

soni the merus of the second pereopod is longer than the carapace whereas in *A. spinulosa* it is shorter than the carapace; and the dactyli of the pereopods are slender and similar on all legs in *D. thomsoni*, whereas they are falciform in the last two legs of *A. spinulosa*. Also, as Barnard (1950: 25) pointed out, *A. spinulosa* generally occurs in shallower water than does *D. thomsoni*.

If this interpretation is correct and *Achaeopsis* and *Dorhynchus* are retained as separate genera, then two other species assigned to *Achaeopsis* sensu lato by Griffin (1966b), *Achaeopsis rostrata* Sakai, 1932, from Japan and *Stenorhynchus ramusculus* Baker, 1906, from South Australia and New Zealand, both of which have slender legs, should be transferred to *Dorhynchus*, and *Achaeopsis* should be restricted to include only the type-species, *A. spinulosa*.

Although *Dorhynchus thomsoni* is now considered to be widely distributed ["virtually cosmopolitan," Griffin (1966b:35)], we agree with Bouvier (1940:351), Monod (1956:523), and Guinot (1967a:289, footnote), all of whom question whether the populations from different areas are conspecific. In the collection of the Smithsonian Institution, for example, there is one lot from Chiloe Island, off Chile (USNM 156225), in which the rostrum is spinulose ventrally, rather than smooth, and in which there are three distal spines on the meri of the pereopods, rather than one as shown for *D. thomsoni* by Christiansen (1969:106, fig. 44). Material of *Dorhynchus thomsoni* should be examined from throughout its range to determine the relationship of the various populations.

Dorhynchus thomsoni Thomson, 1873

Dorhynchus thomsoni Thomson, 1873:174, 175, fig. 34.

Dorhynchus Thomsoni.—Filhol, 1885a:56.

Lispognathus Thompsoni.—Filhol, 1885a, fig. 1.

Dorhynchus thomsoni.—Monod, 1956:522 [references].—Zariquiey Alvarez, 1968:467 [Spain; references].—Christiansen, 1969:106, fig. 44, map 37 [North Atlantic].

DISTRIBUTION.—Eastern Atlantic, W and S of Iceland and the Faroes southward to the Cape

Verde Islands; deep water species, in depths between 100 and 2100 m. The occurrence of this species outside of the eastern Atlantic requires verification.

Genus *Ergasticus* Studer, 1883

Ergasticus Studer, 1883:7 [type-species: *Ergasticus clouei* Studer, 1883, by monotypy; gender: masculine; name 1620 on *Official List*].

Ergasticus clouei Studer, 1883

Ergasticus Clouei Studer, 1882:335 [nomen nudum]; 1883:8. *Ergasticus clouei*.—Monod, 1956:523.—Pérès, 1964:20.—Zariquiey Alvarez, 1968:463, fig. 155b [Spain; references].—Türkyay, 1976a:25 [listed], 39, fig. 32 [Portugal, in part].

MATERIAL EXAMINED.—*Pillsbury Material*: None.

Other Material: Morocco: Off Cap de Mazagan, 33°39'N, 08°46'W, 500 m, Agassiz trawl, 20 Mar 1976, *Onversaagd* Sta 151, 1♀ (L).

Cape Verde Islands: 16°52'N, 27°30'W of Paris (25°10'W of Greenwich), 400–580 m, sand and rock, 29 Jul 1883, *Talisman* Sta 111, 1♂, 1♀ ov (W).

DESCRIPTION.—A. Milne Edwards and Bouvier, 1900:140.

Figure: A. Milne Edwards and Bouvier, 1900, pl. 21: figs. 1–7.

MEASUREMENTS.—Carapace length of non-ovigerous females 8–10 mm, of ovigerous female 8 mm.

BIOLOGY.—*Ergasticus clouei* is a deepwater species, occurring in depths between 70 m and 1241 m; more than 90% of the depth records in the literature are from depths between 300 and 750 m.

Ovigerous females have been recorded in July and August (A. Milne Edwards and Bouvier, 1899, 1900; Bouvier, 1922).

DISTRIBUTION.—Eastern Atlantic from the Bay of Biscay to the Cape Verde Islands, including Madeira and the Azores; Mediterranean. Deepwater, in depths between 70 and 1241 m. Monod (1956) reported no specimens. Other West African records include the following:

Morocco: Banc de Spartel, 35°54'N, 06°14'W, 210 m

(Pérès, 1964). 33°12.6'N, 09°15.2'W, 500 m, and 33°10.5'N, 19°17.5'W, 170–345 m (Türkay, 1976a).

Cape Verde Islands: 15°40'N, 23°06'W, 38 fm (70 m) (Studer, 1882).

Genus *Inachus* Weber, 1795

Inachus Weber, 1795:93 [type-species: *Cancer scorpion* Fabricius, 1779, a subjective junior synonym of *Cancer dorsettensis* Pennant, 1777, by subsequent designation by H. Milne Edwards, 1840, in 1836–1844, pl. 34: fig. 2; gender: masculine; name 1698 on *Official List*].

Macropus Latreille, 1803a:27 [an invalid junior homonym of *Macropus* Shaw, 1790; type-species: *Cancer phalangium* Fabricius, 1775, by monotypy; gender: masculine; name 1777 on *Official Index*].

Leptopodia Leach, 1814:431 [type-species: *Cancer phalangium* Fabricius, 1775, by monotypy; gender: feminine].

Pseudocollodes Rathbun, 1911:247 [type-species: *Pseudocollodes complectens* Rathbun, 1911, by monotypy; gender: masculine].

REMARKS.—Griffin (1974:18) correctly synonymized *Pseudocollodes* Rathbun, 1911 with *Inachus* Weber, 1795, but, as pointed out later (p. 290), we suspect that *Inachus complectens* (Rathbun), known from the western Indian Ocean and South Africa (Barnard, 1950; Griffin, 1974) is not conspecific with *I. dorsettensis* (Pennant).

As is the case with most of the West African spider crabs, the species of *Inachus* appear to require much further study. Four species are represented in the *Pillsbury* collections and three of these are undescribed; two of the species previously were identified with European species.

Monod (1956) recorded seven species from West Africa: *Inachus angolensis* Capart (the only endemic species to be listed), *I. dorsettensis* (Pennant), *I. guentheri* (Miers), *I. phalangium* (Fabricius), *I. thoracicus* (Roux), *I. aguiarii* De Brito Capello, and *I. leptochirus* Leach. Monod's accounts of *I. dorsettensis* and *I. leptochirus*, both relatively well-known European species, appear to be based on material of the two new species described herein. Monod's account of *I. guentheri*

(Miers), which unfortunately is not represented in the *Pillsbury* collections, does not agree with the account of that species in Barnard (1950:27): the rostral teeth and the spination of the carapace appear to be quite different in the Gulf of Guinea and South African populations now referred to this species. Our studies of the *Pillsbury* collections have suggested that relatively few West African species identified by earlier workers with European or Mediterranean species actually are conspecific with those species. We suspect, therefore, that available West African material referred to *I. phalangium*, *I. thoracicus*, and *I. aguiarii*, should be carefully reexamined.

The identity of the dwarf forms of *Inachus dorsettensis* reported by Doflein (1904) and Odhner (1923) from deep water off West Africa cannot be determined with certainty without examining their material; they could have been dealing with the new species *I. grillator* or *I. nanus*, both of which occur in relatively deep water and are smaller than European Atlantic specimens of *I. dorsettensis* sensu stricto. We have tentatively referred them to *I. grillator*.

The identity of the juvenile female from Angola reported by Odhner (1923:19) as *Inachus* sp. also cannot be determined with certainty on the basis of his account. He may have been dealing with *I. biceps*, new species, or with *I. guentheri* sensu lato.

The following key distinguishes the West African species of *Inachus*. The key would be complete for the eastern Atlantic by adding the Mediterranean *I. communissimus* (Rizza), which would key out with *I. nanus*, new species, *I. dorsettensis*, which would key out with *I. angolensis* and *I. grillator*, new species, and *I. leptochirus*, which would key out with *I. biceps*, new species. We decided against adding these species to the key because of the uncertain status of the Mediterranean population of *I. dorsettensis* (see *Inachus grillator*, new species, p. 287).

Key to Tropical West African Species of *Inachus*

1. Gastric areas of carapace with transverse row of 4 tubercles anterior to gastric spine 2
- Gastric area of carapace with at most 2 tubercles anterior to gastric spine 4

2. Interantennular spine short, not visible between rostral spines in dorsal view ***I. nanus***, new species
- Interantennular spine large, well developed, visible between rostral spines in dorsal view [often overreaching rostral spines] 3
3. Cardiac and branchial regions of carapace with erect spines ***I. grallator***, new species
- Cardiac and branchial regions of carapace lacking erect spines ***I. angolensis***
4. Rostral spines appressed for most of their length [white sternal callosity absent in male] ***I. phalangium***
- Rostral spines separate for all of their length 5
5. Branchial regions of carapace each with erect dorsal spine 6
- Branchial regions of carapace each with obtuse swelling or rounded tubercle dorsally, lacking erect dorsal spine 7
6. Male lacking white sternal callosity ***I. guentheri***
- Male with prominent, simple sternal callosity ***I. biceps***, new species
7. Walking legs elongate, first (= second pereopod) more than 4 times as long as carapace in males. Sternal callosity in males only .. ***I. thoracicus***
- Walking legs short, first (= second pereopod) less than 4 times as long as carapace in males. Sternal callosity present in both sexes ***I. aguiarii***

***Inachus aguiarii* De Brito Capello, 1876**

Inachus aguiarii.—Monod, 1956:533, figs. 736–739 [Guinea].
—Forest and Guinot, 1966:107 [Spanish Sahara].

Inachus aguiarii.—Zariquiey Alvarez, 1968:473, fig. 158c,d [Spain; references].

DISTRIBUTION.—Eastern Atlantic, from Portugal, Madeira, and Guinea; Mediterranean. Sublittoral, in depths between 20 and 200 m.

****Inachus angolensis* Capart, 1951**

Inachus angolensis Capart, 1951:72, fig. 22, pl. 1: fig. 7, pl. 2: fig. 10.—Monod, 1956:524, figs. 711–714.—Rossignol, 1957:77, 116 [key], pl. 1: fig. 1.—Gauld, 1960:72.—Rossignol, 1962:122.—Crosnier, 1964:34.—Forest, 1965b:394 [discussion].—Forest and Guinot, 1966:106.—Le Loeuff and Intès, 1968:31, 46, table 1, figs. 51, 63.—Maurin, 1968a:62; 1968b:486, 489, 491.—Le Loeuff and Intès, 1969:66.—Crosnier, 1970:1215 [listed], 1218.

Inachus.—Maurin, 1968b, figs. 4, 9.

?*Inachus mauritanicus*.—Maurin, 1968b:484 [not *Inachus mauritanicus* Lucas, 1846 = *I. communissimus* Rizza, 1839].

MATERIAL EXAMINED.—*Pillsbury Material*: Ivory

Coast: Sta 42, 62–75 m, mud with brown, branched Foraminifera, 2♂, 2♀ (L). Sta 49, 73–77 m, 1♀ (L). Sta 50, 128–192 m, 1♀ (L). Sta 62, 46 m, brown, branched and foliate Foraminifera, 5♂, 1♀ (L). Sta 63, 64 m, sandy mud with shells, 3♂, 1♀ ov (L). Sta 64, 68 m, 1♂ (L).

Ghana: Sta 16, 46 m, mud with Foraminifera, shells, 1♀ (L). Sta 22, 51 m, rough bottom, 1♀ (W). Sta 28, 49–53 m, 2♂, 4♀ (L).

Nigeria: Sta 239, 73 m, 2♂ (L). Sta 241, 59–63 m, mud and shell, 7♀ (6 ov) (L).

Cameroon: Sta 259, 59 m, mud and broken shell, 26♂, 21♀ (3 ov) (W).

Undaunted Material: Angola: Sta 94, 90 m, 1♂, 1♀ (L). Sta 96, 162 m, 1♂, 1♀ (L). Sta 103, 90 m, 1♀ (L).

Other Material: Congo: Off Pointe-Noire, 150 m, slightly sandy mud, 27 Feb 1967, A. Crosnier, 1♂ (W).

DESCRIPTION.—Capart, 1951:72.

Figures: Capart, 1951, fig. 22, pl. 1: fig. 7; Monod, 1956, figs. 711–714.

