regions.

Genus **ARANEUS** Clerck, 1757

39. Araneus theisi Walckenaer.

A cosmopolitan species, commonly found in nearly all the islands of the Pacific. It was collected by the Mangarevan Expedition in the following islands—Austral Islands: Raivavae; Tubuai, Murivai, Tapapatauai; Rurutu; Rimatara; Mangareva; Tuamotus: Tepoto, Anaa, Hao, Oeno Island.

40. Araneus plebejus L. Koch.

Rapa: south slope of Mt. Tepiahu, July 16, 1934, alt. 130-200 m., one female; south ridge of Mt. Perahu, July 13, 1934, one female, one young; Mt. Morongota, July 1, 1934, males, females.

This species, which is similar to *Araneus theisi,* is found only in the Pacific. (See Berland, B. P. Bishop Mus., Bull. **142**:60, figs. 49-53, 1939.)

41. Araneus nigropunctatus (L. Koch) (fig. 8, *e, f*).

Epeira nigropunctata L. Koch, Die Arachn. Austral. Bd. 1: 65, pl. 6, figs. 7-7a, 1871.

Society Islands: Mt. Aorai, alt. 1,500-1,800 m., Sept. 15, 1934, one female.

Though I hesitated to name this spider, which may be a new species, I decided to give it the name of the *Araneus* described by L. Koch from Port Mackay, Australia, despite the great distance between Tahiti and Australia. The pattern on the abdomen is different in details, but is of the same type, though simpler in the Australian specimen. Of most importance, the epigyn (fig. 8, *f*) is similar, without a hook, a form not common in this genus. As mentioned before, forms whose affinities are with far countries were often found in the mountains of Pacific islands, where the fauna is peculiar, often differing from that of the lowlands.

Genus **CYRTOPHORA** Simon, 1864

42. Cyrtophora moluccensis Doleschall.

Henderson Island: one female.

Until now this spider, common in Malaya, and in the west part of the Pacific, was known only as far as Tahiti; it does not exist in the Marquesas. The Polynesian form, which I called var. *polyne-*

sensis Berland, 1929, is somewhat different from the typical form. I am now certain that *C. viridipes* Doleschall does not exist in Polynesia, and that the specimens recorded from Tahiti under this name by Strand are really *moluccensis* var. *polynesensis.*

Family AGELENIDAE

Genus **PARO,**[4] new genus

Close to *Mynoglenes,* differing in the numerous teeth on the margins of the chelae; sternum as broad as long, chelae strong and geniculate, labium with a swollen anterior border; legs with very few spines; a well-developed colulus.

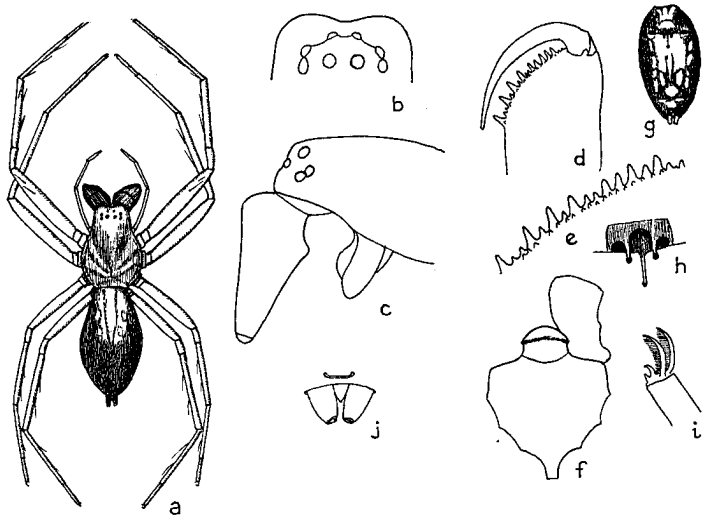

Figure 9.—*Paro simoni,* n. sp.: **a,** female × 3; **b,** female, eyes and front of carapace; **c,** female, lateral view of carapace, chelicera and mouthparts; **d,** chelicera, posterior side; **e,** teeth of chelicera; **f,** sternum and mouthparts; **g,** ventral side of abdomen; **h,** epigyn; **i,** claws; **j,** spinnerets, colulus, and tracheal spiracle.

43. **Paro simoni,** new species (fig. 9, *a-j*).

