

AMERICAN MUSEUM NOVITATES

Number 842

Published by
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

April 13, 1936

THE AUSTRALIAN ANT GENUS *FROGGATTELLA*

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Forel, in 1902, based the genus *Froggattella* on the worker of a small Australian ant, which, owing to its aberrant characters, has had a rather varied career in myrmecological literature. Originally described by Lowne as long ago as 1865 as *Acantholepis kirbyi* and therefore assigned to what is now a very different subfamily, the Formicinae, it was correctly recognized by Mayr in 1870 as a dolichoderine and placed by him in his genus *Hypoclinea*. When the members of this genus were divided between *Dolichoderus* Lund and *Iridomyrmex* Mayr, Dalla Torre, in 1893, assigned *kirbyi* to the former. According to Forel, however, dissection shows that Lowne's ant deserves to rank as the type of an independent genus, because it has a gizzard like that of *Iridomyrmex* and quite unlike that of *Dolichoderus* and possesses a more developed sting than any dolichoderine genus, except *Aneuretus* Emery. In the dolichoderine fascicle of Wytsman's 'Genera Insectorum' (1912) Emery therefore placed *Froggattella* in his tribe Tapinomini, which contains the great majority of the genera of the subfamily (*Semonius*, *Liometopum*, *Turneria*, *Dorymyrmex*, *Iridomyrmex*, *Bothriomyrmex*, *Azteca*, *Forelius*, *Engramma*, *Tapinoma*, *Zatapinoma* and *Technomyrmex*). My discovery of the female and male of *Froggattella*, while I was accompanying the Harvard Australian Expedition in 1931, yields additional proof of its relationship to *Iridomyrmex* and at the same time confirms Forel's view of its status as an independent genus. One of his characters, however, should be dropped from the generic diagnosis. I have dissected out the gizzard and sting of a number of workers and females of *Froggattella* and am able to confirm his account of the gizzard as being essentially like that of *Iridomyrmex*, but not his statement that the sting is "fort distinct à la dissection, bien plus petit que chez *Aneuretus*, mais plus fort que chez les autres genres de la sous-famille." In all my preparations the sting shows no greater development than in *Dolichoderus* (*decollatus*) or *Iridomyrmex* (*detectus*). In all three forms the parts of the sting proper, namely the palpi, sting-sheath and lancets, are nonsclerotized, small and, making allowance for the differences in size of the three species, reduced to precisely the same vestigial condition,

though the quadrate, triangular and oblong plates are clearly differentiated and in part sclerotized as in other aculeates.

FROGGATTELLA FOREL

FOREL, 1902, Rev. Suisse Zool., x, p. 459 ♀; EMERY, 1912, 'Genera Insectorum,' p. 20 ♀.

WORKER.—Monomorphic, with hard integument. Head subcordiform, shaped like that of *Iridomyrmex*; eyes moderately large, feebly convex, just in front of the middle of the sides; ocelli absent. Mandibles well-developed, subtriangular, with dentate masticatory and minutely denticulate basal borders. Maxillary palpi 6-jointed, labial palpi 4-jointed. Clypeus rather large, ecarinate, with entire anterior border and the posterior border broadly rounded in the middle and extending back between the frontal carinae, which are rather widely separated and subparallel. Frontal groove and sutures bounding the frontal area indistinct. Antennae 12-jointed; funiculi somewhat enlarged but not clavate at their tips; first funicular joint as long as the following two subequal joints together. Thorax slender, with pronounced, sellate mesoëpinotal impression; promesonotal suture distinct, mesoëpinotal suture obsolete dorsally; pronotum large, hemispherical; mesonotum long, parallel-sided with marginate mesosterna; metanotal spiracles prominent, closely approximated, projecting dorsally just in front of the deepest portion of the mesoëpinotal impression; epinotum long, its base armed posteriorly with a pair of blunt, flattened, horizontal, subspatulate or subtriangular and sometimes incurved spines, which bear the epinotal spiracles on their expanded bases or even near their tips; declivity concave as in *Dolichoderus*. Petiole long, with very short anterior and very long posterior peduncle, the scale well-developed but low, thick, transverse, strongly inclined forward, fitting into the concave epinotal declivity. First gastric segment concave at the base, overlying the posterior peduncle of the petiole. Gizzard very similar to that of *Iridomyrmex*, with large, reflected calyx. Middle and hind tibiae with well-developed, pectinated spurs; tarsal claws simple.

