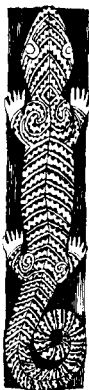


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THE STATUS OF THE MAJID BRACHYURAN GENUS  
*CAMPBELLIA* BALSS

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ABSTRACT

The monotypic genus *Campbellia* Balss, 1930, known only from Campbell Island, 400 miles south of New Zealand, is reduced to synonymy with *Jacquintia* Rathbun, 1915, following examination of juvenile specimens of *J. edwardsii* (Jacquinot, 1853). The description of *Campbellia kohli* proves to have been based on a juvenile specimen of *J. edwardsii*, a southern New Zealand littoral to deep-water species.

INTRODUCTION

THE expedition of Dr L. Kohl-Larsen to the Subantarctic Islands of New Zealand and South Georgia visited Campbell Island, about 400 miles due south of the New Zealand mainland, in 1924. Among the numerous specimens of decapod Crustacea that were collected there, a small male crab, 11 mm in carapace length, taken in Perseverance Harbour at a depth of 42 metres, was assigned by Dr Heinrich Balss (Balss, 1930), the noted German carcinologist, to a new genus and species, *Campbellia kohli*. The new genus was stated by Balss to be closely related to the genus *Leptomithrax* Miers, 1876, and to belong to the majid brachyuran subfamily Majinae (as restricted by Balss, 1929). On the other hand it was believed to show a transition to the subfamily Mithracinae (for an account of subfamilies, see Garth, 1958) in the expansion of the basal antennal article to form a floor to the orbit. Despite the activities of several expeditions to the southern islands of New Zealand in subsequent years, the Cape Expedition of 1941 to 1946, later trips by Drs R. A. Falla and R. K. Dell, and others, and recent cruises by the New Zealand Oceanographic Institute, Wellington, this

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unusual crab has not again been recognized. This may, in part, have been due to its small size.

It has already been stressed that *Campbellia kohli* was described from a small specimen. Two features of this species, the poorly developed chelipeds and the incomplete fusion of the basal antennal article to the surrounding parts (see Balss, 1930: figs. 1 and 4), would seem to indicate that the specimen described by Balss was a juvenile, the adult being as yet unknown. In support of this contention many species of majid crabs are now known to undergo rather drastic changes with growth during their postlarval life, particularly with regard to shape and ornamentation. This is especially well exemplified by *Eurynolambrus australis* H. Milne Edwards & Lucas, 1841, a New Zealand species known from intertidal and shallow offshore waters around these coasts. Up till very recently this species was regarded as belonging to the oxyrhynch family Parthenopidae. However, Kreft (1952) was able to show that it actually belongs to the Majidae, and that while in the adult the carapace is very much broader than long and typically parthenopid-like, the young postlarval crab has the narrowly pyriform carapace characteristic of majids.

While the southern islands of New Zealand, of which the Auckland and Campbell Islands have been the more extensively studied, are recognized as possessing a poor crab fauna in terms of numbers of species, two majids are well known from there: *Leptomithrax australis* (Jacquinot, 1853) and *Jacquinotia edwardsii* (Jacquinot, 1853). Both these species have a characteristically southern distribution extending northward to the New Zealand mainland only as far as Otago, and range from intertidal waters down to more than 200 fm. Furthermore, both are large, reaching in the adult a size of 100 to 150 mm in carapace length.

The point to determine here is whether or not *Campbellia kohli* is a juvenile of any known majid species, the two most likely being *Leptomithrax australis* and *Jacquinotia edwardsii*. The diagnostic features of the genus *Campbellia* were given by Balss as: carapace pyriform, rostrum short, and downwardly flexed at the tips; orbit including an intercalated spine ("interkarladorn" of Balss) closely approximated to the supraorbital cave and postorbital lobe, the latter closely approximated to the laterally expanded basal antennal article ventrally; ambulatory legs of moderate length and flattened, the lateral and medial surfaces bearing flattened lobes. While the double rostrum, seven-segmented abdomen, and the inclusion of an intercalated spine in the orbit, clearly place *C. kohli* in the Majinae, s.l., and the distally notched merus of the third maxillipeds relate it to *Leptomithrax* species, the close proximity of the three parts of the supraorbital margin and the lateral expansion of the basal antennal article greatly favour its inclusion in the Mithracinae, contrary to the opinion of Balss. For such reasons as this *C. kohli* cannot be identical with *Leptomithrax australis*.