Male Pleopod: Capart, 1951, pl. 2: fig. 10 (Angola); Monod, 1956, fig. 714 (Senegal).

MEASUREMENTS.—Our specimens have carapace lengths of 7 to 23 mm; the ovigerous females have carapace lengths of 12 to 16 mm. The largest

specimen recorded by Capart (1951) was 23 mm long.

REMARKS.—*Inachus angolensis*, one of five Atlantic species now known to have a transverse line of four tubercles on the gastric region of the carapace, is one of three of those species in which the interantennular spine is strongly developed, being clearly visible in dorsal view. It is the only one in this group of species lacking erect spines on the cardiac and branchial regions.

In *I. angolensis* the branchial margin of the carapace is continuous with the free epineral margin as described by Forest (1965a) for *I. dorsettensis* (Pennant). The dactylus of the chela is provided with 1 or 2 large basal teeth. The second pereopod may be as much as 5 times as long as the carapace in adult males, and the merus of that leg may be up to 1.5 times as long as the carapace. The dactylus of the fifth pereopod lacks subapical spinules as in the Mediterranean *I. communissimus* Rizza (Forest, 1965a:393).

Monod (1956) suggested that *I. angolensis* might be a southern form of *I. mauritanicus* Lucas [a junior synonym of *I. communissimus* Rizza, according to Forest (1965a) who examined the types of *I. mauritanicus*], but *I. angolensis* differs in numerous features and, as pointed out by Forest (1965a) and Forest and Guinot (1966), can be distinguished by the long interantennular spine alone.

BIOLOGY.—This species apparently prefers soft bottoms in moderate depths on the shelf and upper slope. Most of the specimens collected by the *Pillsbury* were taken at depths between 46 and 77 m, but one sample came from 128–192 m; the samples were taken on mud with Foraminifera and shells and brown, branching and foliate Foraminifera in 46 m, rough bottom in 51 m, mud with brown, branched Foraminifera in 62–75 m, mud and broken shell in 59 m, and sandy mud with shells in 64 m. The specimen recorded here from Pointe-Noire was taken in slightly sandy mud in 150 m. Capart (1951) recorded material on green mud in 60–110 m, on black, brown mud in 100 m, on sand and mud in 240 m, and on

green sandy mud in 250–300 m. Monod (1956) did not specify bottom type, but recorded material in depths between 82 and 350 m.

Crosnier (1964) characterized *I. angolensis* as a cold water species, living at depths greater than 50 m. Maurin (1968b) found this species off Spanish Sahara on muddy detritic bottom in 50–90 m and off Mauritania on mud or sandy mud in 90–100 m and on fine detritic sand, occasionally muddy, in 200–400 m. Le Loeuff and Intès (1968:46) note that “c'est une espèce d'eaux froides (19°5 à 15°2) et salées (35,4 ‰ à 35,72 ‰)”; they found the species in 80 to 200 m. Capart (1951) recorded it in 240 m with a bottom temperature of 10.85°C. Forest and Guinot (1966) found *I. angolensis* on sand and compact sand [sables construit] in 65–75 m and on mud in 50 m.

Ovigerous females have been recorded in February, March, April, May, June, September, and October (Capart, 1951; Monod, 1956; Crosnier, 1970; *Pillsbury*).

DISTRIBUTION.—West Africa, from localities between Spanish Sahara and southern Angola in depths between 46 and at least 350 m. Capart's (1951) material came from off the Congo and Angola and Monod (1956) reported material from Senegal; since 1956 it has been recorded from the following localities.

Spanish Sahara: Between Cabo Corbeiro and Cabo Blanco, 50–90 m (Maurin, 1968b).

Mauritania: Banc d'Arguin, 90–150 m (Maurin, 1968a), and 40–60, 60–70, and 90–100 m (Maurin, 1968b). Off Tamzak (as Tamxat), 200–400 m (Maurin, 1968b).

Senegal: Saint-Louis, 75–85 m (Maurin, 1968b). 12°55.5'N, 17°33'W, 65–75 m (Forest and Guinot, 1966).

Ivory Coast: No specific locality, 60+ m (Le Loeuff and Intès, 1969), 80–200 m (Le Loeuff and Intès, 1968).

Ghana: Off Accra, 60 m (Gauld, 1960). 04°40'N, 02°08'W to 04°39'N, 02°05'W, 50 m (Forest and Guinot, 1966).

Cameroon: No specific locality, depths greater than 50 m (Crosnier, 1964).

Congo: Off Pointe-Noire (Rossignol, 1957). W of Pointe-Noire (Rossignol, 1962).

Angola: 16°27'S, 11°35'E, 90 m; 16°41'S, 11°21'E, 162 m; and 17°06'S, 11°35'E, 90 m (Crosnier, 1970).

****Inachus biceps*, new species**

FIGURES 71, 72

Inachus leptochirus.—Monod, 1956:535, 632, figs. 740-745.—Longhurst, 1958:89.—Gauld, 1960:72.—Forest and Guinot, 1966:107. [Not *Inachus leptochirus* Leach, 1817.]

MATERIAL EXAMINED.—*Pillsbury Material*: Ghana: Sta 17, 48 m, fine sand and green mud, 1♂ (L). Sta 23, 42 m, foliate brown to orange bryozoans, 6♂, 3♀ (2 ov) (L). Sta 24, 35-37 m, dark red bryozoans, 14♂ (includes holotype), 14♀ (13 ov) (L, W). Sta 26, 27m, shell bottom (scallops), 1♂, 2♀ (1 ov) (L).

Nigeria: Sta 248, 33 m, 1♂, 2♀ ov (L).

Other Material: Dahomey: Off Grand-Popo, 30 m, Petersen grab, 23 Feb 1964, Guinean Trawling Survey, Tr 34, Sta 2: 1♂, 1♀ ov (L).

DESCRIPTION.—Carapace (Figure 71*a,d*) broader than long. Gastric region with pair of tubercles anterior to erect gastric spine (Figure 72*a*). Cardiac region with low, rounded or obtuse dorsal projection, lower than gastric spine,

flanked posteriorly on midline by lower prominence. Branchial regions each with dorsal tubercle, lateral branchial margin tuberculate. Hepatic region irregularly tuberculate anteriorly. Rostrum very short, teeth obtusely rounded, each usually with minute apical tubercle. Eyes large, cornea often extending laterally beyond broad postocular spine. Interantennular spine a very small, obtuse lobe, not visible in dorsal view, scarcely or not at all visible in lateral view (Figure 72*a*). Posterolateral border of carapace continuous with free epimeral margin. Basal antennal segment (Figure 72*a,b*) with row of tubercles, some sharp, on mesial and lateral margins, anterolateral angle of basal segment lacking prominent spine.

Chelipeds (Figure 72*c*) enlarged in adult males, about 1.5 times as long as carapace, merus and propodus markedly inflated in adult. Chelipeds in females slender, subequal to or slightly longer than carapace. Merus and carpus spiny in both sexes. Palm with row of large tubercles proximally on outer face in males. Palm depth 1/2 length in females, 2/3 length in males. Fingers subequal to or slightly longer than palm. Cutting edges of fingers unarmed basally in females, dactylus with 2 prominent proximal teeth in males.

First walking leg 4 or slightly more than 4 times as long as carapace, merus, propodus, and dactylus each longer than carapace in males, relatively shorter in females. Dactylus unarmed, sinuous distally, apex gently curved, length subequal to or slightly greater than that of propodus. Second to fourth walking legs decreasing in size posteriorly, fourth about twice carapace length in females, slightly longer in males. Second walking leg scarcely overreaching propodus of first by tip of dactylus. Latter sinuous, gently curved distally, shorter than propodus, with 1 or 2 subdistal teeth ventrally. Third walking leg not extending to end of propodus of second, overreaching carpus of second by distal third of propodus. Dactylus more curved than that of preceding leg, shorter than propodus, with 2 subdistal teeth ventrally. Fourth walking leg rather short, not extending to end of propodus of third. Dactylus short, more strongly

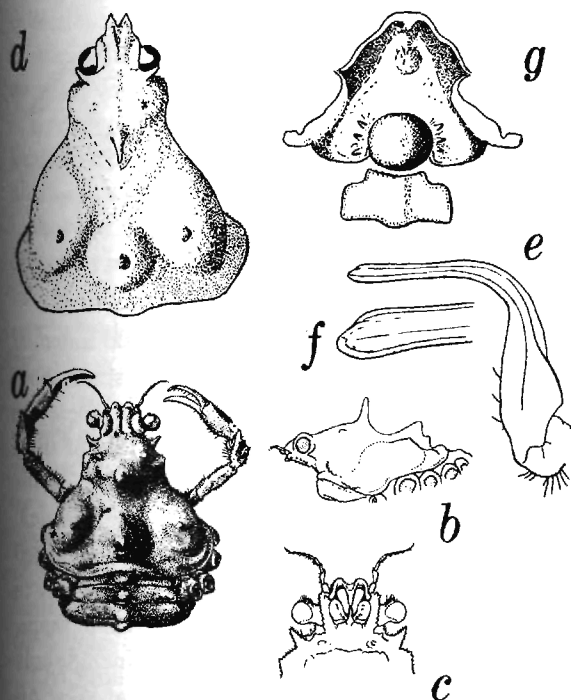


FIGURE 71.—*Inachus biceps*, new species. Ovigerous female, Ghana: *a*, dorsal view; *b*, carapace, lateral view; *c*, front, ventral view. Male, Ghana: *d*, dorsal view; *e*, first pleopod; *f*, apex of first pleopod; *g*, sternum. (From Monod, 1956, figs 740-745.)

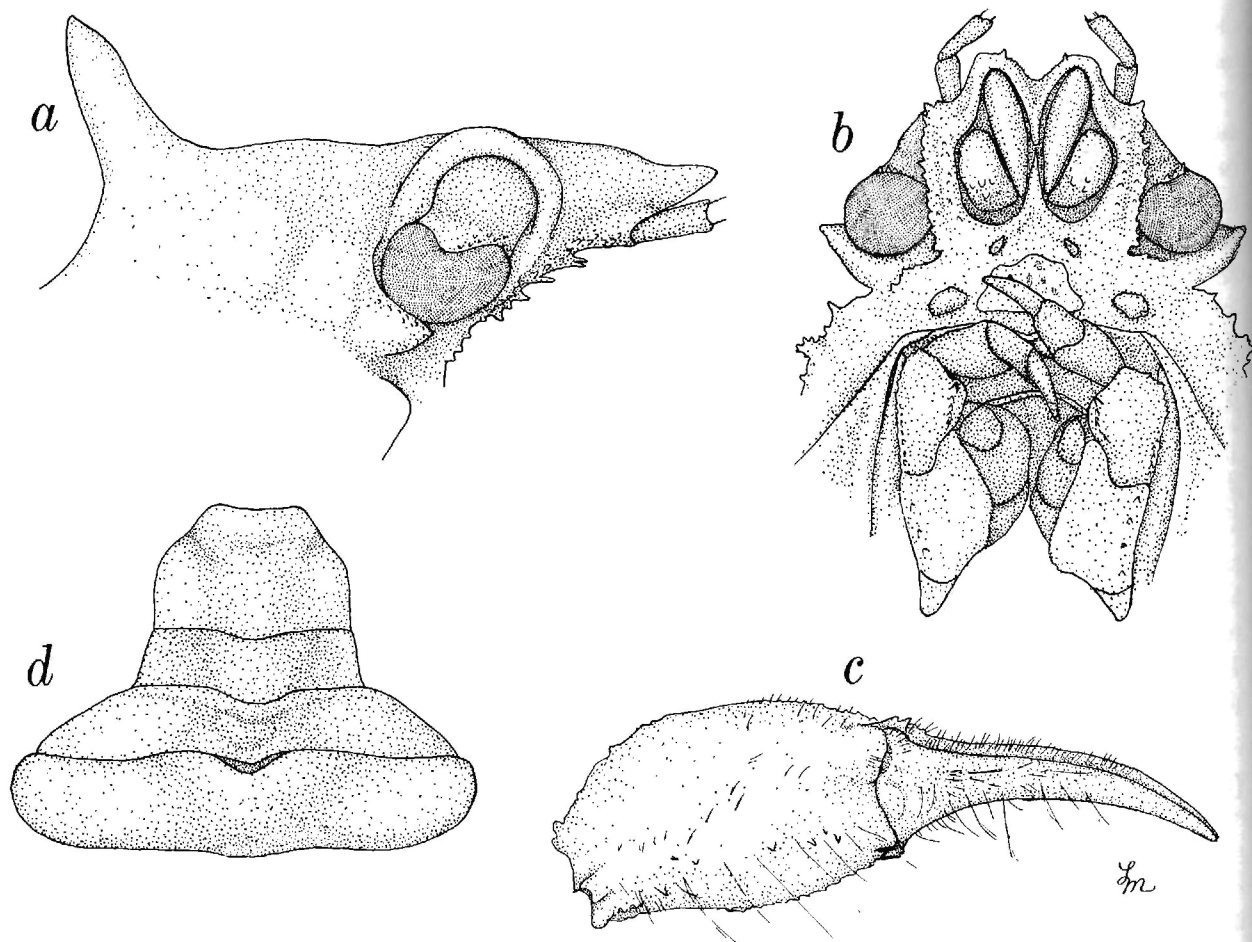


FIGURE 72.—*Inachus biceps*, new species, paratype, male, cl 8.3 mm, Pillsbury Sta 24: *a*, front, lateral view; *b*, front, ventral view; *c*, chela; *d*, abdomen.

curved than those of preceding legs but not sickle-shaped, length across arc subequal to that of propodus, armed ventrally with 1 or 2 large, subdistal teeth and several teeth proximally.