FEMALE.—Much larger than the worker and closely resembling the female of *Iridomyrmex*. Eyes larger and more convex than in the worker; ocelli large, widely separated. Thorax elongate, the epinotum simple, without spines and with the spiracles in the usual position on the sides. Petiole stouter than in the worker, its scale much thicker, nodiform, its posterior peduncle much shorter. Gaster elongate-elliptical as in *Iridomyrmex*, the first segment narrowed and marginate anteriorly above a distinct basal cavity which overlies the peduncle. Fore wings with a long, closed submarginal cell, two large, complete cubital cells and a discoidal cell; pterostigma narrow, elongate, consisting of a darker-colored portion of the wing-membrane bounded anteriorly and posteriorly by distinct continuations of the costal and subcostal veins.

MALE.—Not larger than the worker, resembling the male of *Iridomyrmex*. Head broad, with very large, convex eyes and ocelli and very short cheeks. Mandibles small, pointed, edentate, not meeting in the middle line. Frontal carinae very short, as far apart as their distance from the lateral borders of the cheeks. Antennae short, gradually tapering toward their tips, 13-jointed, scapes very short, scarcely longer than the first funicular joint, which is not enlarged. Thorax voluminous, mesonotum without notauli (Mayrian furrows), convex anteriorly and overhanging

the short pronotum; epinotum sloping, rounded, without traces of spines. Petiole quite unlike that of the worker and female, being very small and short, nodiform, posteriorly broadly applied to the base of the subelliptical gaster, the first segment of which is narrowed anteriorly but does not overhang the petiole. Cerci present. Genitalia small, exserted. Fore wings with a long, closed submarginal cell, a discoidal cell and only a single cuboidal cell; pterostigma proportionally larger than in the female, consisting of a uniform thickening, in which the costal and subcostal veins are indiscernible.

Colonies of *Froggattella*, according to my observations, are nowhere common in Australia. Its geographical range extends from the Cape York Peninsula of Queensland to southern New South Wales and southwestward into South Australia. It probably occurs in the dryer parts of Victoria, but I have seen no specimens from that state, nor is there any record of its occurrence in Central or West Australia. Among my material I am able to distinguish at least seven different forms, six of which may be regarded as so many subspecies of *kirbyi* since at least most of them seem to be confined to particular geographical or ecological environments. The seventh form, from Port Lincoln, South Australia, is an undescribed species (*F. latispina*, new species).

Were the worker of *Froggattella* unknown, the female and male would be assigned without hesitation to the genus *Iridomyrmex*, in which even the sexual difference in the number of cubital cells of the fore wings has been observed. The worker *Froggattella*, on the other hand, differs greatly from the female not only in its smaller size and in the structure of the thorax and petiole but also, as will be shown in the specific description (*vide infra* p. 6) in the more superficial characters of sculpture, pilosity and color. To my knowledge the only ants that exhibit strictly comparable differences are the species of *Colobopsis* (genus *Camponotus*) belonging to the Fijian *dentatus* group, notably *C. bryani* Santschi and *manni* Wheeler, which I have discussed in a recent paper,¹ and certain species of the Neotropical subgenus *Myrmocladoecus* (genus *Camponotus*), especially *bidens* Mayr, *callistus* Emery, *corniculatus* Wheeler, etc., in which the thorax and petiole of the small workers are surprisingly like the corresponding parts of the worker *Froggattella* and quite unlike those of their conspecific females. These species of *Colobopsis* and *Myrmocladoecus*, however, possess forms (soldiers in *Colobopsis*, major and media workers in *Myrmocladoecus*) which bridge the gap between the smallest worker and the female caste. In *Froggattella* no such intermediates occur so that the contrast in structure between the worker and female is

¹ 'Some Aberrant Species of *Camponotus* (*Colobopsis*) from the Fiji Islands.' 1934, Ann. Ent. Soc. Amer., XXVII, pp. 415-424, 5 figs.

