

NEW SPECIES OF DIPLOSPHYRONID PSEUDO-SCORPIONS FROM AUSTRALIA¹

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Through the kindness of Professor Nathan Banks, the writer has been able to study the collections of Australian and New Zealand pseudoscorpions deposited in the Museum of Comparative Zoölogy. The majority of these collections were taken by members of the Harvard Australian Expedition in 1931 and 1932.

The present paper is concerned only with the diplosphyronid pseudoscorpions. The specimens have been mounted on microscope slides after being cleared in beechwood creosote. Measurements were made with a calibrated micrometer ocular and are expressed in millimeters. All of the specimens described here have been returned to the Museum of Comparative Zoölogy.

Family OLPIIDÆ Chamberlin 1930

Subfamily OLPIINÆ Banks 1895

Genus *Olpium* L. Koch 1873

Olpium zealandiense sp. nov.

Figures 1-3

Female. Body moderately slender; carapace moderately brown, abdomen and legs light yellowish brown, palpi deep reddish brown. Length of body 2.7 mm. *Carapace* smooth except weakly developed netlike lines on the posterior one-third of the face and along the sides. *Setæ* sparse, only two *setæ* along the posterior margin of the carapace. The two eyes of each side separated by less than the diameter of the posterior eye. Lateral margins of the carapace weakly convex, posterior margin nearly straight. Length of carapace about 0.8 mm., greatest width across posterior margin and equal to 0.71 mm., ocular width about 0.5 mm.

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Abdomen elongate with sides weakly and evenly convex, length 1.9 mm., width 1.05 mm. All *tergites* equally sclerotic, not divided, surface marked by very faint net-like sculpturing. Each of the first two *tergites* with four *setæ*, more posterior *tergites* with six *setæ*, the tenth and the eleventh with 10 *setæ*. *Sternites* a little more lightly pigmented than the *tergites* and virtually unsculptured. Most *sternites* with six to 10 very fine acuminate *setæ*; *sternites* not divided.

Chelicera fairly stout, 0.27 mm. long, width of base 0.16 mm. Flagellum of three *setæ*, anterior one stout and denticulate along the distal one-third; the middle seta about two-thirds the length of the distal one and also subterminally denticulate; the proximal seta inconspicuous, less than one-half the length of the middle one, and apparently acuminate. *Fixed finger* gently curved, with four or five small, retroconical teeth along the distal one-half of the inner margin; lamina exterior wide and conspicuous; distal tooth of serrula interior ligulate and with finely serrate margin, next three more proximal teeth platyform and with serrate margins, other teeth modified to form a velum. *Movable cheliceral finger* a little curved, fairly slender; serrula exterior of 20 ligulate plates; subapical lobe stout and with two rounded cusps; apical tooth no more sclerotic than the rest of the finger; galeal seta inserted near the base of the subapical lobe and not reaching to the tip of the galea; galea (Fig. 1) stout, straight, and with three fairly stout and little-curved terminal and subterminal rami; length of movable finger 0.2 mm.

Palps (Fig. 2) moderately stout; polished reddish brown in color; investing *setæ* long, acuminate, and fairly numerous; surface smooth except for weakly developed granules on the sides of the maxillæ, on the trochanteral protuberances, on the central portion of the flexor surface of the femur, and along the distal half of the flexor surface of the chelal hand. Maxilla 0.44 mm. long, 0.28 mm. wide; trochanter 0.40 mm. long, 0.24 mm. wide; femur 0.71 mm. long, width 0.26 mm.; tibia 0.71 mm. long, 0.31 mm. wide; chela without pedicle 1.16 mm. long, 0.44 mm. wide; chelal

hand without pedicle 0.60 mm. long, 0.42 mm. deep. From the side, chelal hand (Fig. 3) stout, depth little less than the width; hand not much narrowed towards the fingers; length of movable finger 0.62 mm. Many marginal teeth of chelal fingers broken but apparently about 45 conical and cuspid teeth distributed along nearly the entire margin of each finger.

Legs moderately stout, yellow in color; setæ fine and acuminate, sparse on the proximal podomeres but longer and more numerous on the distal podomeres; surfaces of pedal podomeres apparently unsculptured; tarsal claws stout. *First leg* with pars basalis deepest across the distal end, length measured along the extensor margin 0.264 mm., depth 0.13 mm.; pars tibialis stout, extensor margin flatly convex, flexor margin more convex, length measured along the extensor margin 0.22 mm., depth 0.143 mm.; tibia subcylindrical except in the proximal portion, length 0.30 mm., depth 0.103 mm.; metatarsus subcylindrical, length 0.135 mm., depth 0.07 mm.; telotarsus a little deeper proximally than distally, length 0.133 mm., depth 0.067 mm. *Fourth leg* with extensor margin of femur a little flatly convex in the center, more convex near the ends; flexor margin of femur more weakly and evenly convex than the extensor margin; length of pars basalis 0.23 mm.; length of pars tibialis measured along the extensor margin 0.55 mm., depth 0.265 mm.; length of entire femur 0.67 mm.; tibia with extensor margin nearly straight except at the proximal end, flexor margin weakly convex, length 0.50 mm., depth 0.14 mm.; metatarsus subcylindrical, with a long tactile seta inserted very close to the proximal margin, length 0.20 mm., depth 0.095 mm.; telotarsus subcylindrical, length 0.17 mm., depth 0.078 mm.

Genital complex very simple; posterior operculum or third sternite with four setæ. One median and two lateral cribiform plates, all small and subequal in size.

Type locality. The female holotype collected by Mr. G. Archey on Tera Kihi Island, Hauraki Gulf, New Zealand, on October 25, 1924.