Male abdomen (Figure 72*d*) with terminal somite apically truncated. Male pleopod as shown in Figure 71*e,f*. Males with subcircular pearly sternal callosity (Figure 71*g*).

MEASUREMENTS.—Carapace lengths of males 5.9 to 10.7 mm, of non-ovigerous females 7 to 9 mm, of ovigerous females 6.8 to 8.7 mm.

REMARKS.—*Inachus biceps* closely resembles *I. leptochirus* Leach, differing as follows: the rostral spines are short, rounded lobes, which usually terminate in an apical spinule; the interanten-

nular spine is much smaller; the basal antennal segment lacks a distinct distolateral spine; both the merus and the propodus of the chela are inflated in adult males; there is a row of three prominent tubercles on the outer face of the propodus of the chela in males; the terminal somite of the abdomen in males is truncated rather than rounded; and the sternal callosity in the male is subcircular rather than oval in shape.

In the synonymy of this species we include only references to *I. leptochirus* from tropical West Africa; some of the references to that species from other localities, summarized below under *I. leptochirus*, may well refer to *I. biceps*. All require verification.

Inachus biceps can be distinguished readily from the other West African species which have two gastric tubercles and a sternal callosity in the male. The new species differs from *I. aguiarii* De Brito Capello in several features: the interantennular spine is smaller; there is a dorsal tubercle rather than a spine on the branchial region; and the sternal callosity is subcircular in shape. In *I. aguiarii* the sternal callosity is developed in both sexes, rather than only in the males as in *I. biceps*. Neither of the other West African species with two gastric tubercles, *I. phalangium* (Fabricius) or *I. guentheri* (Miers), have the sternal callosity developed in either sex.

TYPE-LOCALITY.—Off Ghana, 04°56'N, 00°-47.5'W to 04°56'N, 00°50'W, in 35 to 37 m (*Pillsbury* Sta 24).

DISPOSITION OF TYPES.—The holotype (Crust. D. 31770), a male, cl 9.4 mm, cb 10.3 mm, from *Pillsbury* Sta 24, is in the Rijksmuseum van Natuurlijke Historie, Leiden. Paratypes are in the collections of the National Museum of Natural History, Smithsonian Institution, and the Rijksmuseum van Natuurlijke Historie at Leiden.

ETYMOLOGY.—The specific epithet is from the English derivative of the Latin *musculus biceps*, alluding to the inflated cheliped.

BIOLOGY.—*Inachus biceps* is a sublittoral species, occurring in depths between 27 and 300 m. Only two of the 16 depth records available are from relatively deep water, namely off Sierra Leone in 220–240 m (Monod, 1956) and 300 m (Longhurst, 1958); the remainder of the records are from depths of less than 60 m. Material from the two deepest records should be reexamined. The *Pillsbury* collected the species off Ghana, where it appears to be relatively common (28 specimens at Sta 24), on fine sand and green mud and on bottom with bryozoans or shell. It was taken by the *Calypto* on shells, and mud with *Arca*.

Ovigerous females have been collected in February, May, and November (Monod, 1956; Forest and Guinot, 1966; present paper).

DISTRIBUTION.—*Inachus biceps* is a tropical West African species, known from a few localities between Senegal and Nigeria in depths between 27

and 300 m. The following records are in the literature:

Senegal: S of Gorée, 40–41 and 46–50 m (Monod, 1956).

Sierra Leone: No specific locality, 220–240 m (Monod, 1956), 300 m (Longhurst, 1958).

Ghana: Off Accra, 43, 44, and 51 m (Monod, 1956) and 44–51 m (Gauld, 1960).

Nigeria: Off the mouths of the Niger River, 04°03'N, 06°12'E, 32 m (Forest and Guinot, 1966).

It has not been recorded previously from Dahomey, although that is well within its known range.

Inachus dorsettensis (Pennant, 1777)

Cancer Dorsettensis Pennant, 1777:8, pl. 9A: fig. 18.

Inachus dorsettensis.—A. Milne Edwards and Bouvier, 1899:45 [key], 46 [Azores]; 1900:143 [?part; Ilhas Desertas; Spanish Sahara].—Balss, 1922:72 [listed].—Bouvier, 1922:79 [Canary Islands].—Monod, 1933b:503 [p. 48 on separate; listed].—Capart, 1951:70 [part; Spanish Sahara].—Maurin, 1968a:31 [Morocco]; 1968b:489 [Mauritania].—Zariquiey Alvarez, 1968:472, figs. 157f, 159b, 160b [Spain; references].—Christiansen, 1969:100, fig. 41, map 34 [North Atlantic].—Türkey, 1976a:26 [listed], 40, fig. 34 [Portugal, Morocco].

SYNONYMS.—?*Cancer dodecos* Linnaeus, 1767; *Macropus parvirostris* Risso, 1816; *Doclea fabriciana* Risso, 1827.

DISTRIBUTION.—Eastern Atlantic, from the Hebrides southward to Mauritania (?), including the Azores and the Canary Islands; Mediterranean; ?South Africa. Sublittoral, from a few meters to about 110 m. All of these records require verification.

**Inachus grillator*, new species

FIGURES 73, 74

?*Inachus dorsettensis*.—A. Milne Edwards and Bouvier, 1900: 143 [part?: Cape Verde Islands, 75–90 and 318 m].—Doflein, 1904:72 [Banc de la Seine; Spanish Sahara].—Odhner, 1923:19 [Angola, 72–108 m].—Monod, 1956:526 [? part].—Longhurst, 1958:89 [Sierra Leone, 72–118 m].—Guinot and Ribeiro, 1962:77 [Angola, 150–220 m].

Inachus dorsettensis.—Capart, 1951:70, fig. 21, pl. 1: fig. 6, pl. 2: fig. 11 [part, not specimens from Spanish Sahara?].—

Crosnier, 1970:1218. [Not *Inachus dorsettensis* (Pennant, 1777).]

MATERIAL EXAMINED.—*Pillsbury Material*: Nigeria: Sta 255, 264–269 m, 3♂ (includes holotype), 1♀ (L, W).

Undaunted Material: Angola: Sta 96, 162 m, 1♀ (L).

Other Material: Congo: 05°03'S, 11°23'E, 247–250 m, sandy mud, 23 Jan 1968, A. Crosnier, 3♀ ov (W).

DESCRIPTION.—Carapace (Figure 73a) distinctly longer than broad, length 1.06 to 1.12 times width. Gastric region of carapace with 4 tubercles in transverse row anterior to erect gastric spine. Cardiac region of carapace with erect dorsal spine. Each branchial region with shorter erect spine, not markedly recurved anteriorly, and with dorsal tubercle anterior to each spine. Hepatic lobe with 2 distinct tubercles, and smaller, less conspicuous tubercles scattered on surface. Rostrum (Figures 73b, 74b) short, spines broad, lateral margins convergent anteriorly. Eyes large, but not extending laterally beyond strong postorbital spine. Interantennular spine well developed, clearly visible in dorsal view (Figure 73a,b) overreaching rostral spines in some specimens. Branchial margin of carapace tuberculate, anteriorly continuous with free epimeral margin. Basal antennal segment (Figure 73b) with row of tubercles, posteriormost largest, anterolateral angle lacking prominent spine.

Chelipeds subequal to or slightly longer than carapace, slender, not markedly inflated (slightly inflated in some males), equal and similar in both

sexes; ischium with inner row of 4 or 5 erect tubercles; merus rounded, with low, blunt spines and tubercles, primarily on ventral surface; carpus with scattered small tubercles and spinules; palm covered with small, blunt spines; dactylus much longer than palm, cutting edge lacking enlarged proximal tooth or teeth.

Second pereopod (Figure 74c) about 4 (3.8 to 4.5, mean 4.1) times as long as carapace, very slender, merus, propodus, and dactylus each longer than carapace; dactylus unarmed, subequal to or slightly shorter than propodus. Third pereopod not extending to end of propodus of second, overreaching carpus of second by half of propodus and all of dactylus; latter shorter than propodus, lacking subdistal spines ventrally. Fourth pereopod extending to or slightly overreaching propodus of third; dactylus slightly curved, with 2 low, subdistal tubercles, subequal to propodus. Fifth pereopod (Figure 74d,e) scarcely overreaching propodus of fourth by tip of dactylus; latter similar to those of third and fourth pereopods, subequal to propodus, with 2 subapical tubercles apically. Male pleopod shown in Figure 73c.

MEASUREMENTS.—Carapace lengths of males 14.2 to 15.5 mm, of non-ovigerous females 12.7 to 13.0 mm, of ovigerous females 14.5 to 14.6 mm.

REMARKS.—*Inachus grallator* is the southern counterpart of *Inachus dorsettensis*, which it closely resembles. It may be a smaller species than *I. dorsettensis*, Atlantic populations of which may attain a carapace length of 30 mm (Christiansen, 1969), almost twice as large as adult specimens of *I. grallator* available for study. It also appears to live in deeper water, occurring off West Africa in depths of 162–269 m. Zariquiey Alvarez (1968) noted that *I. dorsettensis* is usually found at depths of 30–40 m in Spain, and Christiansen (1969) recorded it from 6–10 m to about 110 m, and, because Bouvier (1940) noted that it occurred from the shore to 550 m, it seems possible that he was dealing with more than one species. Material of *I. dorsettensis* from Spain in the collections of the Smithsonian Institution comprises more than 30 lots from the Ria de Arosa, where it is common

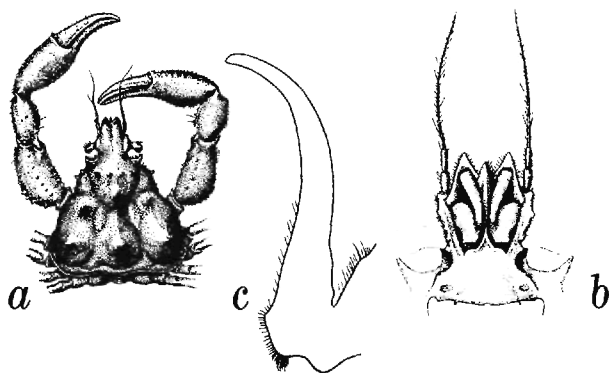


FIGURE 73.—*Inachus grallator*, new species: a, dorsal view; b, ventral view of front; c, male pleopod. (All from Capart, 1951, fig. 21, pl. 1: fig. 6, pl. 2: fig. 11.)