more startling. Though the genus is in all probability an ancient specialized offshoot of *Iridomyrmex*, which has monomorphic workers, we may perhaps assume that *Froggattella* originally possessed di- or polymorphic workers like *Colobopsis* and *Myrmocladoecus* and that the larger forms or soldiers have been lost completely during phylogeny. In this respect *Froggattella* would resemble such myrmicine genera as *Carebara*, *Erebomyrmex*, *Paedalgus* and most species of *Solenopsis*, which have also lost the major worker or soldier caste that still exists in *Solenopsis geminata* and in allied genera such as *Oligomyrmex*, *Aëromyrma*, etc. Since the extraordinarily similar thoracic and petiolar structure of the workers of *Froggattella* and of the smallest workers of certain species of *Colobopsis* and *Myrmocladoecus* represent quite independent lines of descent, we must assume that these ants exhibit an unusually interesting example of "convergence," or what German biologists have recently been calling "typovergence."

There are no data in the literature on the habits of *Froggattella kirbyi*, except Lowne's remark that he found it "under loose bark in spring and early summer." Colonies or portions of colonies may, perhaps, hibernate in such situations, but I am convinced that Lowne did not see the true nest. Although I made many myrmecological excursions in New South Wales in 1914 and 1931, I encountered *Froggattella* only on seven or eight occasions and always in the dry, open *Eucalyptus* bush. The workers were ascending and descending the trunks of small trees in straggling files and were evidently visiting coccids or psyllids on the foliage. On four occasions I succeeded in tracing the insects to their nests. Two of these, belonging to the subspecies *bispinosus* Forel, were observed near Southerland, N. S. W., on November 23 and December 1, 1914. Of the other two, which I refer to the typical *kirbyi*, one was found December 26, 1931, in the National Park, the other on the following day at Epping, N. S. W. All these nests were in small, dead, standing trees whose trunks measured only two and one-half to three inches in diameter. When broken open their wood was found to be tunneled throughout with narrow galleries occupied by a population of many hundreds of workers with quantities of brood in all stages. The National Park colony contained also dozens of mature males and winged females, the Epping colony a great number of males but few females. The workers were inoffensive like many of the smaller species of *Iridomyrmex* so frequently encountered in the Australian bush. Some of these (e. g., *nitidus* Emery) also regularly form very populous colonies in dead wood.

KEY FOR THE IDENTIFICATION OF THE *Froggattella* WORKERS

- 1.—Larger forms, averaging 2.3–3.7 mm.; head subcordate, decidedly broader and laterally more convex behind than in front; funicular joints all distinctly longer than broad; epinotal spines dorsoventrally flattened, compressed and subspatulate, bearing the spiracles on their expanded bases; meso- and epinotum sharply, longitudinally rugose. 2.
 Smaller form, averaging 2.2–2.5 mm.; head much narrower and laterally less convex behind the eyes; funicular joints 3–10 as broad as long; epinotal spines thicker, shorter, subtriangular, bearing the spiracles near their tips; meso- and epinotum sharply and finely reticulate, with faint longitudinal rugules. South Australia. *latispina*, n. sp.
- 2.—Mesoepinotal impression rather shallow, the base of the epinotum in profile rising from it gradually and with feeble convexity. 3.
 Mesoepinotal impression deeper and more pronounced, the base of the epinotum rising abruptly, with strong convexity. 5.
- 3.—Epinotal spines narrow and rather slender. Length, 3.5–3.7 mm. New South Wales. *kirbyi* Lowne (typical).
 Epinotal spines distinctly broader. 4.
- 4.—Superior border of petiolar node thick and entire; legs brown; gaster subopaque, with violet metallic reflections. Length, 2.5–3.5 mm. Queensland.
 *ianthina*, n. subsp.
 Superior border of petiolar node thinner, distinctly impressed in the middle; femora and tibiae black; gaster shining, with faint greenish reflections; head and thorax more distinctly microscopically reticulate. Length, 2.5–3.5 mm. Queensland. *nigripes*, n. subsp.
- 5.—Antennal scapes nearly or quite reaching the posterior border of the head; head, thorax and petiole red. Length, 2.5–3.3 mm. New South Wales.
 subsp. *bispinosa* Forel.
 Antennal scapes shorter; head, thorax and petiole paler. 6.
- 6.—Smaller and more slender (2.3–2.8 mm.); posterior border of head nearly straight; superior border of petiolar node broadly rounded; head, thorax, petiole and legs brownish yellow; gaster brown. New South Wales. *lutescens*, n. subsp.
 Larger and more robust (3–3.5 mm.); head broader and laterally more convex behind, its posterior border distinctly concave; antennal scapes shorter; epinotal spines broader; superior border of petiolar node broader, distinctly impressed in the middle; head, thorax and petiole yellowish red; femora and tibiae yellowish brown; gaster very dark brown. South Australia.
 *laticeps*, n. subsp.