The sole New Zealand representative of the Mithracinae is *Jacquinotia edwardsii*, and the points of resemblance between this species and *C. kohli* are numerous: apart from those uniting them in the same subfamily they include the short rostrum of two flattened, triangular lobes fused for at least the basal half, the possession of two hepatic spines and five marginal branchial spines of which the last is subdorsal and remote from the margin, the densely granular and sparsely tuberculated

carapace, the distally notched merus of the third maxillipeds, the tuberculated chelipeds and seven-segmented abdomen. The principal differences between the two species include the marginally spiniform rostrum and supraorbital cave, prominent intercalated supraorbital spine, narrow carapace, distally separate rostral spines and prominently lobate ambulatory legs of *C. kohli*. In adults of *J. edwardsii*, however, the rostrum and supraorbital cave are provided with small tubercles laterally and the ambulatory legs are also weakly tuberculated.

During examination of small specimens (37 mm in carapace length) labelled "*Jacquiniotia edwardsii*" in the collections of the Dominion Museum, Wellington, the above resemblances between *Campbellia kohli* and *Jacquiniotia edwardsii* were noticed. Examination of smaller specimens proves conclusively that the two species are synonymous. The remainder of the present paper is devoted to a short description of juveniles of *J. edwardsii* and a discussion of growth changes in this species. The terminology used throughout this paper is mainly that employed by Rathbun (1925).

#### ACKNOWLEDGEMENTS

I wish to thank Dr R. K. Dell of the Dominion Museum for making available to me the interesting small specimens of *Jacquiniotia edwardsii* from Dominion Museum trawling expeditions and also the larger specimens in the general collections of the Museum. I am grateful to Dr J. C. Yaldwyn, Australian Museum, Sydney, formerly of the Dominion Museum, for helpful discussion, and for reading the manuscript.

#### SYSTEMATICS

Genus *Jacquiniotia* Rathbun, 1915

(Syn. *Prionorhynchus* Jacquiniot, 1853, name preoccupied).

*Jacquiniotia edwardsii* (Jacquiniot, 1853). Figs. 1-4.

*Prionorhynchus edwardsii* Jacquiniot, in Jacquiniot & Lucas, 1853: 8, pl. 1, fig. 1. Miers, 1876: 11. Filhol, 1886: 367, pl. 42, figs 1-4. Rathbun, 1892: 243. Hodgson, 1902: 230. Chilton, 1909: 608; 1911: 290. Thomson, 1913: 237; 1921: 97. Stephensen, 1927: 292. Chilton & Bennett, 1929: 742.

*Jacquiniotia edwardsii*, Balss, 1930: 200. Richardson, 1949: 63, fig. 26.