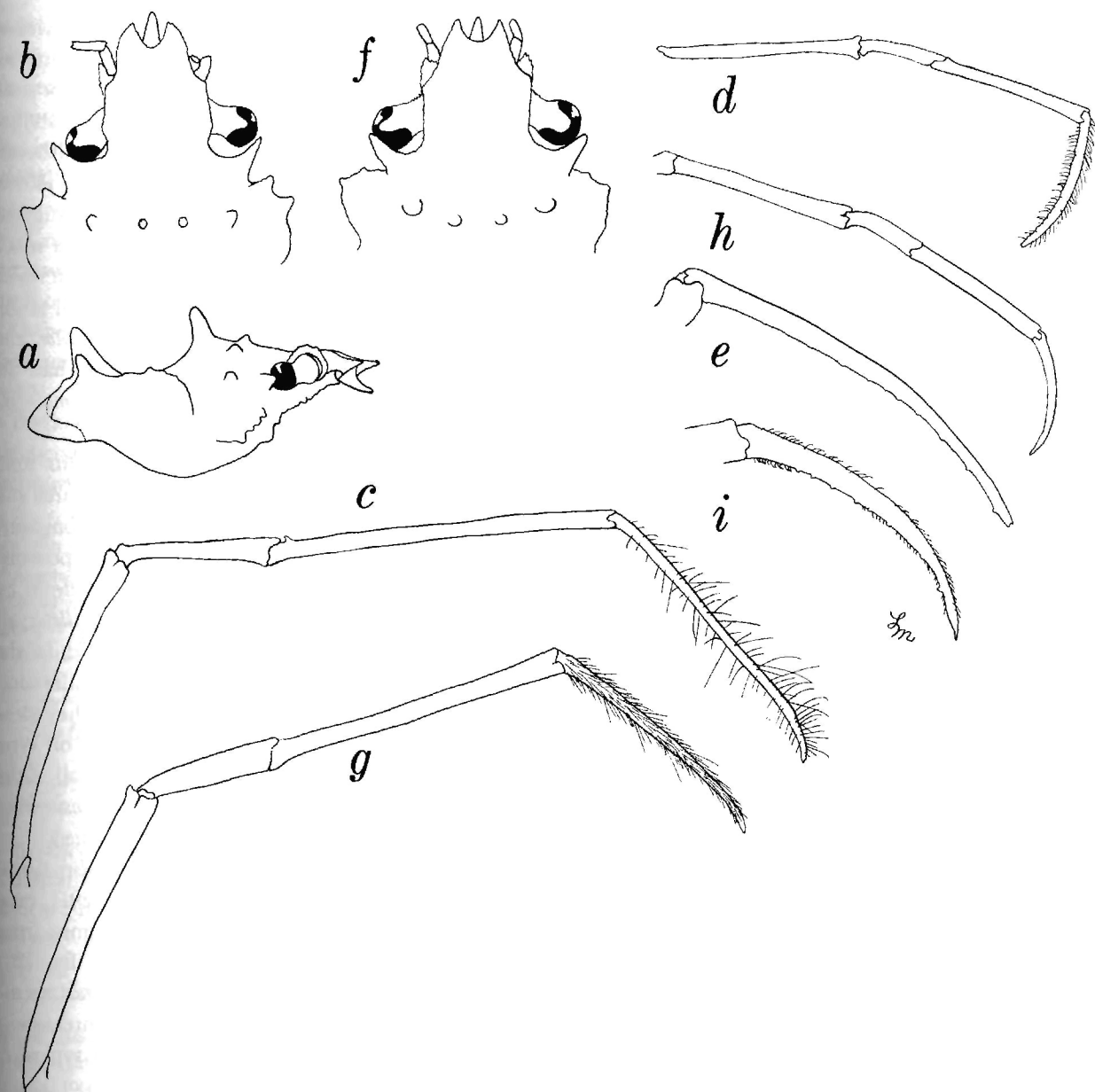


FIGURE 74.—*Inachus grasslator*, new species, male paratype, cl 14.2 mm, Pillsbury Sta 255: a, carapace, lateral view; b, front, dorsal view; c, second pereiopod; d, fifth pereiopod; e, dactylus of fifth pereiopod. *Inachus dorsettensis* (Pennant), male, cl 15.1 mm, Spain: f, front, dorsal view; g, second pereiopod; h, fifth pereiopod; i, dactylus of fifth pereiopod.

in depths of less than 40 m, although 8 lots were taken in depths between 45 and 70 m.

The best way to distinguish *I. grasslator* from *I. dorsettensis* is by the slenderness of the pereiopods and the shape of the dactyli of the fifth pereiopods.

In *I. grasslator*, the pereiopods are slenderer, appearing longer, and the dactyli of the fifth pereiopods are much less curved, being subsimilar to those of the fourth pereiopods (compare Figure 74d,e with 74b,i), as well as comparatively longer.

In adult females of *I. grallator* the dactylus of the fifth pereopod is longer than the carapace, whereas in *I. dorsettensis* it is shorter. In females of the new species the pereopods are slightly stouter than in males, but they are noticeably slenderer than the same pereopods of *I. dorsettensis*.

Although Forest (1965a:392–393), in differentiating the Mediterranean *I. communissimus* Rizza from *I. dorsettensis*, stated that in the latter species the carapace is longer than broad (mean length/width ratio of 1.1 to 1), that the second pereopod was three times as long as the carapace, and that the merus of the second leg was equal to the carapace, our material from Spain suggests that *I. dorsettensis* may be somewhat variable in these features. Our specimens have the carapace length/width ratio varying from 0.97 in ovigerous females to 1.04 in males; the carapace of adult females is noticeably broader than long. In our specimens the second pereopods are 3.29 to 4.09 (mean 3.65) times as long as the carapace, being comparatively longer in males, and, in all of the specimens measured, the merus is perceptibly longer than the carapace.

As Forest (1965a:391) noted, Atlantic specimens of *I. dorsettensis* appear to be much larger than do Mediterranean specimens; the former may attain a carapace length of 30 mm, whereas the latter rarely exceed 20 mm in length. Our material suggests that in the Mediterranean population the dorsal spines of the carapace are much slenderer and higher than they are in material from Atlantic localities except in very large females in which the median spines usually are worn down. If the Mediterranean population proves to be distinct, the name *Inachus parvirostris* (Risso, 1816), which Risso originally proposed as *Macropus parvirostris*, is available.

Although Griffin (1974) synonymized *Pseudocollodes complectens* Rathbun, 1911, with *I. dorsettensis* (Pennant, 1777), reexamination of Griffin's material from the western Indian Ocean, as well as the type of *P. complectens*, leads us to believe that the Indian Ocean form is a distinct species. As noted above Griffin was correct in synonymizing *Pseudocollodes* with *Inachus*. We suspect that

Griffin was misled in using the accounts of Monod (1956) and Barnard (1950) to help identify his material with *I. dorsettensis*. Monod was not dealing with *I. dorsettensis* but with an undescribed species, *I. nanus*, new species (p. 291). Although we have seen no material from South Africa, Barnard's (1950) account of *I. dorsettensis* suggests that he was dealing with *I. complectens*, a much spinier species with sharper rostral teeth, in which the four dorsal spines of the carapace all attain the same height (in *I. dorsettensis*, *I. grallator*, and *I. nanus*, the median spines are higher than the branchials). A redescription of *I. complectens* (Rathbun) is in preparation.

Specimens identified with *I. dorsettensis* from West African localities by A. Milne Edwards and Bouvier (1900), Odhner (1923), Longhurst (1958), Guinot and Ribeiro (1962), and, possibly, part of the material referred to *I. dorsettensis* by Monod (1956) may be referable to *I. grallator*; all of these records have been questioned in the synonymy, above. Both Doflein and Odhner commented on the small size of specimens they identified with *I. dorsettensis* from deep water off West Africa. All of their material, as well as all of the material listed above under *I. dorsettensis* from NW African localities, should be restudied.

Some of the deeper records for *I. dorsettensis*, assigned to *I. nanus*, new species (p. 291), may well be based on *I. grallator*. The specimen from Senegal illustrated by Monod (1956, fig. 720; Figure 75*d* herein) with long dorsal spines resembles *I. grallator* in that feature, but the interantennular spine appears to be small as in typical *I. nanus*.

ETYMOLOGY.—The specific epithet is derived from the Latin and means "one who goes on stilts," alluding to the long, slender legs of this species.

TYPE-LOCALITY.—Gulf of Guinea off Nigeria, 03°49'N, 07°38'E to 03°48'N, 07°42'E, in 264–269 m (*Pillsbury* Sta 255).

DISPOSITION OF TYPES.—The holotype (Crust. D. 27154) a male from *Pillsbury* Sta 255, is in the Rijksmuseum van Natuurlijke Historie, Leiden;

paratypes also are in that collection and in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

BIOLOGY.—*Inachus grillator* is a deep water species, known to occur in depths between 100 m and 250–300 m on soft bottom; Capart (1951) reported specimens from green mud, brown sandy mud, muddy sand and green muddy sand. The specimens recorded herein from the Congo were taken on sandy mud in 247–250 m.

Ovigerous females have been recorded in January and November (Capart, 1951; present paper).

DISTRIBUTION.—West Africa, from a few localities between Nigeria and Angola. Records in the literature include the following:

Gabon: 45 mi [72.5 km] NxE of Port-Gentil, 00°S, 08°58'E, 250–300 m (Capart, 1951).

Angola: 25 mi [40 km] WNW of Ambriz, 07°39'S, 12°47'40"E, 100 m; 8 mi [12.8 km] NxE of Baía dos Elefantes, 13°05'S, 12°46'E, 100–110 m; 18 mi [29 km] WSW of Baía dos Tigres, 16°36'S, 11°27'E, 110 m (all Capart, 1951). 16°37'S, 11°22'E, 126 m (Crosnier, 1970).

Inachus guentheri (Miers, 1879)

Inachus guentheri.—Monod, 1956:529, figs 723–730 [Senegal, Gabon, Angola].

SYNONYM.—*Inachus antarcticus* Doflein, 1904.

DISTRIBUTION.—Off West Africa and South Africa, sublittoral, from about 18 to more than 180 m.

Inachus leptochirus Leach, 1817

Inachus leptochirus Leach, 1817, in 1815–1875, pl. 22B.—A. Milne Edwards and Bouvier, 1894:7 [Azores]; 1899:45 [key]; 1900:145 [part; Spain; Azores; Mauritania].—Doflein, 1904:73 [Seine Seamount].—Bouvier, 1922:79, pl. 2: fig. 5 [color] [Josephine Seamount; Princesse Alice Bank; S of Almadena].—Bals, 1922:72 [listed].—Monod, 1933b:503 [p. 48 on separate] [listed].—Chapman and Santler, 1955:376 [Azores].—Maurin, 1968b:484 [Spanish Sahara].—Zariquiey Alvarez, 1968:472, fig. 157a,b [Spain; references].—Christiansen, 1969:104, fig. 43, map 36 [North Atlantic].—Türkyay, 1976a:26 [listed], 40, fig. 35 [Morocco].

SYNONYM.—*Inachus affinis* Rizza, 1839.

DISTRIBUTION.—Eastern Atlantic, from the He-

brides southward to Mauritania, including the Azores; Mediterranean. Sublittoral, from about 30 m to more than 500 m.

**Inachus nanus*, new species

FIGURE 75

Inachus dorsellensis.—Monod, 1956:526, 632, figs. 715–722 [?part].—Rossignol, 1957:116 [key]. [Not *Inachus dorsellensis* (Pennant, 1777).]

MATERIAL EXAMINED.—*Pillsbury Material*: Liberia: Sta 68, 70 m, broken shell, 3♂, 2♀ ov (L). Sta 69, 29 m, coral or rock, 1♂ (W).

Ivory Coast: Sta 42, 62–75 m, mud with brown, branched Foraminifera, 1♂ (holotype), 4♀ ov (L). Sta 49, 73–77 m, 1♂ (W). Sta 60, 79–82 m, coral or rock, 1♂, 2♀ ov (L). Sta 64, 68 m, 1♂, 1♀ ov (W).

Ghana: Sta 16, 46 m, mud with Foraminifera, shells, 1♂, 1♀ ov (W). Sta 22, 51 m, rough bottom, 1♂, 2♀ ov (L). Sta 23, 42 m, foliate brown to orange bryozoans, 2♂, 1♀ ov (L). Sta 29, 58–60 m, 1♂ (W).

Nigeria: Sta 239, 73 m, 1♀ (W).

Cameroon: Sta 260, 46 m, 6♂, 1♀ ov (L).

DESCRIPTION.—Carapace (Figure 75a) with length and width subequal or length greater. Gastric region of carapace with transverse row of 4 tubercles anterior to erect gastric spine. Cardiac region with sharp, erect dorsal spine. Branchial regions each with dorsal spine, and, anterior to each, 1 blunt tubercle. Surface, anterior to branchial area, with 3–5 large tubercles, lateral margins of branchial regions irregularly tuberculate. Hepatic regions each with prominent lateral tubercle, margins irregularly tuberculate. Rostrum (Figure 75a,b) very short, margins tuberculate, outer margins convergent anteriorly. Interantennular spine acute but small, not visible in dorsal view between rostral teeth (Figure 74a). Eyes large, cornea extending laterally beyond prominent postocular spine. Posterolateral border of carapace continuous with free epimeral margin. Basal antennal segment (Figure 75b) with row of tubercles mesially and laterally, with larger spinule anterolaterally.