Froggattella kirbyi (Lowne)

Acantholepis kirbyi LOWNE, 1865, The Entomologist, II, p. 333, ♂.

Hypoclinea kirbyi MAYR, 1870, Verh. Zool. bot. Ges. Wien, XX, p. 956, ♂.

Dolichoderus kirbyi DALLA TORRE, 1893, 'Cat. Hymen.,' VII, p. 159, ♂.

Froggattella kirbyi FOREL, 1902, Rev. Suisse Zool., X, p. 459, ♂; EMERY, 1912,

'Genera Insect.,' p. 21, ♂.

WORKER.—Length, 3.5–3.7 mm.

Head distinctly longer than broad, decidedly broader behind than in front,

with rather straight, anteriorly converging cheeks, the sides behind the eyes convex, the posterior corners broadly rounded, the posterior border broadly and feebly excised. Eyes elliptical, situated about one and one fourth their length from the posterior clypeal suture. Mandibles convex, with rounded external border, the masticatory border with 7-8 teeth, the two apical teeth large, the others subequal, broad and directed very slightly backward. Clypeus feebly and evenly convex, its anterior border straight and transverse in the middle, sinuate on each side. Frontal area large, triangular, not impressed, indistinctly defined. Antennal scapes narrow and distinctly flattened at the base, widening apically, not reaching the posterior border of the head by a distance equal to the greatest diameter of their tips; first funicular joint twice as long as broad; joints 7-10 as broad as long, terminal joint not longer than the two preceding joints together. Pronotum without the neck as broad as long, convex above and laterally; mesonotum less than half as broad as the pronotum, rectangular, about one-third longer than broad, its dorsal outline in profile straight and sloping to the mesoëpinal impression with the dorsally projecting metanotal spiracles just behind its middle third. Epinotum about as long as the mesonotum, widened behind ventrally, its base in profile rising in a gradual even curve from the mesoëpinal impression and becoming straight and horizontal where it is continued into the spines. Seen from above the bases of the spines are angularly widened, their blunt, flattened, distal portions rather narrow and subparallel, more than twice as long as broad, slightly deflected at their tips. Declivity of epinotum shorter than the base, semicircularly concave in profile. Petiole from above fully twice as long as broad, broader in front than behind, with posteriorly slightly concave sides, the inclined scale with straight, transverse summit and rectangular corners. In profile the petiole is fully twice as long as high, the scale very blunt, projecting beyond the anterior border of the segment. Legs long and stout, the femora, especially the fore pair, distinctly thickened in the middle.

Smooth and shining, with fine, sparse, piligerous punctures; antennal scapes more densely punctulate; neck sharply, base of epinotum more superficially reticulate; mesonotum, gaster and legs microscopically and superficially shagreened; mesonotum, mesoëpinal impression and sides of epinotum regularly, sharply and longitudinally rugose, with the interrugal spaces finely and rather superficially reticulate. The rugae, which are somewhat less numerous in the mid-dorsal region of the mesonotum, pass without interruption across the impression which represents the mesoëpinal suture.

Hairs and pubescence white or pale yellowish, the former generally distributed, erect, sparse, delicate, of uneven length, longer on the body than on the appendages; pubescence fine, appressed, moderately dense, distinct only on the clypeus, funiculi, coxae and tibiae.

Bright red or yellowish red; gaster black, with blue reflections; legs, including the coxae and sometimes the petiole, brown; tarsi yellowish; teeth of mandibles, tips of antennae and last joint of tarsi blackish.