Female. Color: general color as a normal agelenid; legs reddish, femora and tibiae grayish with lighter rings, more or less distinct; carapace reddish brown, chelae dark reddish, mouth parts brown, the apex lighter, sternum brown, lighter in the middle; abdomen grayish brown, lighter in the middle of the back, and in the ventral face. Carapace broad in front, the anterior margin a little incurved. Eyes: first row recurved, the median smallest, nearer together than to the lateral, second row recurved, its eyes equal; group of the median eyes

[4] *Paro* is the ancient name of Rapa, sometimes written "Oparo", but "O" is only a prefix.

longer than broad, and narrower in front, lateral of the two rows contiguous. Chelae very strong, geniculate at the base (fig. 9, *c*), anterior margin with a series of numerous, unequal teeth (fig. 9, *d, e*), inside this row a series of very small teeth; the chelae are widely apart from the mouth parts (fig. 9, *c*); mouth parts (fig. 9, *f*); sternum as broad as long. Legs with very few spines, on tibiae and metatarsi I, II, respectively 2-2 and 2-2-2 spines, claws (fig. 9, *i*). Epigyn (fig. 9, *g, h*), thrice arched, the two median parts prolonged beyond the genital line, their summit a little enlarged; genital line also prolonged in a sort of thin hyaline tongue, with its summit black (fig. 9, *h*). Total length, 7 mm.

Rapa: Mangaoa Peak, alt. 300-400 m., July 6, 1934, one female (holotype).

This spider puzzled me a good deal for it is near no other in the Pacific, except perhaps *Mynoglenes,* a genus known only from New Zealand and the subantarctic islands—Chatham, Macquarie, etc. But it is decidedly different, chiefly in the epigyn, and in the very numerous teeth of the chelae (fig. 9, *d, e*), and I am obliged to consider it as a new, isolated, Pacific genus.

Mynoglenes was placed in the family Agelenidae by Simon, but its affinities seem much greater with the linyphids. I once described a spider from the Chatham Islands as a *Linyphia,* but afterwards observed that it was simply *Mynoglenes insolens.* Hickman recently discussed this question, and concluded that *Mynoglenes* is a linyphid. The same doubt exists with *Paro* which may be a linyphid, but the chelae are of a very different type. When the male is known, perhaps its affinities will be easier to decide.

Family LYCOSIDAE

Genus **LYCOSA** Latreille, 1804

44. Lycosa tanna (Strand).

Tarentula tanna Strand, 1913.

Lycosa tanna Berland, 1938.

Tarentula tongatabuensis Strand, 1911 (?).

Marotiri, July 22, 1934, two males, two females, many young.

This large spider (male 14 mm., female 24 mm.) is the same as the one which I identified as *L. tanna* Strand, described from Tanna, New Hebrides. It is abundant in the New Hebrides.

It is probably a widely distributed spider, as it seems to be known from different points of Polynesia—Tongatabu, Tonga, Tahiti, Samoa, Tuamotus—generally under the name *Tarentula tongatabuensis* Strand. If these two species are synonymous, the last name should have priority.

The *Lycosa* of the Pacific are little known. About thirty species were described, but at least half of the descriptions are absolutely worthless. A revision of the genus is necessary, and will certainly reduce the number of species. There is a group in the west of the Pacific (New Zealand, New Caledonia, New Hebrides) and another in Hawaii, but generally the lycosids are poorly represented in Polynesia.

It is a curious fact that the largest species of a genus of spiders generally live only on the smallest islands: the largest *Lycosa, L. ingens,* is found only on an islet near Madeira, Deserta Grande; the largest *Araneus* in the Loyalty Islands, and in the present case, Marotiri possesses the largest Pacific *Lycosa.*

Family FILISTATIDAE

Genus **FILISTATA** Latreille, 1810

45. Filistata bakeri Berland, Soc. ent. France, Ann. **107**: 187, figs. 159-162, 1938.

Austral Islands: Tubuai, Tapapatauai, Aug. 19, 1934, one female.

Phoenix Islands: Canton Island, E. H. Bryan, Jr., March 19, 1924, two females, two young.

Christmas Island: Griegs Grove, Bryan, Oct. 21, 1924, one female.

This family was known only from the Galapagos in the Pacific. Recently, however, I described one species collected by John R. Baker at Santo, New Hebrides, which was later found in different islands of Polynesia. Whether this dispersal is natural, or due to artificial introduction by man is difficult to decide; it seems impossible to see direct relations between so widely separated points in the Pacific.

Family ULOBORIDAE

Genus **ULOBORUS** Latreille, 1806

46. Uloborus tahitiensis Berland, Soc. ent. France, Ann. **103**: 323, 331, figs. 1-6, 1934.

Austral Islands: Raivavae, Aug. 1934, males, females, young; Rurutu, Aug. 30, 1934, males, females.

Rapa: Mangaoa Peak, July 6, 1934, alt. 300-400 m., females; northeast ridge of Mangaoa, July 29, 1934, alt. 300-400 m., one female.

Described from Tahiti, this spider was previously found in Rapa by the St. George Expedition, 1925.