Remarks. A single species of *Olpium*, *O. michaelsoni* Tullgren, 1909, has been reported previously from the

Australian region. From the description given by Chamberlin (1930), it is evident that *zealandiensis* differs from *michaelsoni* by having much stouter palpal podomeres. By comparing the palp of *zealandiensis* with the figure given by Beier (1932, fig. 210) for the palp of *michaelsoni*, it may be seen that a number of slight differences exist between the two forms with respect to the shape of the palpal podomeres. *Olpium zealandiensis* may be readily separated from other species of the genus by characteristics of the palpal podomeres.

Genus *Xenolpium* Chamberlin 1930

Xenolpium granulosum sp. nov.

Figures 4-6

Female. Body elongate; length 4.65 mm. *Carapace* light brown in color; posterior margin nearly straight, anterior margin weakly bilobed, lateral margins very weakly convex to straight behind the eyes; posterior margin with two setæ, each placed some distance anterior to the actual margin; anterior margin with four setæ; eyes prominent; anterior eye separated from the anterior carapacial margin by more than the diameter of the eye, eyes of each pair separated by about one-half the diameter of the eye; carapace smooth except for netlike markings along the side and weakly developed granules behind the eyes; length of carapace 1.08 mm.; posterior and greatest width about 0.9 mm.; ocular width 0.5 mm. *Abdomen* much wider than carapace; lateral margins gently convex; length 3.55 mm., greatest width 1.9 mm. *Tergites* light brown in color, surface virtually smooth; first tergite with four setæ, central tergites with six to eight setæ; all tergites undivided. *Sternites* smooth, light brown in color; most sternites with eight, some with six or 10 marginal setæ.

Chelicera moderately deep brown in color; base fairly stout and marked by a few netlike lines on the exterior surface; all setæ long and acuminate; flagellum of four stout blades, each with an almost smooth margin; chelicera 0.29 mm. long, base 0.175 mm. wide. *Fixed finger* with wide and evenly convex lamina exterior; distal one-

half of inner margin with five or six retroconical teeth, two other teeth in the inner margin of the apical tooth; terminal plate of serrula interior spinelike, the next three conical, others fused into a velum, all teeth with entire margins. *Movable finger* fairly stout, a little curved; subapical lobe much smaller than the apical tooth and located very close to the latter; serrula exterior of about 20 ligulate plates (exact count prevented by broken plates); galea (Fig. 4) trifid near base, each branch simple and fingerlike; galeal seta fairly stout and not reaching to the tip of the galea; movable finger 0.26 mm. long.

Palps (Fig. 5) moderately stout, deep reddish brown in color; setæ acuminate; surface of podomeres very weakly granular, with the granules minute and hardly discernible on the extensor surfaces of all podomeres except the trochanter; chelal fingers with surface smooth. Maxilla 0.54 mm. long, 0.38 mm. wide; trochanter with conical extensor protuberance and a more rounded subdorsal one, granules of the extensor side confined to the protuberances; length of trochanter 0.54 mm., width 0.31 mm.; femur 0.88 mm. long, 0.35 mm. wide; tibia 0.92 mm. long, with 0.37 mm. Chela from the dorsad with hand stout, fingers gently curved and well separated from the hand; chela without pedicle 1.58 mm. long, 0.55 mm. wide; chelal hand exclusive of the pedicle 0.85 mm. long, 0.49 mm. deep; movable finger 0.8 mm. long. From the side, chelal hand (Fig. 6) subcylindrical; basal margin rounded and blended into the dorsal and ventral margins without interruption; fingers fairly slender; each finger with about 60 marginal teeth distributed along almost the entire finger margin; teeth of the distal portion of each row retroconical and with well-developed cusps, those of the proximal end of each row rounded and acuspid.

The *legs* deep yellow in color; fairly stout; surface apparently not sculptured; setæ long and acuminate, more numerous on the distal than on the proximal podomeres; tarsal claws stout. *First leg* with femoral parts stout, margins of pars basalis flatly convex, margins of pars tibialis more rounded; length of pars basalis measured along the extensor margin 0.285 mm., depth 0.185 mm.;

pars tibialis measured along the extensor margin 0.30 mm. long, 0.182 mm. deep; tibia with extensor margin nearly straight except at the proximal end, weakly convex on the flexor margin, pedicle not developed, length 0.375 mm., depth 0.118 mm.; metatarsus subcylindrical but a little narrowed distally, length 0.16 mm., depth 0.083 mm.; telotarsus like the metatarsus in shape but somewhat more slender, length 0.16 mm., depth 0.067 mm. *Fourth leg* with subtriangular pars basalis, length 0.315 mm., depth 0.20 mm.; flexor margin of pars tibialis almost straight, extensor margin flatly convex with a distinct angulation near the basal end, length measured along the extensor margin 0.78 mm., depth 0.335 mm.; entire femur 0.93 mm. long; tibia and tarsal podomeres with shape much like the corresponding podomeres of the first leg; tibia 0.62 mm. long, 0.175 mm. deep; metatarsus 0.245 mm. long, 0.115 mm. deep; telotarsus 0.225 mm. long, 0.095 mm. deep; metatarsus with a tactile seta located on the extensor surface near the base of the podomere; telotarsus with two tactile setæ, one located 0.045 mm. and the other 0.125 mm. from the proximal margin.

Genital complex very simple. Second sternite or anterior operculum with 11 small marginal setæ; third sternite or posterior operculum with five marginal setæ. Small median and lateral cribiform plates present.

Type locality. The female holotype from Mullewa, Western Australia. Collection made by Dr. W. M. Wheeler on September 20, 1931.

Remarks. *Xenolpium granulorum* appears closely related to *O. amboinensis* Chamberlin, 1930, from the Dutch West Indies. The two species differ by the more slender chela, the basally less truncate chelal hand, and the larger size of the body in *O. granulorum*.