Chelipeds enlarged in males, about 1.3–1.4 times as long as carapace, merus and propodus markedly inflated (at cl 8.5 mm), extending with

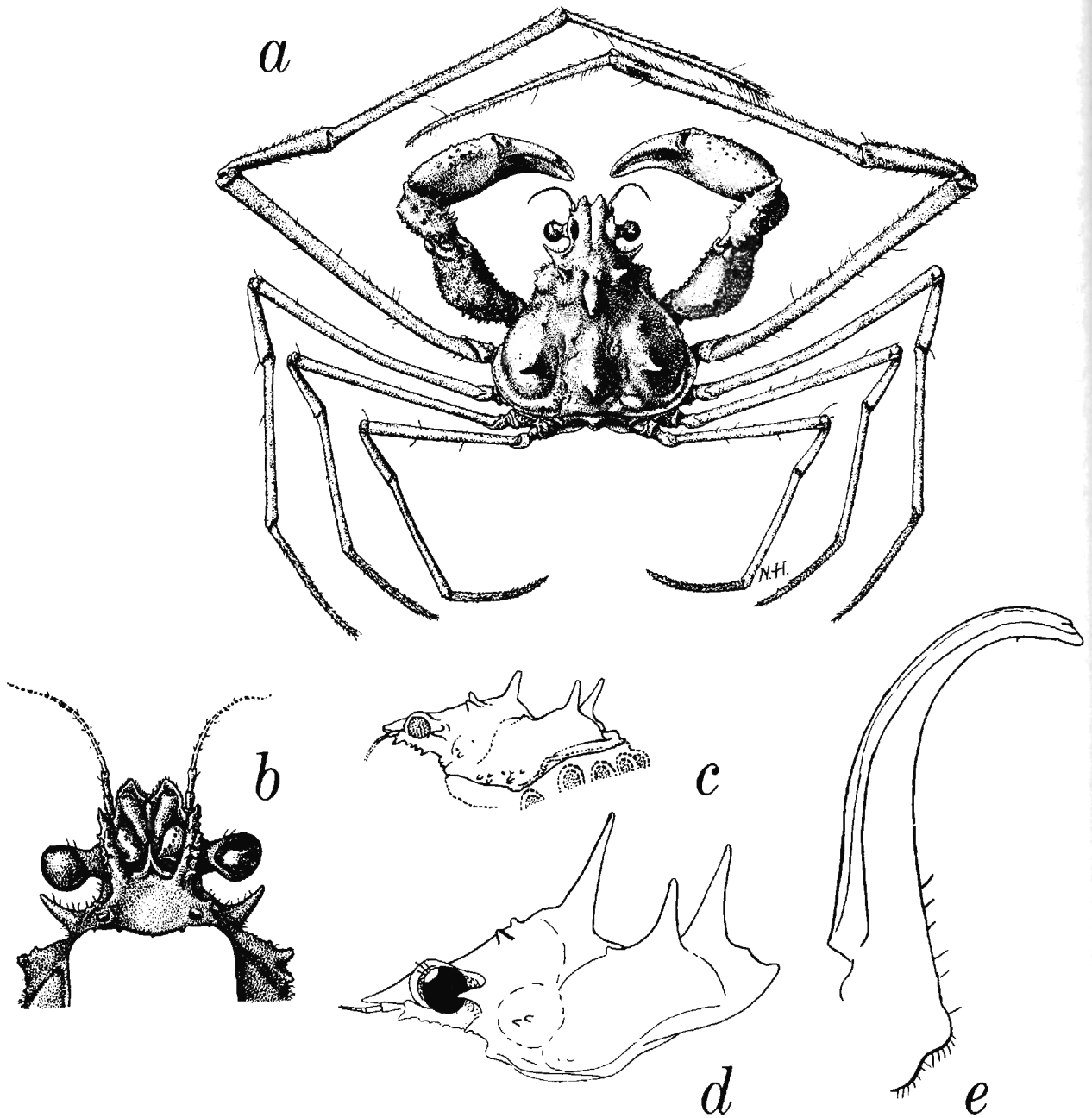


FIGURE 75.—*Inachus nanus*, new species: *a*, dorsal view; *b*, front, ventral view; *c*, carapace, lateral view; *d*, carapace of different specimen, lateral view (this could be based on *I. grillator*, new species); *e*, male pleopod. (All from Monod, 1956, figs. 715–717, 720, 722.)

half the carpus beyond front. Chelipeds in females slenderer than in males, about 1.1 times as long as carapace, carpus not extending to front. Chelipeds in both sexes with lower margin of merus and inner border of carpus very spiny. Palm

tuberculate in both sexes, length about 1.7 times height in females, 1.3–1.4 times greatest height in males. Dactylus of chela with 2 rounded teeth proximally on cutting edge in males.

Second pereiopod about 4 times carapace

length in males, about 3.5 times carapace length in females (most second pereopods detached); dactylus with minute tubercles ventrally, shorter than propodus, latter slightly shorter than merus. Dactylus of third pereopod not overreaching propodus of second. Second to fifth pereopods decreasing in size posteriorly, fifth about twice as long as carapace in males, about 1.5 times as long as carapace in females. Dactylus of fifth pereopod curved but not strongly falcate, with 1 or 2 large, subdistal spinules flanked proximally by line of smaller spinules and tubercles.

Terminal somite of male abdomen rounded apically. Male pleopod as shown (Figure 75e).

MEASUREMENTS.—Carapace lengths of males 4.9 to 8.9 mm, of ovigerous females 4.8 to 8.3 mm.

REMARKS.—*Inachus nanus* resembles the Mediterranean *I. communissimus* Rizza and differs from the other Atlantic species of *Inachus*, which have a transverse row of four tubercles on the gastric region. It differs from *I. dorsettensis* (Pennant) and *I. grallator*, new species, in having a very small interantennular spine, which is not visible between the teeth of the rostrum in dorsal view. *Inachus nanus*, which has a maximum carapace length of less than 10 mm, is a much smaller species than *I. communissimus*; in the latter species Forest (1965a) recorded specimens with carapace lengths up to 26 mm. The carapace in *I. nanus* is longer than broad or about as broad as long; in *I. communissimus* it is much broader than long. In *I. nanus* the posterolateral margin of the carapace is continuous with the free epimeral margin whereas in *I. communissimus* it is not continuous, being interrupted on the anterior part of the branchial region.

Some of the West African records of *I. dorsettensis*, referred above to *I. grallator*, new species, may well be based on *I. nanus*; this can only be determined by examining the material.

TYPE-LOCALITY.—Gulf of Guinea off the Ivory Coast, 05°02.5'N, 03°49.5'W to 05°05'N, 03°52'W, in 62–75 m (*Pillsbury* Sta 42).

DISPOSITION OF TYPES.—The holotype (Crust. D. 27155), a male, cl 8.3 mm, cb 7.8 mm, is in

the Rijksmuseum van Natuurlijke Historie, Leiden; paratypes also are deposited there and in the National Museum of Natural History, Smithsonian Institution.

ETYMOLOGY.—The specific epithet is from the Latin and refers to the diminutive size of this species.

BIOLOGY.—*Inachus nanus* is a sublittoral species, occurring in depths between 29 and 118 m. Only three of the 21 depth records available are from 100 m or more and only one is from less than 40 m. Although three of the lots taken by the *Pillsbury* were from rough bottom, coral or rock, most of the specimens were taken on mud, either with *Jullienella* or bryozoans. Some of the deeper records in Monod (1956) may be based on specimens of *I. grallator*.

Ovigerous females have been taken in February, May, June, July, September, and October, suggesting that the species spawns all year (Monod, 1956; *Pillsbury*).

DISTRIBUTION.—*Inachus nanus* is a sublittoral West African species, known from a few localities between Senegal and Gabon. The following records are all from Monod (1956):

Senegal: S of Cap Vert, 97–98 m; Fosse de Kayar, 100 m; S of Fosse de Kayar, 50 m; SE of Île de la Madeleine, Dakar, 48 m; off Gorée, 95, 96, and 132 m.

Sierra Leone: No specific locality, 118 m.

Gabon: Libreville, 60 m.

It has not previously been recorded from Liberia, Ivory Coast, Ghana, Nigeria, or Cameroon, but all of these lie within its known range.

Inachus phalangium (Fabricius, 1775)

Inachus phalangium.—Monod, 1956:531 [references].—Zariquiey Alvarez, 1968:472, fig. 159c [Spain; references].—Christiansen, 1969:102, fig. 42, map 35 [North Atlantic]. *Inachus dorynchus*.—Rossignol, 1957:115 [key].—Forest and Gantès, 1960:357 [Morocco].

SYNONYMS.—?*Cancer tribulus* Linnaeus, 1767 [name suppressed by ICZN]; *Inachus dorynchus* Leach, 1814; *Macropus arachnides* Risso, 1816.

DISTRIBUTION.—Eastern Atlantic, from about 60°N latitude southward to the Cape Verde Is-

lands; Mediterranean. Sublittoral, from about 10 to at least 150 m.

Inachus thoracicus Roux, 1830

Inachus thoracicus.—Capart, 1951:68 [Congo].—Monod, 1956: 532, figs. 731–735 [Senegal, Gambia].—Rossignol, 1957: 115 [key].—Longhurst, 1958:89 [Sierra Leone].—Maurin, 1968a:48, 59; 1968b:480, 484, 486, fig. 5 [both Spanish Sahara, Mauritania].—Zariquiey Alvarez, 1968:473, figs. 157c,d, 158a,b [Spain; references].

SYNONYM.—*Inachus cocco* Rizza, 1839.

DISTRIBUTION.—Eastern Atlantic, from southern Europe to the Congo, including the Canary Islands; Mediterranean. Sublittoral, to at least 100 m.

Genus *Macropodia* Leach, 1814

Macropodia Leach, 1814:395 [type-species: *Cancer longirostris* Fabricius, 1775, by monotypy; gender: feminine; name 1699 on *Official List*].

Peridromus Gistel, 1848:ix [replacement name for *Macropodia* Leach, 1814 (as *Macropus*); type species: *Cancer longirostris* Fabricius, 1775; gender: masculine].

REMARKS.—Specific identification of the eastern Atlantic species of *Macropodia* has remained particularly difficult until recently when Forest and Zariquiey Alvarez (1964) reviewed the Mediterranean species and their nomenclature (Forest, 1965b). They pointed out that in the past identification often was based on keys provided by A. Milne Edwards and Bouvier (1899:48) or Bouvier (1940:362) and that results obtained through using these keys generally were unsatisfactory.

Forest and Zariquiey Alvarez (1964) recognized five species in the Mediterranean: *M. rostrata* (Linnaeus, 1761); *M. longipes* (A. Milne Edwards and Bouvier, 1899); *M. longirostris* (Fabricius, 1775); *M. czernjawskii* (Brandt, 1880); and a new species they named *M. linearesi*.

In discussing the literature relating to these species, Forest (1965b:349) pointed out that the epithet *longirostris* in the past had been applied to three distinct taxa: *M. longirostris* proper, *M. longipes*, and a third species from areas in the north-

eastern Atlantic north of the Mediterranean, *M. tenuirostris* Leach, 1814. Thus many earlier records of *M. longirostris* from the Mediterranean were based on that species or *M. longipes*.

Monod (1956:559) included *M. longirostris* as a member of the West African fauna, based on earlier records by A. Milne Edwards and Bouvier (1900:156, 157) who reported two males and a female from the Banc d'Arguin, one male from Senegal, and one female from the Cape Verde Islands, as well as material from Morocco. Forest and Zariquiey Alvarez (1964:228) considered *M. longirostris* to be a Mediterranean endemic and identified many of A. Milne Edwards and Bouvier's records of *M. longirostris* with *M. longipes*, noting (1964:226, footnote) that material reported by these authors from three localities, including Morocco and Senegal, no longer was in the collection at Paris. Apparently there are no substantiated records for either *M. longipes* or *M. longirostris* from tropical African waters, and we have omitted these species from our accounts below.

Material from the third locality, the Strait of Bonifaccio (between Corsica and Sardinia), is in the collection of the National Museum of Natural History, Smithsonian Institution, under catalog number USNM 22978. It consists of a single male, cl 15.9 mm, clearly identifiable with *M. longirostris*. Outside of the Mediterranean, *M. longipes* is known with certainty from the Bay of Biscay (Forest and Zariquiey Alvarez, 1964:226).