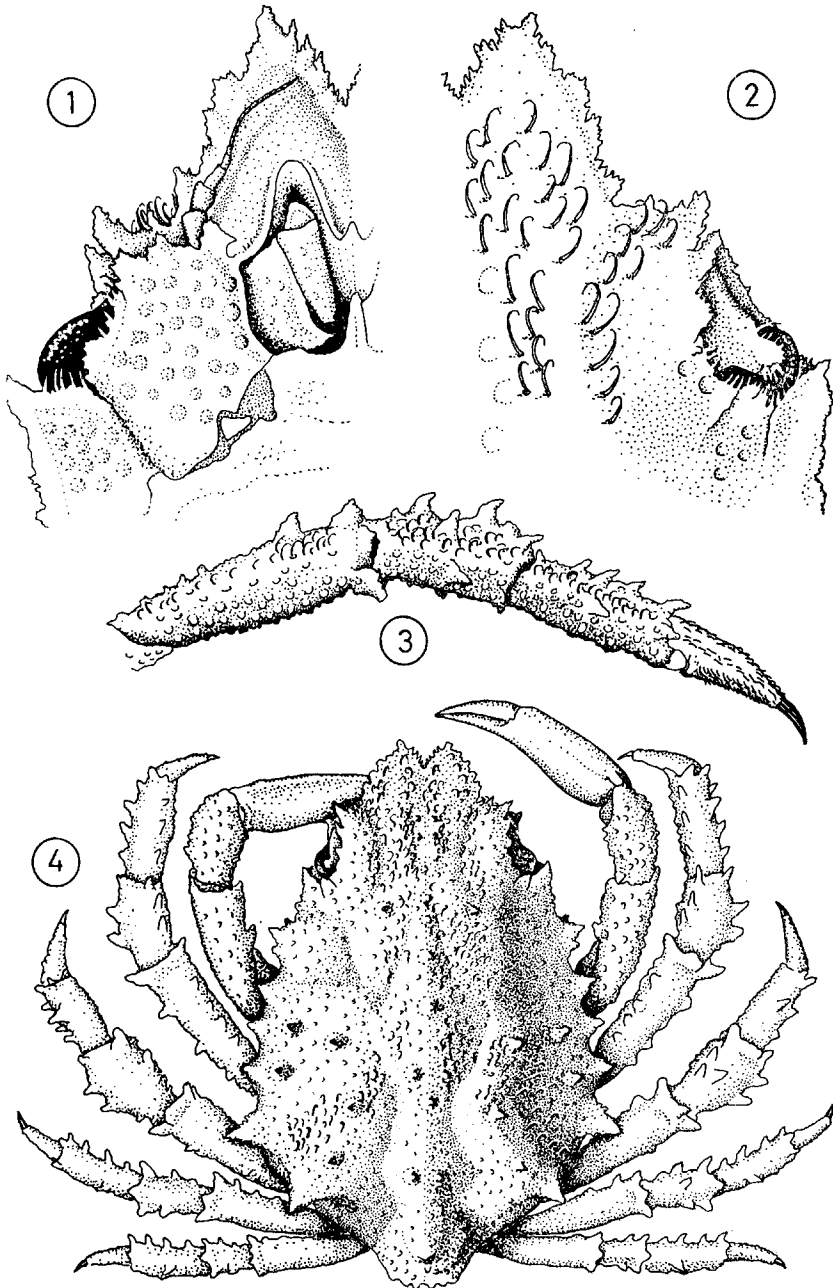
*Campbellia kohli* Balss, 1930: 200, figs 1-4. Richardson, 1949: 64, fig. 29.

Material examined.—A total of 27 specimens in the collections of the Dominion Museum, Wellington:

B.S. 189: off East Otago Coast, edge of Canyon A, 45° 38' S., 171° 02' E., 120 fm, 6/2/1955, m.v. *Alert*, 1 male (Z.Cr. 591), 21 mm.

B.S. 191: off East Otago Coast, edge of Canyon C, 45° 47' S., 171° 07' E., 250-300 fm, 16/8/1955, m.v. *Alert*, 1 male (Z.Cr. 607), 36 mm; 2 males, 3 females (Z.Cr. 567), males, 37, 38 mm, females, 34-49 mm.

B.S. 202: off Taiaroa Head, Otago Peninsula, 45° 44' S., 171° 02' E., 75 fm, 23/1/1957, m.v. *Alert*, 1 male, 16 mm.



*Jacquinotia edwardsii* (Jacquinot, 1853), 16 mm male from off Taiaroa Head, Otago, 75 fm (Dom. Mus. B.S. 202); 1, infraorbital detail,  $\times 13$ ; 2, supraorbital detail,  $\times 13$ ; 3, first right ambulatory leg,  $\times 8$ ; 4, dorsal view of whole specimen,  $\times 4$ .

Off Otago, trawled, 1953, presented A. Black, 1 male, 71 mm, 1 female, 74 mm.

Ranui Cove, Auckland Islands, on rocks at low water, 8/11/1954, coll. R. A. Falla, 1 female, 117 mm.

In addition a series of 16 specimens (14 males, 95-195 mm; 2 females, 105, 109 mm) from Campbell Island, mostly Perseverance Harbour.

Description of Juvenile Stage.—The following description is based on the 16 mm male from B.S. 202.

Carapace narrowly pyriform, surface granular and weakly tuberculate, regions well defined, cardiac and intestinal regions tumid, cardiac region with two submedial tubercles, intestinal region with a single large tubercle; dorsal surface with short, curled hairs covering rostrum and extending backward and outward in a line from rostrum on to branchial regions on each side of midline to an area just behind widest part of carapace, also along medial margin of orbital region and around lateral margins of carapace. Lateral margins bearing seven flattened, triangular spines provided, at least basally, with accessory spinules, two hepatic, the second barely half the first, five branchial, the first three subequal, subequidistant, along anterolateral margins, fourth spine at widest part of carapace, twice length of preceding spines, fifth  $\frac{2}{3}$  fourth, subdorsal, remote from margin. Branchial regions with five tubercles dorsally, three along medial margins, two anterolateral, above second and third marginal spines.