Family GARYPIDÆ Hansen 1894

Subfamily GARYPINÆ Simon 1879

Genus *Garypus* L. Koch 1873

Garypus longidigitus sp. nov.

Figures 7, 8

Female. Body large, stout, 4.4 mm. long; appendages long and slender. *Carapace* light brown in color; surface

granular and marked by netlike lines; anterior margin bilobed, lateral margins weakly convex; eyes large, the eyes of one side separated by less than one ocular diameter; eyes removed from the anterior carapacial margin by between two and three ocular diameters; transverse furrows weakly developed; setæ scattered, fairly numerous; length of carapace 1.28 mm., greatest width posteriorly and equal to 1.1 mm., ocular width 0.7 mm. *Abdomen* oval-elongate, length 3.1 mm., width about 1.9 mm. *Tergites* 2 to 10 divided; surface sculptured as on the carapace; brown in color; setæ weak and short; first tergite with 10 setæ, half-tergites of central and posterior part of body with six or seven setæ along the posterior margin and two or three setæ along the lateral margin; intertergal membranes and median membranes between half-tergites continuous, wide, and marked by wavy striations. *Sternites* 4 to 10 divided; very lightly pigmented, especially anteriorly; sculpturing scalelike or netlike and much more weakly developed than on the tergites; setæ short, fine, more or less similar in number and arrangement to those of the tergites; intersternal membranes like those of the tergites. *Pleural membranes* wide, marked by rugose or papillose striations. Stigmata placed entirely in the pleural membranes and not on the sclerotic sternal halves.

Chelicera fairly stout, yellowish brown in color; length 0.36 mm., width of base about 0.215 mm. Base quadrate; inner margin with a deep sinuation between the base and the fixed finger; setæ *is*, *ls*, and *sb* located on the promixal half of the fixed finger; dorsal surface of base weakly sculptured by netlike lines. *Flagellum* with three stout and much flattened blades; the posterior blade two-thirds as long as the anterior one, the central blade intermediate in length; each blade denticulate, with the teeth long, slender, irregular in distribution and length, and confined to the distal two-thirds of each blade. *Fixed finger* very convex, with well-rounded lamina exterior; apical tooth very dark brown and sclerotic, with two small denticles on the inner surface; inner margin of finger with one or two stout, sclerotic, retroconical distal teeth followed

proximally by three to five weaker, non-sclerotic, retroconical teeth becoming progressively smaller in size; distal plate of serrula interior spinelike and directed anteriorly. *Movable finger* gently curved; apical tooth acute, darkly pigmented, and sclerotic; subapical lobe subdivided distally into two acute teeth; galeal seta inserted at the level of the subapical lobe and not reaching to the tip of the galea; serrula exterior partly broken but probably composed of about 25 ligulate plates; galea stout, fairly straight, with six slender and gently curved simple rami confined to the distal one-third; length of movable chelical finger about 0.31 mm.

Palps (Fig. 7) slender; yellowish brown except chela reddish brown; surface of podomeres except the chelal fingers marked by netlike lines and granulations; setæ fairly numerous, short, acute, slightly curved, and inconspicuous. Maxilla 0.78 mm. long, about 0.5 mm. wide; trochanter 0.65 mm. long, 0.38 mm. wide; femur 1.65 mm. long, 0.318 mm. wide; tibia 1.38 mm. long, 0.35 mm. wide; chela without pedicle 2.65 mm. long, 0.65 mm. wide; depth of chela 0.59 mm., length of hand without pedicle 1.1 mm.; length of movable finger 1.65 mm. Shape of chela from the side and the arrangement of tactile setæ as shown in figure 8. Marginal teeth of chelal fingers cuspid, arranged along the entire finger margin; about 85 teeth on the fixed finger, about 70 teeth on the movable finger; teeth near each end of the row on each finger more or less conical, those of the center of the row on the fixed finger retroconical, those of the center of the row of the movable finger retroconical to much flattened so that they are much less acute than the opposing teeth of the fixed finger.

Legs very slender; deep yellow in color; surface marked by netlike lines; setæ like those of the palpi, except longer and more numerous on the flexor surfaces of the tibial and tarsal podomeres. *First leg* with stout trochanter, 0.33 mm. long, 0.235 mm. deep; pars basalis slender, flexor margin nearly straight, extensor margin convex in the center, podomere deepest near the distal end, length measured along the extensor margin 0.62 mm., depth 0.185 mm.; pars tibialis subcylindrical, length measured along

the extensor margin 0.39 mm., depth 0.18 mm.; tibia with extensor margin convex, flexor margin concave, deepest at the distal end, length 0.57 mm., depth 0.135 mm.; metatarsus subcylindrical in shape, length 0.38 mm., depth 0.105 mm.; telotarsus 0.345 mm. long, 0.1 mm. deep. *Fourth leg* with trochanter 0.55 mm. long, 0.24 mm. deep; pars basalis subtriangular in outline, 0.395 mm. long, 0.215 mm. deep; pars tibialis with very weakly convex flexor margin continuous with the margin of the pars basalis, extensor margin weakly to flatly convex but a little more convex basally than distally, length measured along the extensor margin 0.995 mm., depth 0.275 mm.; entire femur 1.25 mm. long; tibia shaped as in the first leg but much more slender, length 0.98 mm., depth 0.15 mm.; metatarsus subcylindrical but a little narrower across the distal than the proximal end, length 0.48 mm., depth 0.13 mm.; telotarsus 0.38 mm. long, 0.12 mm. deep.

Genital complex simple; anterior operculum with 17 setæ, many of which are arranged in a row along the posterior margin; posterior operculum or third sternite with eight setæ forming a single row; lateral cribiform plates smaller than the somewhat fragmented median plate.