The eastern Atlantic species of *Macropodia* still require a great deal of work, especially the status of the species occurring on the NW African coast, including *M. longirostris* auctorum (including Pérès, 1964:20, Morocco), *M. longipes* auctorum (Forest and Gantès, 1960:357, Morocco; Bas, Arias, and Guerra, 1976, table 3, Spanish Sahara; Türkay, 1976a:40, fig. 33, Portugal and Morocco), *M. egyptia* sensu A. Milne Edwards and Bouvier, 1900, and *M. intermedia* Bouvier, 1940 (see p. 300). We believe that the status of Mediterranean material identified with *M. rostrata* (Linnaeus, 1761) also requires investigation.

Key to Tropical West African Species of *Macropodia*

1. Dactylus of fifth leg slightly curved 2
Dactylus of fifth leg strongly arcuate 4
2. Rostrum longer than antennal peduncle, more than 2/3 postrostral length of carapace. [Nuchal spine present. Basal article of antenna with strong spines ventrally] *M. longipes*
Rostrum shorter than antennal peduncle, less than half postrostral length of carapace 3
3. Rostrum extending beyond midlength of distal article of antennal peduncle. Nuchal spine present. Orbital margin with dorsal spines or tubercles. Basal article of antenna with strong spines ventrally *M. gilsoni*
Rostrum falling short of midlength of distal article of antennal peduncle. Nuchal spine absent. Orbital margin smooth. Basal article of antenna smooth, unarmed *M. spinulosa*
4. Epistome with longitudinal ridge on each side extending from pore of antennal gland to basal article of antenna *M. macrocheles*
Epistome lacking longitudinal ridge on each side 5
5. Rostrum longer than antennal peduncle. Basal segment of antenna unarmed 6
Rostrum not reaching end of antennal peduncle. Basal segment of antenna armed with spinules and tubercles 7
6. Rostrum more than 2/3 postrostral length of carapace. Basal article of antenna smooth *M. longicornis*
Rostrum less than half postrostral length of carapace. Basal article of antenna irregularly tuberculate *M. straeleni*
7. Rostrum extending beyond midlength of distal segment of antennal peduncle. Gastric region with sharp, erect spine ... *M. doracis*, new species
Rostrum not extending to midlength of distal segment of antennal peduncle. Gastric region with low, conical prominence *M. hesperiae*, new species

Macropodia doracis, new species

FIGURE 76

Stenorhynchus aegyptius.—A. Milne Edwards and Bouvier, 1900:155 [part] [not *Stenorhynchus aegyptius* H. Milne Edwards, 1834 = *Cancer longirostris* Fabricius, 1775].

MATERIAL EXAMINED.—*Pillsbury Material*: None.

Other Material: Cape Verde Islands: between Ilhéu Branco and Ilhéu Raso, 110–180 m, sand, rocks, *Talisman* No. 105, 27 Jul 1883, 1♀ ov (W, holotype).

DESCRIPTION.—Size small, carapace length of adult less than 10 mm (7.8 mm).

Rostrum (Figure 76a) moderately long, extending almost to but falling short of end of distal segment of antennal peduncle, ornamented with curved hairs. Apices of rostral teeth appressed. Rostrum upturned dorsally. Nuchal region with lateral spinule, visible in dorsal view (Figure 76a). Protogastric region smooth, lacking dorsal tubercles medially. Hepatic regions each with low, conical prominence dorsally. Hepatic lobes each with bluntly rounded tubercle apically. Gastric region with high, erect spine dorsally. Cardiac region with broad, obtuse prominence dorsally, lower than gastric spine. Branchial regions each

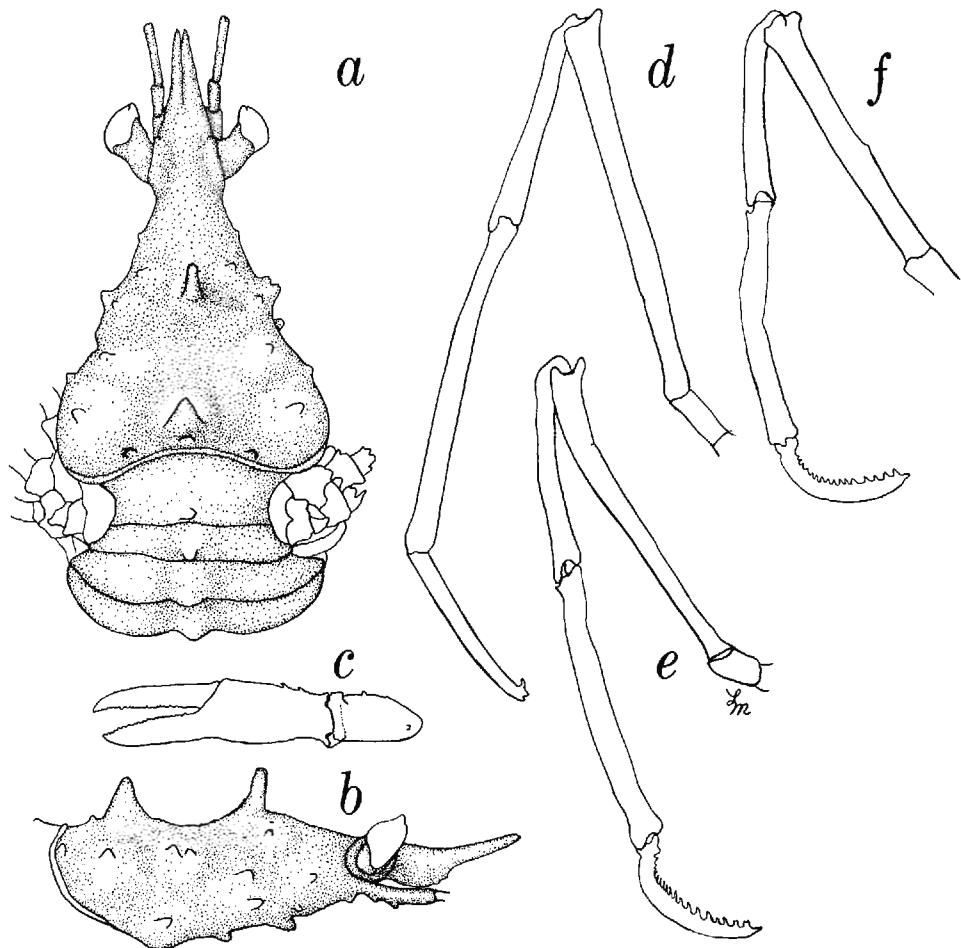


FIGURE 76.—*Macropodia doracis*, new species, holotype, ovigerous female, cl 7.8 mm, Cape Verde Islands: *a*, carapace, dorsal view; *b*, carapace, lateral view; *c*, chela; *d*, third pereopod; *e*, fourth pereopod; *f*, fifth pereopod. (All pereopods slightly damaged.)

with 1 low dorsal epibranchial tubercle, 1 broadly rounded anterolateral epibranchial tubercle, 1 dorsal mesobranchial tubercle, and 1 metabranchial tubercle situated almost on posterior margin. Anterolateral margins with rounded tubercle posterior to hepatic lobe.

Basal antennal segment (Figure 76*b*) with 2 tubercles on each side, larger, almost spiniform, anteriormost. Distal article of antennal peduncle about twice as long as penultimate. Epistome with rounded lobule near opening of antennal gland and with tubercle at base of antenna.

Ocular peduncle lacking distinct anterior lobe. Cornea with distal dorsal tubercle.

Cheliped (Figure 76*c*) of adult female slender,

fingers, measured dorsally, longer than palm, latter with row of spinules dorsally. Merus with 2 prominent dorsal tubercles.

Dactylus of second pereopod slender, slightly curved distally, apex broken; merus shorter than carapace. Merus of each walking leg with blunt, unarmed dorsal projection (Figure 76*d*). Dactyli of fourth and fifth pereopods (Figure 76*e,f*) strongly arcuate, ventral margin toothed along entire margin.

MEASUREMENTS.—Carapace length of ovigerous female 7.8 mm.

REMARKS.—*Macropodia doracis* approaches *M. hesperiae*, (p. 298), in general facies, but differs in having a longer rostrum, which extends almost to

the end of the antennal peduncle, in having a shorter distal segment on the antennal peduncle, and in having a sharp, erect gastric spine. The present species may be closest to *Macropodia aegyptia* sensu Bouvier (1940:364, fig. 220), from the Canary Islands, but in that species the epistome has more spines and the basal segment of the antennal peduncle is armed with three large sharp spines rather than a spinule and a tubercle.

TYPE-LOCALITY.—Cape Verde Islands, between Ilhéu Branco (16°39'N, 24°41'W) and Ilhéu Raso (16°37'N, 24°36'W) in 110–180 m.

DISPOSITION OF TYPES.—The unique holotype (USNM 22980), an ovigerous female, cl 7.8 mm, is in the National Museum of Natural History, Smithsonian Institution. Apparently it was sent to the Smithsonian on exchange early in the 1900's.

ETYMOLOGY.—The specific epithet is derived from a Latin name for the Cape Verde Islands, *Doraces insulae*.

DISTRIBUTION.—Known only from the type-locality in the Cape Verde Islands.

**Macropodia gilsoni* (Capart, 1951)

Achaopsis gilsoni Capart, 1951:65, fig. 20, pl. 1: figs. 4, 10, pl. 2: fig. 3.—Rossignol, 1957:115 [key].

Macropodia gilsoni.—Monod, 1956:555, figs. 811–822.—Longhurst, 1958:89.—Rossignol, 1962:123.—Crosnier, 1964:34.

Macropodia intermedia.—Guinot and Ribeiro, 1962:78.—Forest and Guinot, 1966:115.—Crosnier, 1970:1215 [listed], 1218. [Not *M. intermedia* Bouvier, 1940.]

Macropodia.—Voss, 1966:22.

MATERIAL EXAMINED.—*Pillsbury Material*: Liberia: Sta 68, 70 m, broken shell, 4♂, 2♀ (1 ov) (L).

Ivory Coast: Sta 42, 62–75 m, mud with brown, branched Foraminifera, 1♂, 1♀ (W). Sta 45, 73–97 m, 2♂, 2♀ ov (W). Sta 47, 37 m, bottom with *Jullienella*, 1♀ ov (L). Sta 50, 128–192 m, 1♀ ov (L). Sta 59, 55–64 m, mud with dense branched Foraminifera, 1♂ (L). Sta 62, 46 m, brown branched and foliate Foraminifera, 6♂, 6♀ (4 ov) (L). Sta 63, 64 m, sandy mud with shells, 5♂, 8♀ (5 ov) (W). Sta 64, 68 m, 2♂, 1♀ ov (L).

Ghana: Sta 16, 46 m, mud with Foraminifera, shells, 2♀ (1 ov) (W). Sta 23, 42 m, foliate brown to orange bryozoans, 1♂ (W). Sta 28, 49–53 m, 4♂, 4♀ ov (L). Sta 30, 61–64 m, coral, 2♂ (W). Sta 32, 110 m, 1♀ ov (W).

Nigeria: Sta 237, 101 m, 1♂, 2♀ (L). Sta 239, 73 m, 8♂, 7♀ (L). Sta 241, 59–63 m, mud and shell, 11♂, 8♀ (5 ov) (W).

Cameroon: Sta 259, 59 m, mud and broken shell, 3♂, 3♀ (W). Sta 260, 46 m, 1♂ (L).

Geronimo Material: Gabon: Sta 235, 100 m, 1♂ (W).

Undaunted Material: Angola: Sta 95, 126 m, 2♂, 1♀ ov (L).

Other Material: Cameroon: 03°54'N, 08°53'E, 64 m, Aug 1963, A. Crosnier, 5♂, 2♀ (1 ov) (W). 03°55.5'N, 08°52.5'E, 60 m, Ombango, A. Crosnier, 5 Jan 1963, 1♀ ov (W).

DESCRIPTION.—Capart, 1951:65.

Figures: Capart, 1951, fig. 20, pl. 1: figs. 4, 10, pl. 2: fig. 3; Monod, 1956, figs. 811–822.

Male Pleopod: Capart, 1951, pl. 2: fig. 3 (Cabininda); Monod, 1956, fig. 821 (Senegal).

MEASUREMENTS.—Carapace lengths of males 6.5 to 19 mm, of non-ovigerous females 7.5 to 14 mm, of ovigerous females 11 to 16.7 mm.