FEMALE.—Length, 7-8.5 mm.; fore wings 7.5 mm.

Head resembling that of the worker, but proportionally larger, broader anteriorly, with broader and more deeply concave posterior border, sharper posterior corners, larger and more convex eyes. Frontal area more distinct, but not impressed. Antennal scapes proportionally shorter, their tips reaching only to the lateral ocelli or

slightly beyond. Pronotum narrowed toward the neck, much narrower than the mesonotum, which is longer than broad, produced and narrowly rounded anteriorly, scutellum as long as broad, epinotum subtrapezoidal from above, as long as broad, narrowed posteriorly, its base in profile moderately convex, somewhat sloping, passing rather abruptly into the declivity, which is distinctly concave and not more than a third as long as the base. The epinotal spines of the worker are represented by a very small, low welt on each side at the posterior end of the base. Petiole from above only about one-fourth longer than broad, as broad behind as in front, with concave sides and with the scale of the worker replaced by a transversely elliptical node, twice as broad as long, flattened above, with nearly perpendicular anterior and sloping posterior surface and the posterior peduncle much shorter than the node. Gaster long, with subparallel sides, the first segment narrowed anteriorly, with concave, marginate median border and sharply marginate anterior corners; in profile with the base deeply concave at its junction with the postpetiole.

Subopaque, or lustrous; legs and petiole more shining; head and thorax punctate-rugulose, the rugules delicate, longitudinal on the clypeus, front and mesonotum transverse on the occiput, pronotum and base of epinotum, where they are arcuate and coarser. Mandibles finely reticulate and coarsely and sparsely punctate. Petiole, gaster, scapes and legs finely reticulate-punctate.

Hairs as in the worker but the appressed pubescence much more abundant, longer and investing all parts of the body except the petiole, though nowhere concealing the integument except on the gaster where it becomes very dense and snow white at the posterior border of each segment, thus forming a rather broad, sharply defined, band. The pubescence of each band converges sharply at the mid-dorsal line but turns laterally on each side, becoming transverse on the sides of the gaster.

Head, thorax and petiole dull yellowish red; gula, epinotum and petiole somewhat paler; sides of clypeus, front and vertex blackish brown as are also the scutellum, a large spot on the posterior portion of the mesonotum, continued forward as a narrow median vitta and two broader parapsidal vittae and a large elliptical spot on each side, covering the posterior portion of the pronotum and the mesopleurae. Legs dark brown, with the coxae and extensor surfaces of the femora and tibiae black; gaster deep black except for the sharply contrasting fasciae of dense white pubescence. Wings colorless, with pale brown veins and dark brown pterostigma.

MALE.—Length, 3–3.5 mm.

Head small, about one-fourth broader than long through the eyes, flattened; ocelli transversely elliptical, the anterior one surrounded in front by a deep semi-circular groove, the posterior directed laterally and connected by a straight, thick, transverse welt. Clypeus with a circular median convexity, its anterior border rounded and somewhat projecting in the middle, sinuate on each side, frontal area convex, triangular, slightly longer than broad. Antennal scapes only one and one-half times as long as broad; first funicular joint slightly shorter than the second, which like all the joints except the last is nearly as broad as long. Thorax much broader than the head, the large mesonotum as broad as long; scutellum as long as broad, shaped like the mesonotum but reversed; epinotum evenly rounded and sloping in profile, without distinct base and declivity. Petiole nearly twice as broad as long, wider behind than in front, in profile higher than long, the node broadly rounded and medially impressed above; postpetiole broadly articulated to the gaster so that the

anterior slope of the node is long and steep, the posterior slope very short and rounded. Stipites of genitalia very small, subtriangular, their tips rounded, their bases very largely membranous; volsellae long, slender, falcate, with acute tips; sagittae broad, subelliptical, with finely serrate ventral borders.

Shining, finely reticulate or shagreened, with fine scattered, piligerous punctures.

Pilosity as in the worker but shorter and sparser; appressed pubescence generally distributed, as in the female, but shorter and much more dilute, not dimming the shining integument, absent on the petiole.