Type locality. Weier, Murray Islands, Torres Strait, Queensland. Collection made by H. L. Clark on October 4, 1913. Unfortunately, no ecological data accompany the single individual (holotype) in the collection.

Remarks. This is the first record of the genus *Garypus* L. Koch from the Australian region and its occurrence fulfills a prophecy made by Chamberlin (1934) that the genus should be present in Oceania.

Garypus longidigitus is readily separated from other species of the genus by the characteristics, especially the length : width ratios, of the palpal prodromeres. The very long and slender chelal fingers are among the most significant of the diagnostic features.

Genus *Synsphyronus* Chamberlin 1930

Synsphyronus + *Maorigarypus* Chamberlin, 1930, Ann. and Mag. Nat. Hist., ser. 10, 5: 616, 617.

Synsphyronus + *Maorigarypus* Chamberlin, 1931, Stan-

ford Univ. Publ., Univ. Ser., Biol. Sci., 7(1) : 135, 153, 155, 208, 215, 228 (figs.).

Synsphyronus Chamberlin + *Synsphyronidæ* Beier + *Maorigarypus* Chamberlin, Beier, 1932, Das Tierreich, 57: 226, 238.

Synsphyronus emend., Chamberlin, 1943, Ann. Ent. Soc. Amer., 36: 488, 489.

Genus emendatus. On studying in detail the new species described below, it becomes obvious that the species belong to the genus *Synsphyronus* in spite of the presence of seven, instead of eight or nine, tactile setæ on the fixed finger of the palpal chela. Since Chamberlin (1943) has shown that the variable number of tactile setæ is not a useful diagnostic character in this genus, there is no justification for the erection of a new genus. As a result, the genus *Synsphyronus* is hereby emended to include forms that have seven to nine tactile setæ on the fixed chelal finger.

The presence of seven setæ on the fixed chelal finger indicates relationship to the genus *Anagarypus* Chamberlin, 1930. However, the nature of the vestitural setæ of the palps and the position of tactile seta *est* of the fixed chelal finger preclude assignment of the present three species to the genus *Anagarypus*.

***Synsphyronus* (*Maorigarypus*) *niger* sp. nov.**

Figures 9, 10

Male. Body, legs, and chelicerae brown in color; palpi dark reddish brown; sculpturing of body and appendages as in the genus; length of body 3.6 mm. *Carapace* as in the genus; eyes of each side separated by about the lesser diameter of the anterior eye; carapacial furrows not evident; posterior margin with four setæ; length of carapace 1 mm., greatest width across the posterior margin and equal to 1.1 mm., ocular width about 0.6 mm. *Tergite* 1 with six setæ; each half of tergite 2 and tergite 3 with three setæ, more posterior tergites with four or five setæ on each half; tergal setæ subclavate to clavate. *Sternites* with setæ acuminate to terminally truncate; setæ similar to those of the tergites in number and arrangement; con-

tral sternites not divided, anterior and posterior ones divided. *Abdomen* stout, 2.6 mm. long, about 1.85 mm. wide.

Chelicera with chaetotaxy and flagellum as in the genus; length of chelicera 0.25 mm., width of base about 0.16 mm. Inner margin of fixed finger with three or four retroconical teeth, inner margin of apical tooth of fixed finger with two small denticles. *Movable cheliceral finger* a little curved; subapical lobe very near the base of the apical tooth; serrula exterior of 18 ligulate plates; galea relatively short, simple, stout, terminally rounded and without rami; length of movable finger 0.19 mm.

Palps (Fig. 9) very similar in outline to those of other species of the genus. *Setæ* of maxilla chiefly acuminate; *setæ* of the trochanter, femur, and tibia distinctly clavate; *setæ* of the chelal hand subclavate to clavate; *setæ* of the fingers acuminate and relatively long. Maxilla 0.60 mm. long, 0.34 mm. wide; trochanter nearly square in outline with the pedicle short and stout, length including pedicle 0.47 mm., greatest width taken at about a right angle with the longitudinal axis 0.37 mm.; femur 1.07 mm. long, width 0.30 mm.; tibia 0.81 mm. long, 0.325 mm. wide; chela basally truncate and little convex, fingers very slender in relation to the hand and gently curved; length of chela without pedicle 1.52 mm., width 0.44 mm.; length of hand without pedicle 0.83 mm., depth of chelal hand 0.36 mm.; length of movable finger 0.70 mm. *Marginal teeth* of the chelal fingers conical to retroconical in the distal part of the row of each finger, much flattened in the proximal portion of each row; cusps poorly developed; about 35 teeth on the movable finger, about 45 on the fixed finger. *Tactile setæ* arranged as shown in figure 10.

Legs dark brown in color, with the more distal podomeres somewhat dusky; *setæ* of femoral parts and the extensor margins of the more distal podomeres clavate, being conspicuously long and club-shaped on the tarsal podomeres of the fourth leg; *setæ* of the flexor surface of the tibial and tarsal podomeres acuminate; tarsal claws moderately stout. *First leg* with trochanter 0.245 mm. long, 0.175 mm. deep; pars basalis with flexor margin more or less evenly convex, 0.253 mm. long, 0.163 mm.

deep; pars tibialis with evenly convex extensor margin, flexor margin bulging near the center; length 0.285 mm., depth 0.19 mm.; tibia as in other species of the genus, length 0.335 mm., depth 0.125 mm.; metatarsus subcylindrical, length 0.158 mm., depth 0.095 mm.; telotarsus with both margins a little convex, length 0.145 mm., depth 0.075 mm. *Fourth leg* with extensor margin of the trochanter evenly convex, length 0.365 mm., depth 0.17 mm.; pars basalis subtriangular in shape, 0.265 mm. long, 0.19 mm. deep; pars tibialis with extensor margin more or less evenly but not strongly convex, flexor margin nearly straight and continuous with the flexor margin of the pars basalis, greatest length 0.61 mm., depth 0.245 mm.; entire femur 0.80 mm. long; tibia very weakly S-shaped, length 0.49 mm., greatest depth in the distal half and equal to 0.14 mm.; metatarsus subcylindrical, 0.195 mm. long, 0.102 mm. deep; telotarsus stout, length 0.19 mm., depth 0.10 mm.