REMARKS.—*Macropodia gilsoni*, *M. hesperiae*, new species, *M. intermedia*, and *M. longipes* are the only West African species of the genus with strong, well-developed nuchal spines; these spines are also present in the northern species, *M. tenuirostris* (Leach) (Christiansen, 1969, fig. 47). Further, *M. gilsoni* and *M. intermedia* are the only species in the genus with spines on the supraorbital margin. Differences between these two species are pointed out (p. 300) under the account of *M. intermedia*.

Macropodia gilsoni appears to be quite variable in some features, especially in the extent of spination: the supraorbital spines may be reduced to tubercles; the walking legs often have but one spine or even up to five spines on the merus of the fourth leg rather than three; the hairiness of the legs is variable; and in some specimens the rostrum is sharply upturned. The distal third of the dactylus of the fifth leg usually is smooth; the proximal two-thirds are ornamented with strongly recurved teeth and dense setae. There is a small intestinal tubercle on the carapace in some specimens.

BIOLOGY.—*Macropodia gilsoni* is a sublittoral species, occurring in depths between 37 m (30–50 m) and 200+ m. Of 51 depth records available, 32 (about 62%) are from depths of less than 100 m and only 8 (about 16%) are from less than 50 m. It has been taken on various kinds of muddy

bottoms, including bottoms with shells and bryozoans or foliate Foraminifera.

Ovigerous females have been found in all months but July, indicating that the species spawns all year.

DISTRIBUTION.—West Africa, from localities between Senegal to Angola (16°37'S); sublittoral, in depths between 37 and about 200 m. Capart (1951) studied numerous specimens from localities between Gabon and Angola, and Monod (1956) had material from Senegal and Guinea. Records since 1956 include the following:

Senegal: 12°55.5'N, 17°33'W, 65–75 m (Forest and Guinot, 1966).

Guinea-Bissau: 10°19'N, 16°34'W, 60–73 m (Forest and Guinot, 1966).

Sierra Leone: No specific locality, 54–200 m (Longhurst, 1958).

Ivory Coast: 04°35'N, 06°40'W to 04°35'N, 06°41'W, 64 m (Voss, 1966).

Cameroon: No specific locality, deeper than 50 m (Crosnier, 1964).

Gabon: W of Barre des Portugais; W of Mayumba, 110 m (Rossignol, 1962).

Angola: Luanda, 102–122 m (Guinot and Ribeiro, 1962). 16°37'S, 11°22'E, 126 m (Crosnier, 1970).

* *Macropodia hesperiae*, new species

FIGURE 77

Macropodia linaresi.—Forest and Guinot, 1966: 117 [not *Macropodia linaresi* Forest and Zariquiey Alvarez, 1964].

Macropodia.—Voss, 1966: 31.

MATERIAL EXAMINED.—*Pillsbury Material*: Ivory Coast: Sta 60, 79–82 m, coral or rock, 1♂, 1♀ (L). Sta 65, 46–49 m, 1♂ (holotype), 1♀ (L).

Ghana: Sta 22, 51 m, rough bottom, 1♂ (W).

Nigeria: Sta 230, 82–97 m, hard ground, with gorgonians, coral, rock, 1♂ (W).

DESCRIPTION.—Size small, carapace lengths of adults less than 10 mm. Rostrum (Figure 77a,e) short, overreaching base but falling short of middle of fifth article of antennal peduncle, ornamented with curved hairs. Apices of rostral teeth divergent in some specimens. Rostrum slightly upturned dorsally (Figure 77b). Nuchal region usually with lateral spinule or tubercle, visible in

dorsal view. Protogastric region smooth, lacking dorsal tubercles medially. Hepatic regions each with low, conical prominence dorsally. Hepatic lobes each with apical spinule, flanked mesially with spine on anterior margin in some specimens. Gastric and cardiac regions each with low, conical prominence. Branchial regions with poorly marked prominences: 1 low, rounded epibranchial, 1 broad dorsal mesobranchial, 1 low metabranchial near posterior margin, and sharp tubercles laterally. Anterolateral margins with sharp, anteroventrally directed spine posterior to hepatic lobe.

Basal antennal segment (Figure 77b) with 1–3 spinules or sharp tubercles, anteriormost largest. Distal article of antennal peduncle about 3 times as long as penultimate. Epistome with spinule near opening of antennal gland, occasionally with spinule anteriorly near base of antenna.

Ocular peduncles lacking distinct anterior lobe. Cornea with distinct dorsal tubercle.

Chelipeds of adult males larger and more robust than in females. Fingers as long as palm, latter with row of spinules dorsally. Merus with 3 erect dorsal spines or lobes.

Dactylus of second pereopod (Figure 77c) slender, slightly curved distally, 7/9 as long as merus, latter longer than carapace and antennal peduncles. Meri of second through fifth pereopods each with single large distal dorsal spine, latter lower on merus of fifth pereopod. Dactyli of fourth and fifth (Figure 77d) pereopods strongly arched, ventral margin toothed along entire margin.

MEASUREMENTS.—Carapace lengths of males 5.2 to 9.4 mm, of females 4.2 and 7.3 mm.

REMARKS.—*Macropodia hesperiae* resembles *M. linaresi* Forest and Zariquiey Alvarez, 1964, but differs as follows: The rostrum is longer, with the apices of the spines divergent rather than appressed; the dorsal prominences of the carapace are much less prominent; the carapace is smoother and less hairy; and the legs are longer, the merus of the second pereopod being longer than the carapace and antennal peduncles combined.

If our interpretation of the original account of

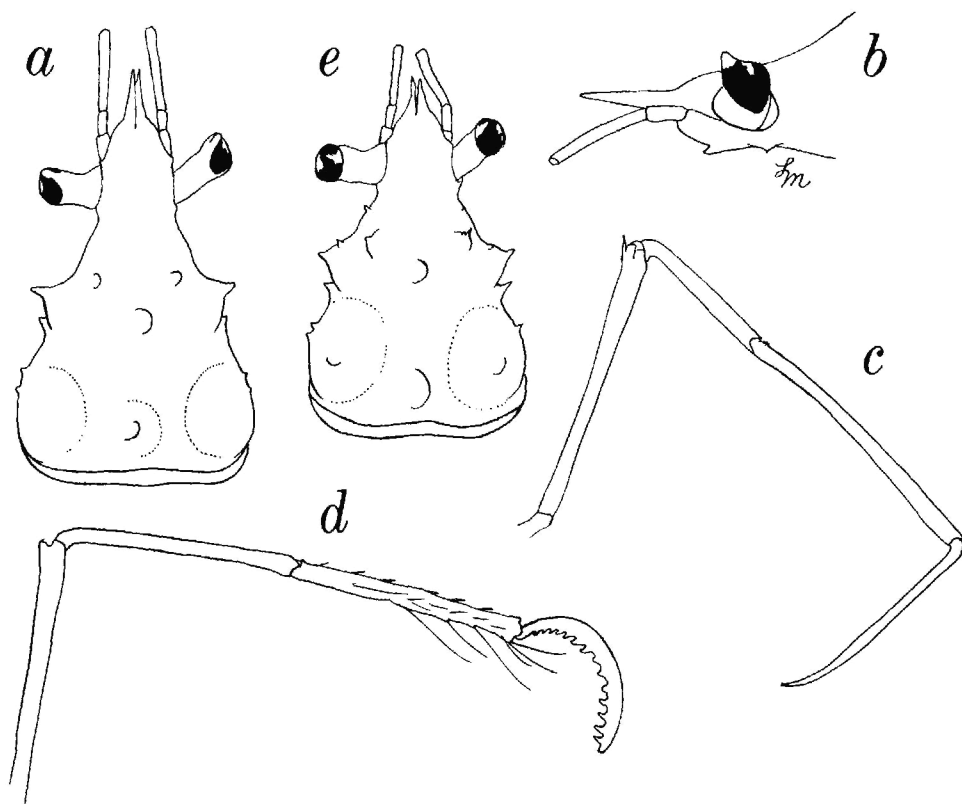


FIGURE 77.—*Macropodia hesperiae*, new species. Male paratype, cl 6.0 mm, Pillsbury Sta 60: a, carapace; b, front, lateral view; c, second pereiopod; d, fifth pereiopod. Female paratype, cl 4.2 mm, Pillsbury Sta 60: e, carapace.

M. linaresi is correct, the basal antennal segment in that species lacks distinct spines; it was described as "avec des granules ou des courtes spinules" (Forest and Zariquiey Alvarez, 1964:241). Also, in that species, the merus of the second pereiopod was described as being slightly longer than the carapace. We have examined a male cl 7 mm, and a female, cl 7 mm (RMNH Crust. D. 20133), from Cadaqués, Spain, and found that both specimens had three spinules ventrally on the basal segment of the antenna, the anterior-most largest, and, in the female, the merus of the second pereiopod is longer than the carapace; all the pereiopods of the male were detached.

We have no hesitation in identifying material identified with *M. linaresi* from Senegal by Forest and Guinot (1966:117) with *M. hesperiae* as they noted that "elle ne diffère guère des exemplaires typiques . . . que par un rostre légèrement plus

grêle et une carapace plus lisse et plus glabre." *Macropodia hesperiae* is a much smoother species than *M. linaresi*.

TYPE-LOCALITY.—Off the Ivory Coast, 04°15'N, 07°32'W to 04°12'N, 07°35.5'W, 46–49 m, Pillsbury Sta 65.

DISPOSITION OF TYPES.—The holotype (Crust. D. 23891), a male from Pillsbury Sta 65, is in the Rijksmuseum van Natuurlijke Historie, Leiden; paratypes also are at Leiden and in the National Museum of Natural History, Smithsonian Institution, Washington, D.C.

ETYMOLOGY.—The specific name is derived from the Latin name for the Gulf of Guinea, *Hesperium mare*.

BIOLOGY.—*Macropodia hesperiae* is a sublittoral species known from depths of 46–49 m, 51 m, 79–82 m, and 82–97 m (Pillsbury) and 65–75 m (*Calypso*; Forest and Guinot, 1966). Our specimens

were taken on rough bottom at three or four stations. The *Calypto* specimens were taken on mud, sand, and compact sand (sable construit).

An ovigerous female was taken in May by the *Calypto* (Forest and Guinot, 1966).

DISTRIBUTION.—Gulf of Guinea, from off Senegal, the Ivory Coast, Ghana, and Nigeria, in depths between 46–49 and 82–97 m. Records in the literature include the following:

Senegal: 12°55.5'N, 17°33'W, 65–75 m (Forest and Guinot, 1966).

Nigeria: 06°11'N, 03°36'E to 06°10'N, 03°38'E, 82–97 m (Voss, 1966).

Macropodia intermedia Bouvier, 1940

Macropodia longirostris var. *intermedia* Bouvier, 1940:366.—Capart, 1951:76.

?*Macropodia gilsoni*.—Maurin, 1968a:48, 62; 1968b:484, 486, 489, fig. 5 [not *Macropodia gilsoni* (Capart, 1951)].

MATERIAL EXAMINED.—*Pillsbury Material*: None.

Other Material: Morocco: No specific locality, holotype of *Macropodia longirostris* var. *intermedia*, 1♂ (MP).

Remarks.—Although several authors have synonymized *Macropodia gilsoni* Capart, 1951, with *Macropodia intermedia* Bouvier, 1940 (p. 297), we believe that two taxa may be involved, *M. intermedia* from areas to the north of the tropical region and *M. gilsoni* from the Gulf of Guinea proper, and, until more material from the two regions can be studied together, we prefer to recognize two species.

The holotype of *M. intermedia*, a male, cl 19 mm, cb 13.5 mm, was examined by Manning at the Muséum national d'Histoire naturelle in Paris in 1971. Several differences between it and our material of *M. gilsoni* were observed: (1) The rostrum is longer than the antennal peduncle; it is shorter in *M. gilsoni* (Monod, 1956, fig. 814). (2) The posterior margins of the antennular fossae as well as those portions that overlap the basal segment of the antenna are smooth; they usually are spinulose in *M. gilsoni* (Monod, 1956, figs. 814, 815). (3) The ventral spine on the ischium of the fifth pereopod appears to be much less prom-

inent and appears to be directed laterally rather than posteriorly as in *M. gilsoni*.

Although these differences are relatively minor, they suggest to us that *M. intermedia* should be considered distinct from *M. gilsoni*, at least for the time being.