Black; mandibles, mouth parts, tibiae, tarsi, petiole and genitalia piceous; first funicular joint and articulations, veins and pterostigma of wings paler and more yellowish brown.

The type locality, as recorded by Lowne, is Sydney. I have three topotypes collected by Mr. W. W. Froggatt and have seen many specimens from the following localities in New South Wales: National Park ♀ ♀ ♂, Hornsby ♀, and Southerland ♀ (Wheeler); Epping ♀ ♀ ♂ (Wheeler, F. R. Taylor); La Pouse ♀ (W. M. Mann); Asquith ♀ (H. P. Schrader).

I believe that I am correct in my identification of this, the typical form of the species. Unfortunately Lowne's and Mayr's descriptions are deplorably inadequate. Forel, who examined Lowne's type in Mayr's collection at Vienna says only that it differs from his own var. *bispinosa* in having the head narrower behind and not or scarcely excised and in having the base of the epinotum rising less abruptly from the mesoepinotal impression.

Froggattella kirbyi nigripes, new subspecies

WORKER.—Length, 2.8–3.3 mm.

Very similar to the typical *kirbyi*, but differing in the following characters: epinotum shorter, the bases of its spines less angularly set off from their terminal portion, which is shorter, broader and more incurved. Petiolar node somewhat less inclined forward, its summit in profile thinner and more pointed, seen from behind transverse and distinctly impressed in the middle.

Microscopic reticulation of head and thorax distinctly coarser and more pronounced, especially between the longitudinal rugae of the meso- and epinotum. These latter regions and the petiole are also darker and more brownish than the head and pronotum. Tips of scapes, last joint of funiculi, lower portions of pleurae and coxae and in some specimens also the vertex of the head dark brown or fuscous; femora and tibiae black; gaster black with greenish reflections.

Thirteen specimens taken by Dr. P. J. Darlington during May, 1932, at Coen, on the Cape York Peninsula, Queensland.

Froggattella kirbyi ianthina, new subspecies

WORKER.—Length, 2.5–3.5 mm.

Closely resembling the two preceding forms and like them with shallow meso-

epinotal impression, without anteriorly abrupt base of the epinotum, but the head is distinctly narrower and less convex laterally, the antennal scapes somewhat shorter, the epinotal spines broader and shorter than in *nigripes* with their bases more expanded and more angulate laterally. Color and sculpture of head and thorax as in the typical *kirbyi*, but with the rugae of the meso- and epinotum less uniform. Legs paler brown than in the typical *kirbyi*. Gaster subopaque, densely and sharply shagreened, with pronounced metallic violet reflections.

Two specimens which I took November 10 and 12, 1914, near Brisbane, Queensland. The one taken on the latter date is the larger and may be regarded as the type, the other has the gaster more shining and seems to be transitional to the typical *kirbyi*. The true status of this subspecies cannot be determined without additional material.

Froggattella kirbyi, subspecies **bispinosa** Forel

Froggattella kirbyi var. *bispinosa* FOREL, 1902, Rev. Suisse Zool., X, p. 460, ♀; EMERY, 1912, 'Genera Insect.,' p. 21, ♀.

WORKER.—Length, 2.5–3.3 mm.

This form differs from the typical *kirbyi* and the preceding subspecies in its distinctly smaller average size, in having the head somewhat broader and laterally more convex behind, the occipital border more concave, the antennal scapes nearly or quite reaching the posterior border and the mesoepinotal impression distinctly deeper, with the base of the epinotum rising anteriorly with a more abrupt curve and forming a more distinct angle with the horizontal posterior portion. The superior border of the petiolar node seen from behind is feebly convex, with more rounded lateral corners. The epinotal spines are like those of the typical *kirbyi* as are also the color, pilosity and sculpture.

Forel records this form from Sydney and Oatley, New South Wales (W. W. Froggatt). I assign to it a large number of workers which I collected November 23 and 26 and December 2, 1914, at Southerland, near Sydney.

Froggattella kirbyi lutescens, new subspecies

WORKER.—Length, 2.3–2.8 mm.