Genital complex with the anterior operculum asetaceous except for six small acuminate setæ just anterior to the genital pore; posterior operculum with seven or eight small setæ approximate to the genital pore and five longer setæ along the posterior margin. Both opercula with numerous slitlike lyrifissures.

Type locality. The single male, the holotype, collected by Dr. P. J. Darlington on November 30, 1931, at Adelaide, South Australia.

Remarks. The present species differs from all previously described species of the subgenus *Maorigarypus* by having two rather than one or three tactile setæ on the movable chelal finger and differs from all described species of the genus *Synsphyronus* by having only seven tactile setæ on the fixed chelal finger. *Synsphyronus niger* is similar in these characters to *S. magnus* described below. Methods of separating these two species will be given under the description of the latter.

***Synsphyronus (Maorigarypus) magnus* sp. nov.**

Figures 11, 12

Female. Very large; body ovate in general shape; abdomen, carapace, and legs light to medium brown; palpi

deep reddish brown; sculpturing as typical in members of the genus; body 4.45 mm. long. *Carapace* as in the genus; anterior eye of each side narrowly elliptical and separated from the posterior eye by about twice the lesser diameter of the anterior eye; a heavily sclerotized keel or ridge between the eyes, reaching its greatest development at the anterior border of the posterior eye; anterior eye removed from the anterior carapacial margin by a distance equal to four or five times the diameter of the posterior eye; lateral margins of carapace gently and evenly convex; posterior margin with six marginal setæ; length of carapace 1.35 mm.; greatest width along the posterior margin and equal to 1.5 mm.; ocular breadth about 0.8 mm. *Tergites* 2 through 10 divided; tergites 4 through 10 with each tergal half marked by a centrally located and more deeply pigmented spot; setæ subclavate, terminally truncate but not much widened; tergites 1 and 2 with eight setæ; other tergites with 10 to 16 setæ. *Sternites* 5 through 10 marked by pigmented spots similar to those of the tergites; division of some sternites weakly indicated; sternite 4 with eight marginal setæ; setæ of other sternites ranging from 10 to 14; setæ of anterior sternites acuminate, some setæ of posterior sternites weakly subclavate. *Abdomen* stout; 3.1 mm. long, about 2.5 mm. wide.

Chelicera as usual in members of the genus; longest blade of flagellum with three or four slender and long dentations placed a little distal to the midpoint; length of chelicera between 0.35 and 0.36 mm., width of base 0.21–0.22 mm.; length of movable finger about 0.26 mm. *Fixed finger* with relatively narrow lamina exterior; four retroconical teeth on the distal half of the inner finger margin, two smaller denticles on the inner margin of the apical tooth. *Movable finger* little curved; subapical lobe poorly developed, located approximate to the apical tooth; apical tooth little sclerotic; galea gently curved, simple, stout, terminally rounded and blunt, with conspicuous gland ducts passing from the base to the tip; serrula exterior of 19 ligulate plates; galeal seta not reaching nearly to the tip of the galea.

Palps (Fig. 11) with sculpturing and general shape of podomeres as usual in members of the genus; setæ of the maxillæ weakly subclavate like those of the tergites; setæ of all other podomeres of the palp, including both margins of the chelal hand, short, stout, clavate, and fairly numerous; setæ of the chelal fingers acuminate. Maxilla 0.81 mm. long, 0.46 mm. wide; trochanter including pedicle 0.67 mm. long, greatest width measured at about a right angle to the longitudinal axis 0.51 mm.; femur 1.50 mm. long, 0.39 mm. wide; tibia 1.17 mm. long, 0.42 mm. wide; length of chela without pedicle 2.05 mm., width 0.63 mm.; length of hand without pedicle 1.16 mm., depth 0.53 mm.; length of movable fingers 0.97 mm. Marginal teeth of chelal fingers weakly retroconical and strongly cusped in the distal part of the row, but flattened and acuspid in the proximal portion of the row of each finger; about 40 teeth on the movable finger and about 45 on the fixed finger. Movable finger with two tactile setæ, the fixed finger with seven, distributed as shown in figure 12.

Legs as typical in the subgenus *Maorigarypus*; anterior legs stout, posterior legs relatively slender; yellowish brown in color; tarsal claws moderately stout; setæ of the femur and the extensor margins of the tibial and tarsal podomeres short and subclavate to clavate, setæ of the flexor margins of the tibial and tarsal podomeres acuminate and relatively long. *First leg* with flexor margin of trochanter evenly convex, 0.35 mm. long, 0.25 mm. deep; pars basalis with both extensor and flexor margins weakly convex, the flexor flatly so, length measured along the extensor margin 0.35 mm., depth 0.24 mm.; pars tibialis subfusiform, length 0.40 mm., depth 0.27 mm.; tibia stout, the extensor margin weakly concave except in the proximal one-fourth, flexor margin convex, length 0.50 mm., depth 0.175 mm.; tarsal podomeres subcylindrical; metatarsus 0.21 mm. long, 0.13 mm. deep; telotarsus 0.225 mm. long, depth 0.11 mm. *Fourth leg* with extensor margin of trochanter highly arched or convex, flexor margin weakly but evenly convex, length 0.52 mm., depth 0.265 mm.; pars basalis subtriangular, 0.355 mm. long, 0.23 mm. deep; pars tibialis with extensor margin flatly convex, flexor

margin weakly concave and continuous with that of the pars basalis; length of pars tibialis measured along the extensor side 0.91 mm., depth 0.28 mm.; entire femur 1.16 mm. in length; tibia weakly S-shaped, length 0.75 mm., depth 0.18 mm.; both tarsal podomeres subcylindrical; length of metatarsus 0.275 mm., depth 0.135 mm.; telotarsus 0.28 mm. long, depth 0.13 mm.