DISTRIBUTION.—Eastern Atlantic, from the NW coast of Africa, sublittoral. All but the first of the following records require verification:

Morocco: Atlantic coast (Bouvier, 1940).

Spanish Sahara: Pulpito Bay, 20–30 m (Capart, 1951). Between Cabo Corbeiro and Cabo Blanco, 60–80 m (Maurin, 1968a). Between Cabo Barbas and Cabo Blanco, 50–90 m (Maurin, 1968b).

Mauritania: S Banc d'Arguin, 90–150 m (Maurin, 1968a). Banc d'Arguin, 40–60, 60–70, 90–100 m (Maurin, 1968b).

Macropodia longicornis (A. Milne Edwards and Bouvier, 1899)

Macropodia longicornis.—Monod, 1956:562 [references].

DISTRIBUTION.—Cape Verde Islands; sublittoral, to at least 275 m.

Macropodia longipes (A. Milne Edwards and Bouvier, 1899)

Stenorhynchus longipes A. Milne Edwards and Bouvier, 1899: 48.

?*Macropodia longirostris*.—Monod, 1956:559 [references].—Rossignol, 1957:115 [key].—Pérès, 1964:20 [Morocco]. [Not *Cancer longirostris* Fabricius, 1775.]

Macropodia longipes.—Forest and Gantès, 1960:357 [Morocco].—Forest and Zariquiey Alvarez, 1964:226, 241 [key], figs. 2, 6, 13 [review of Mediterranean species].—Forest, 1965b:349, 350 [discussion].—Bas, Arias, and Guerra, 1976, table 3 [Spanish Sahara].—Türkyay, 1976a: 25 [listed], 40, fig. 33 [Portugal, Morocco].

Macropodia tenuirostris longipes.—Forest, 1978:337, figs. 9, 16.

REMARKS.—Forest (1978:337) considers *M. longipes* to be the southern subspecies of *M. tenuirostris* (Leach, 1814).

DISTRIBUTION.—Eastern Atlantic, from the Gulf of Gascogne to Mauritania, Cape Verde Islands, and western Mediterranean; sublittoral, in 50–445 m (Forest, 1978).

****Macropodia macrocheles* (A. Milne Edwards and Bouvier, 1898)**

Macropodia macrocheles.—Capart, 1951:77, fig. 23.—Monod, 1956:560, 632, figs. 823–827.—Rossignol, 1957:115 [key].—Longhurst, 1958:89.—Guinot and Ribeiro, 1962:78.—Forest and Guinot, 1966:116.

Macropodia.—Voss, 1966:27.

MATERIAL EXAMINED.—*Pillsbury Material*: Liberia: Sta 82, 146–150 m, 1♂, 1♀ ov (L).

Nigeria: Sta 255, 264–269 m, 3♂, 2♀ (1 ov) (L, W).

Geronimo Material: Gabon: Sta 197, 200 m, 1♀ (W).

Other Material: Mauritania: Off Cabo Blanco, 240 m, *Talisman*, 13 Jul 1883, syntype, 1♀ ov (W, USNM 22979).

DESCRIPTION.—Capart, 1951:77.

Figures: Capart, 1951, fig. 23; Monod, 1956, figs. 823–827.

Male Pleopod: Monod, 1956, fig. 827 (Senegal).

MEASUREMENTS.—Carapace lengths of males 12.3 to 21 mm, of non-ovigerous females 11.8 to 15.2 mm, of ovigerous females 8.0 to 13.8 mm.

BIOLOGY.—*Macropodia macrocheles* is a deep water species, occurring between 96 and 300 m on soft bottoms (mud and sand, muddy sand), generally in depths greater than 150 m.

Ovigerous females have been taken in January, February, May, June, and December (Capart, 1951; Monod, 1956; *Pillsbury*).

DISTRIBUTION.—West Africa, from localities between Mauritania and Angola, in depths between 96 and 300 m. Monod (1956) reported the species from Senegal and Sierra Leone; since 1956 it has been taken from the following localities:

Guinea-Bissau: 10°32'N, 16°53.5'W, 174 m (Forest and Guinot, 1966).

Sierra Leone: 08°45'N, 14°38'W, 220–240 m (Longhurst, 1958).

Liberia: 04°57'N, 09°30'W to 04°58'N, 09°32'W, 146–150 m (Voss, 1966).

Angola: Baía dos Tigres, 150–200 m (Guinot and Ribeiro, 1962).

****Macropodia spinulosa* (Miers, 1881)**

FIGURE 78a

Stenorhynchus rostratus var. *spinulosus* Miers, 1881a:206.

Stenorhynchus phalangium.—Studer, 1882:335; 1883:7 [not *Cancer phalangium* Fabricius, 1775].

Macropodia rostrata spinulosa.—Rathbun, 1900a:293 [listed].

Macropodia rostrata.—Rathbun, 1900a:293 [listed].—Bals, 1922:71.—Odhner, 1923:18.—Monod, 1933b:501 [listed].—Capart, 1951:74, pl. 1: fig. 3.—Sourie, 1954b:147.—Monod, 1956:562, figs. 828–836.—Rossignol, 1957:115 [key].—Longhurst, 1958:89.—Gauld, 1960:72.—Guinot and Ribeiro, 1962:78, pl. 4: figs. 2, 3.—Forest and Guinot, 1966:116.—Le Loeuff and Intès, 1968:46, table 1.—Crosnier, 1970:1218. [Not *Macropodia rostrata* (Linnaeus, 1761).]

Stenorhynchus rostratus.—Doflein, 1904:69.—Lenz and Strunck, 1914:272 [part, not South African specimens?]. [Not *Macropodia rostrata* (Linnaeus, 1761).]

?*Stenorhynchus phalangium*.—Stimpson, 1907:22 [Madeira] [not *Cancer phalangium* Fabricius, 1775].

MATERIAL EXAMINED.—*Pillsbury Material*: Ivory Coast: Sta 46, 38–42 m, mud with dense *Jullienella*, 5♂, 10♀ (7 ov) (W). Sta 47, 37 m, bottom with *Jullienella*, 1♂ (L). Sta 48, 22 m, 1♂, 3♀ ov (L). Sta 65, 46–49 m, 1♂ (L).

Ghana: Sta 16, 46 m, mud with Foraminifera, shells, 1♂, 1♀ (W). Sta 17, 48 m, fine sand and green mud, 1♂ (L). Sta 23, 42 m, foliate brown to orange bryozoans, 2♂, 2♀ ov (L). Sta 24, 35–37 m, dark red bryozoans, 2♂, 1♀ ov (W). Sta 28, 49–53 m, 10♂, 8♀ (6 ov) (L).

Nigeria: Sta 248, 33 m, 1♂ (W).

Undaunted Material: Angola: Sta 95, 126 m, 1♀ ov (L).

Other Material: Dahomey: Off Grand-Popo, 30 m, Petersen grab, 23 Feb 1964, Guinean Trawling Survey, Tr 34, Sta 2, 1♂ (L).

Congo: Off Pointe-Noire, 04°48'S, 11°39'E, 54–56 m, *Ombango*, A. Crosnier, 23 Sep 1965, 1♂ (W).

DESCRIPTION.—Capart, 1951:74.

Figures: Capart, 1951, pl. 1: fig. 3; Monod, 1956, figs. 828–836.

Male Pleopod: Monod, 1956, figs. 834–836 (Senegal).

MEASUREMENTS.—Carapace lengths of males 5 to 18.7 mm, of non-ovigerous females 10 to 11 mm, of ovigerous females 11 to 16 mm. Capart (1951) noted that his largest specimens were a male cl 17 mm, cb 12 mm and a female cl 16.5 mm, cb 13 mm.

REMARKS.—*Macropodia spinulosa* differs from *M. rostrata* in numerous features: the rostrum is shorter, extending just beyond the base of the distal segment of the antennal peduncle rather than almost to the middle of that segment as in *M. rostrata*; the anterior margins of the antennular fossae are visible in dorsal view (Monod, 1956, fig. 829), whereas they cannot be seen in *M.*

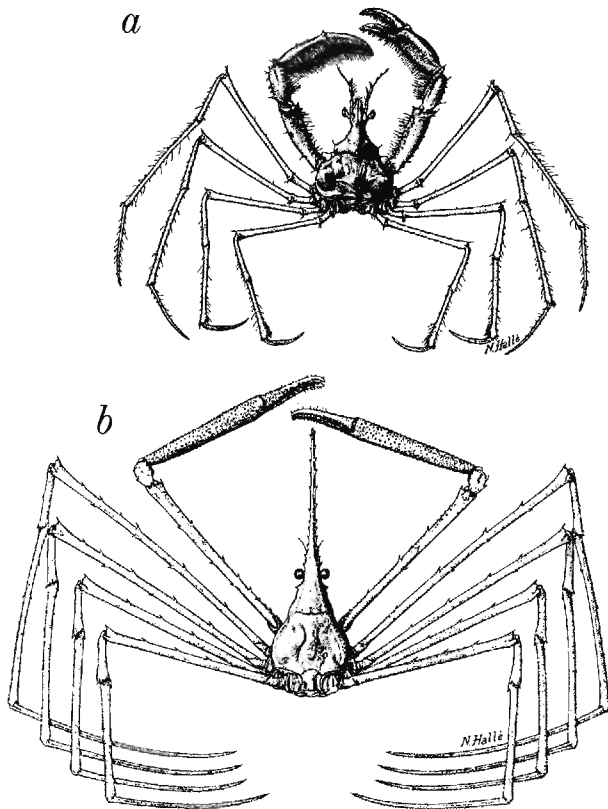


FIGURE 78.—*a*, *Macropodia spinulosa* (Miers) (from Monod, 1956, fig. 828); *b*, *Stenorhynchus lanceolatus* (Brullé) (from Monod, 1956, fig. 838).

rostrata (a character mentioned by Forest and Zariquiey Alvarez, 1964:241, key); only the proximal third or fourth of the dactylus of the fifth pereopod is armed with spinules or low tubercles whereas in *M. rostrata* the proximal two-thirds to three-fourths is armed (most of the dactylus of that leg is naked in *M. spinulosa*, lacking even setae); and the dorsal spines of the carapace are much longer (Monod, 1956, fig. 830). In addition the pereopods are longer, with the third leg almost five times rather than three times as long as the carapace (Christiansen, 1969:112) and, as noted by Miers (1881a:206) the chelipeds are very spinulose. Some of these differences already had been noted by Guinot and Ribeiro (1962:79) and by Crosnier (1970:1218).

We have compared our material of *M. spinulosa* with *M. rostrata* from the North Sea, as well as from the Mediterranean, and we found some

differences in material of *M. rostrata* from those two areas. The Mediterranean form is more slender (compare carapace shape in Forest and Zariquiey Alvarez, 1964, fig. 1, and Christiansen, 1969, fig. 46), a feature reflected in the shape of the epistome, which in Mediterranean specimens is as long as wide but in northern specimens is much broader than long. Also, the carapace in Mediterranean specimens is much smoother and less hairy. Finally, in Mediterranean specimens the dactylus of the fifth leg is longer, more slender, less curved, less setose, and has low denticles only on the proximal third; in northern specimens the dactylus is short, more strongly curved, much more setose, and has erect spinules on the proximal two-thirds. These differences strongly suggest that two species may be involved. If they prove to be constant and the Mediterranean form is a distinct species, the name *Macropodia inermis* (Heller, 1856) is available. It was named originally as *Stenorhynchus inermis* from the Adriatic Sea (Heller, 1856:3).

Material from South Africa identified with *M. rostrata* by Lenz and Strunck (1914) and Barnard (1950, 1954) resembles *M. spinulosa* rather than *M. rostrata* in having a short rostrum, with the margins of the antennular fossae visible at the base of the rostrum. Barnard's material, at least, differs from both of these more northern species in having distal spinules on the basal segment of the antenna, an apical seta on the eye, and in having spinules along the entire margin of the dactylus of the fifth pereopod.

BIOLOGY.—*Macropodia spinulosa* is a sublittoral species, having been taken in depths between ca 1 and 126 m; of 55 depth records available, only 3 (5%) are from depths of more than 100 m (108, 110, and 126 m), 11 (20%) are from between 50 and 100 m, 11 (20%) are from depths of 20 m or less, and the remainder (55%) are from depths between 20 and 50 m. The deeper material identified here with this species probably should be restudied.

The species generally occurs on soft bottoms, mud or muddy sand, but it was taken by the *Calypso* (Forest and Guinot, 1966) on mud, rocks,