Structurally very similar to the subsp. *bispinosa* but averaging smaller; scapes not reaching to the posterior border of the head which is nearly straight. Microscopic reticulate sculpture even feebler and more superficial so that the head and pronotum are smoother and more shining, the interrugal reticulation of the meso- and epinotum less distinct. Color of head, thorax and petiole paler and more brownish yellow, head slightly darker; mandibles, clypeus and antennae yellow; legs brownish yellow, concolorous with the thorax and petiole; gaster dark brown, the first segment paler brown or in some specimens even yellowish at the base.

Seven workers taken by Mr. W. W. Froggatt near Sydney, New South Wales, and received from Mr. John Clark. These specimens were labelled "var. *bispinosa* Forel, cotypes." It is quite possible that Forel based his variety on specimens of what I regard as two different forms.

His description, however, is certainly more applicable to the form for which I have retained his name.

***Froggattella kirbyi* laticeps, new subspecies**

WORKER.—Length, 3–3.5 mm.

More robust than the typical *bispinosa*, head proportionally larger and broader behind, with sharper, less rounded posterior corners and more deeply excised posterior border. Antennal scapes decidedly shorter, not attaining the posterior border of the head by at least one and one-half times their greatest diameter. Pronotum, excluding neck, broader than long; mesonotum only one and one-fourth times as long as broad; mesoepinotal impression as in *bispinosa*, but the epinotum is longer, its spines broader. Superior border of petiole seen from behind distinctly impressed in the middle, with more angular corners than in *bispinosa*. Sculpture and pilosity as in that subspecies except that the rugae on the dorsal surface of the mesonotum are finer and the gaster is more sharply shagreened. Head, thorax and petiole of a distinctly paler, more yellowish red or reddish yellow, the femora and tibiae yellowish brown, the gaster very dark brown instead of black.

Described from numerous specimens collected by Mr. B. A. Feuerherdt at Lucindale, South Australia.

***Froggattella latispina*, new species**

WORKER.—Length, 2.2–2.5 mm.

Smaller than any of the subspecies of *kirbyi* and differing in the shape of the head and epinotal spines, in sculpture, etc. Head longer in proportion to its width, narrowed posteriorly so that the sides behind the eyes are less convex and more nearly parallel, the posterior border nearly straight; antennal scapes very short, not reaching the posterior border of the head by fully twice their greatest diameter; funicular joints 3–10 distinctly shorter than in the various forms of *kirbyi*, not longer than broad. Eyes slightly more convex. Pronotum less convex, broader than long without the neck; promesonotal suture more deeply impressed; mesonotum shorter, scarcely one and one-fourth times as long as broad; metanotal spiracles less projecting dorsally; mesoepinotal impression somewhat deeper and more abrupt than in the subsp. *bispinosa*; epinotum somewhat longer than broad, the base convex, rising abruptly from the mesoepinotal impression and terminating behind in two very broad, thick spines only slightly longer than the width of their bases from which they taper rapidly to very blunt tips. They are not curved inward and their mesial borders when seen from above form a perfect semicircle with the median posterior border of the base included between them. The epinotal spiracles are borne on the sides of the spines near their tips. Epinotal declivity much shorter and much more deeply concave in profile than in any of the forms of *kirbyi*. Petiole distinctly shorter but the node shaped as in the subsp. *bispinosa* with its superior border feebly convex when seen from behind.

Microscopic reticulation of the body and appendages much more pronounced than in any of the other forms of *kirbyi*, especially on the head, meso- and epinotum. On the front the reticulation becomes longitudinal so that the surface has a finely granulated-striolate appearance. On the meso- and epinotum it is even coarser and

the sharp longitudinal rugae of *kirbyi* are reduced to fine granular rugules except on the mesoëpinotal impression which is traversed by the usual sharp rugae or costae. Pronotum, epinotal declivity and petiolar node much smoother and more shining than the head; costae on the posterior peduncle of the petiole well developed.

Erect hairs white and distributed much as in *kirbyi* and its subspecies but distinctly shorter on the body and decidedly less numerous on the legs.

Head yellowish red; coxae, thorax and petiole slightly paler; mandibles and antennae yellow; last joint of funiculi fuscous; femora and tibiae brown; gaster brown-black.

Described from 10 workers collected by Mr. A. M. Lea at Port Lincoln, South Australia.