Genital complex simple, opercula little differentiated; anterior operculum with eight setæ, chiefly along the medial portion of the posterior margin; posterior operculum with nine marginal setæ; cribiform plates relatively large; two median plates with one located anterior to the other, the posterior one the smaller; lateral plates subequal in size to the larger of the median plates.

Type locality. A single specimen, the female holotype, in a collection taken by Dr. P. J. Darlington in November, 1931, on the Margaret River, Western Australia.

Remarks. The present species may be separated from other members of the subgenus *Maorigarypus*, except *S. niger*, by the reduced number of tactile setæ on the fixed chelal finger and by the presence of two tactile setæ on the movable finger. From *S. niger*, *S. magnus* may be separated by the larger size of the body and appendicular podomeres, differences in shape of the palpal tibia, and differences in the nature of the carapacial eyes and the teeth of the chelal fingers, as well as other specifically significant characteristics.

Synsphyronus (Synsphyronus) callus sp. nov.

Figures 13-15

Female. Description based on two individuals, the holotype and one female paratype. Measurements of the paratype are given in parentheses immediately after the corresponding measurements for the holotype whenever the two show significant difference. Body ovate; body, carapace, and legs light to moderately brown; palps deeper brown in color; sculpturing as typical in members of the genus; anterior legs somewhat stout, posterior legs relatively more slender; body 3.3 (3.25) mm. long. *Carapace* as usual in the genus; eyes of each side separated by

about the diameter of the anterior eye, a sclerotic keel or ridge just anterior to the posterior eye; anterior eye of each side more or less circular in outline, posterior eye a little elliptical; four setæ along the posterior margin of the carapace; carapace 0.9 (0.95) mm. long, 0.1 mm. wide; ocular breadth about 0.55 mm. *Tergites* except the first divided; tergites 1 and 2 with four setæ, greatest number of setæ on any tergite is eight; all setæ subclavate; tergites 4 through 10 with a pigmented spot on each half-tergite. *Sternites* 4 and 5 nearly entire, sternites 6 through 10 divided; sternites 5 through 10 with darkly pigmented spots much as on the tergites; most sternites with six setæ, a few with eight setæ; setæ of anterior sternites usually acuminate, those of posterior sternites weakly subclavate. *Abdomen* oval in general shape, length about 2.4 mm., breadth about 1.9 mm.

Chelicera as usual in the genus; flagellum with the two short blades little more than one-fourth as long as the longest blade; the longest flagellar blade with one to three slender denticles near the center of the anterior margin; length of the chelicera about 0.23 mm., width of base 0.15 to 0.16 mm.; movable finger 0.165 (0.185) mm. long. *Fixed cheliceral finger* with three retroconical teeth on the distal half of the inner margin; inner margin of the apical tooth nearly edentate; apical tooth stout, terminally blunt; lamina exterior narrow. *Movable cheliceral finger* little curved, outer margin nearly straight; subapical lobe blunt, not well developed, approximate to the apical tooth in position; serrula exterior of 19 to 21 ligulate plates (condition and position of specimens preclude exact count); galea broken in all specimens, but evidently stout.

Palps (Fig. 13) with setæ of maxilla acuminate to subclavate; setæ of chelal fingers acuminate; all other palpal setæ clavate and relatively long; podomeres with the usual pseudoderm and sculpturing. Maxilla 0.47 (0.49) mm. long, 0.30 mm. wide; trochanter 0.42 mm. long, width at right angles to greatest length 0.34 (0.33) mm., width across the distal end 0.27 mm.; femur 0.98 mm. in length, 0.245 (0.25) mm. in width; tibia with length 0.73 (0.74)

mm., width 0.27 (0.28) mm.; length of chela without pedicle 1.38 (1.43) mm., width 0.39 (0.375) mm.; chelal hand without pedicle 0.68 (0.7) mm. long, 0.33 mm. deep; movable finger 0.7 (0.75) mm. in length. Chelal teeth retroconical and cuspid at the distal end of the row of each finger, conical to rounded and acuspid at the proximal end of the row; fixed finger with 45 to 50 teeth, movable finger with about 35 teeth. Movable finger with one tactile seta, fixed finger with seven; setæ distributed as indicated in figure 14.

Legs as in the subgenus *Synsphyronus* except that the tarsus of one or more legs may have a suture dividing the tarsus into two parts, which, however, are never articulate; incompletely fused metatarsus and telotarsus may occur on the same animal as has some of the tarsal podomeres completely fused; tarsal claws stout; pedal chæotaxy much as in *S. niger* described above. *First leg* fairly stout; trochanter 0.235 mm. long, 0.16 mm. deep; pars basalis with extensor margin nearly straight, flexor margin weakly convex, length 0.26 mm., depth 0.135 mm.; pars tibialis with extensor margin nearly straight except near the proximal end in the holotype but somewhat evenly convex in the paratype, flexor margin moderately convex, length 0.25 mm., depth 0.16 mm.; tibia with extensor margin nearly straight, length 0.31 mm., depth 0.105 mm.; miotarsus (fused metatarsus and telotarsus) 0.285 (0.305) mm. long, 0.08 mm. deep. *Fourth leg* relatively slender; trochanter about 0.34 mm. long (broken in holotype and length not determined), 0.16 (0.17) mm. deep; pars basalis with a slight protuberance at the distal end of the nearly straight flexor margin, 0.275 mm. long, 0.16 mm. deep; pars tibialis with extensor margin a little flatly convex except at the ends, flexor margin nearly straight, length 0.55 (0.54) mm., depth 0.19 (0.185) mm.; entire femur 0.75 (0.74) mm. long; tibia weakly S-shaped, length 0.52 mm., depth 0.115 (0.11) mm.; miotarsus subcylindrical or a little fusiform, 0.38 (0.39) mm. long, 0.095 (0.09) mm. deep.