Rostrum short ( $\frac{1}{8}$  carapace length), of two strongly flattened, depressed, broadly triangular lobes fused for basal half, margins provided with irregularly shaped spinous lobes. Orbit consisting above of supraorbital cave, intercalated spine and postorbital lobe, all three parts closely approximated, intercalated spine separated from cave and postorbital lobe by distinct fissures; cave broad and bearing laterally several spinous lobes, of which two, situated anterolaterally, are longer than the others; intercalated spine broadly subtriangular, truncate to emarginate distally; postorbital lobe deeply excavated anteriorly, laterally tuberculate, especially basally; eyestalk stout, when retracted fitting into postorbital "cup", thus only partly visible in dorsal view and almost completely hidden in ventral view, cornea terminal, large, ovoid. Basal antennal article broadly expanded laterally to meet ventral edge of postorbital lobe, subpentagonal, provided laterally and anteriorly with short, broad, spinous lobes.

Third maxillipeds with subquadrate merus of endopodite deeply notched distally, a broad, blunt, triangular tooth at outer angle of notch.

Chelipeds scarcely as long as carapace, merus and carpus tuberculated all over, propodus tuberculate to granular basally, diminishing distally, fingers closely approximated along inner edges, not gaping. Ambulatory legs short, the first almost as long as cheliped, following legs decreasing slightly and uniformly to the last which is about half length of carapace; subtrigonal and dorsally flattened, provided laterally and medially with prominent, flattened lobes, merus in first leg with seven lobes medially and five laterally, carpus with three medial, two lateral and one mid-dorsal overlying distal edge, propodus with three on each side and three mid-dorsal; number of lobes, particularly on meri, decreasing in following legs.

Abdomen seven-segmented, widest at base of third segment, narrowing to base of sixth, then widening slightly, seventh segment with a strongly convex margin. Sternal and abdominal surfaces granular.

Measurements.—Described specimen: length 16 mm, width 10.5 mm, rostral length 2 mm, rostral width 3.5 mm, cheliped 15.5 mm, first ambulatory leg 14 mm.

#### DISCUSSION AND CONCLUSIONS

The small specimen described above differs from *Campbellia kohli*, as described by Balss (1930), only in the relative prominence of some of the spinous marginal lobes of the rostrum and supraorbital cave, the shape of the distal edge of the intercalated spine, which Balss (1930: fig. 2) describes as acute, and in the number and arrangement of the mid-dorsal tubercles of the carapace and flattened lobes of the ambulatory legs. The differences between this specimen and that described by Balss are so slight, and the agreement otherwise so complete that I would not hesitate to assign them to Balss's species. The 21 mm male has a slightly less spinulose appearance and the marginal spines appear very slightly more prominent, but in every other feature exactly resembles the smaller specimen.

From the specimens available to me it is possible to trace a general change in those features, present in *Campbellia kohli* and the specimens just mentioned, and separating Balss's species from the much larger *Jacquinotia edwardsii*, until the narrow spinulose carapace, distally separate rostral spines, distinct intercalated spine and prominently lobate ambulatory legs become the broad, tuberculate carapace, distally fused rostral spines, reduced intercalated spine, and tuberculate ambulatory legs of the latter species. In adults of *J. edwardsii* the intercalated spine is a broadly triangular, flattened lobe squeezed tightly between the supraorbital cave and postorbital lobe, the basal antennal article is subrectangular with blunt margins, the carapace remains granular but the few tubercles on the dorsal surface become more prominent, and there are no curled hairs: the chelae become enlarged and the fingers gape basally in the male.

From the above discussion it may be safely concluded that while the small specimens, 16 and 21 mm in carapace length, are clearly conspecific with *Campbellia kohli* they must, on the other hand, be regarded as juveniles of *Jacquinotia edwardsii*. *Campbellia kohli* Balss, 1930, is therefore a junior subjective synonym of *Jacquinotia edwardsii* (Jacquinot, 1853) and the genus *Campbellia* Balss, 1930, similarly becomes a junior objective synonym of *Jacquinotia* Rathbun, 1915 (= *Prionorhynchus* Jacquinot, 1853), the two genera being based on the same type species.

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