Genital complex simple, anterior operculum with six setæ, posterior operculum with six (paratype) or eight (holotype) setæ; two median cribiform plates, arranged

one behind the other and with two or three very small accessory plates between; lateral plates subequal to or smaller than the anterior median plate.

Tritonymph. A single nymph, probably a tritonymph. Similar to the adult in general appearance and many details; appendages stouter and, especially the palpi, a little lighter in color; body 2.4 mm. long. *Carapace* 0.73 mm. long, 0.89 mm. wide across the posterior margin, ocular breadth about 0.45 mm. *Chelicera* much as in the adult; galea (Fig. 15) bifurcated at the very tip; serrula exterior of 16 plates. *Palpi* in general as in the adult, except podomeres somewhat smaller and stouter; femur 0.73 mm. long, 0.195 mm. wide; tibia 0.53 mm. long, 0.23 mm. wide; chela including pedicle 1.02 mm. in length, 0.30 mm. in width; length of hand including pedicle 0.53 mm.; movable finger 0.52 mm. long. Movable chelal finger with about 25 marginal teeth; one tactile seta, probably *t*, located somewhat distal to the midpoint of the finger. Fixed chelal finger with about 35 marginal teeth; six tactile setæ present and distributed as follows: *et* about one-third of the finger length from the tip; *it* on a level about one areolar diameter proximal to *et*; *est* located a little distal to the basal one-third of the finger; *ist* (?) and *ib* situated a little more than one-fifth of the finger length from the base of the finger and separated by less than one areolar diameter; a single exterior seta (probably *eb*) located near the base of the finger and considerably proximal to the level of *ib*. *Legs* similar to those of the adult but podomeres smaller and somewhat stouter.

Type locality. Australia. The female holotype from a collection taken on Rottnest Island, Western Australia, in December, 1931, by members of the Harvard Australian Expedition; the female paratype collected by Dr. P. J. Darlington at Cottesloe Beach, near Perth, Western Australia, on October 17, 1931; and the paratype nymph in a collection made by Dr. Darlington on October 24, 1931, at Rottnest Island, Western Australia.

Remarks. *Synsphyronus callus* is unique among members of the genus by having a combination of one tactile seta on the movable chelal finger and seven tactile setæ on the fixed chelal finger.

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EXPLANATION OF PLATES 2 AND 3

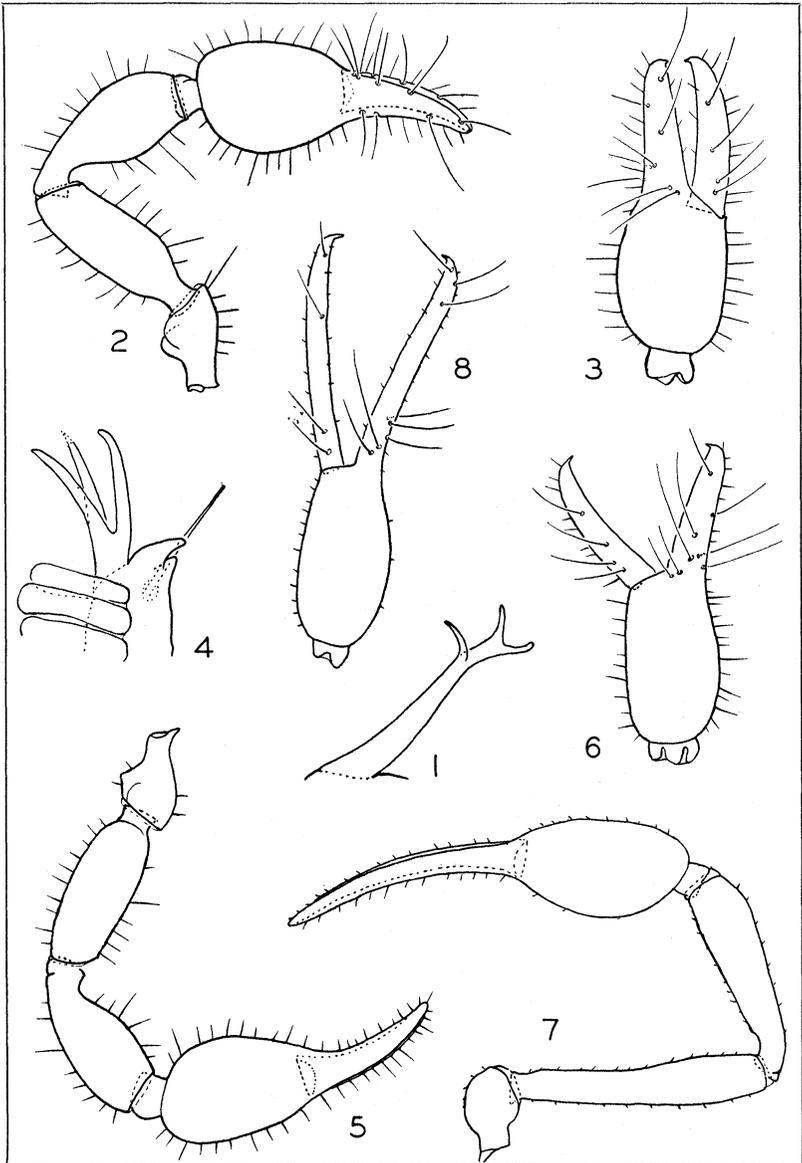
Drawings were made with the aid of a camera lucida. The tactile setæ are omitted from most of the dorsal views of the palpi and the marginal teeth are omitted from the exterior views of the chelæ.

PLATE 2

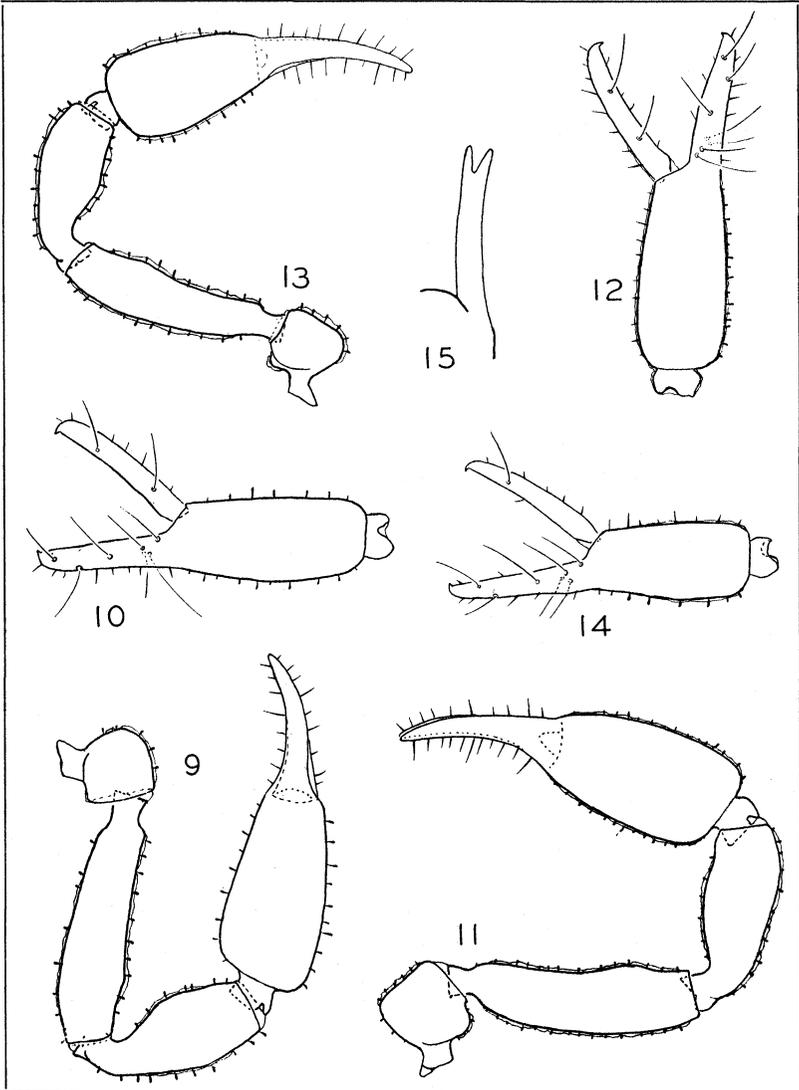
- Fig. 1. *Olpium zealandiense* sp. nov., galea, female holotype.
- Fig. 2. *Olpium zealandiense* sp. nov., dorsal view of palp, female holotype.
- Fig. 3. *Olpium zealandiense* sp. nov., exterior view of chela, female holotype.
- Fig. 4. *Xenolpium granulosum* sp. nov., tip of movable cheliceral finger and galea, female holotype.
- Fig. 5. *Xenolpium granulosum* sp. nov., dorsal view of palp, female holotype.
- Fig. 6. *Xenolpium granulosum* sp. nov., exterior view of chela, female holotype.
- Fig. 7. *Garypus longidigitus* sp. nov., dorsal view of palp, female holotype.
- Fig. 8. *Garypus longidigitus* sp. nov., exterior view of chela, female holotype.

PLATE 3

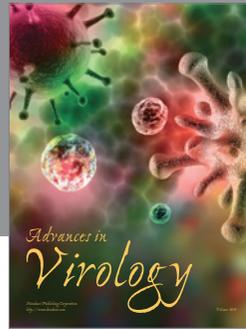
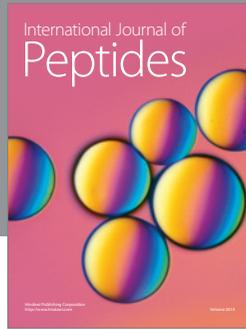
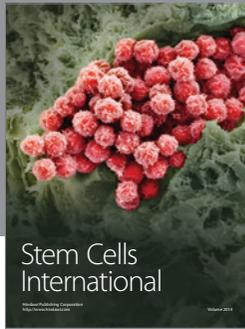
- Fig. 9. *Synsphyronus niger* sp. nov., dorsal view of palp, male holotype.
- Fig. 10. *Synsphyronus niger* sp. nov., exterior view of chela, male holotype.
- Fig. 11. *Synsphyronus magnus* sp. nov., dorsal view of palp, female holotype.
- Fig. 12. *Synsphyronus magnus* sp. nov., exterior view of chela, female holotype.
- Fig. 13. *Synsphyronus callus* sp. nov., dorsal view of palp, female holotype.
- Fig. 14. *Synsphyronus callus* sp. nov., lateral view of chela, female holotype.
- Fig. 15. *Synsphyronus callus* sp. nov., galea, nymphal paratype.



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