

TWO NEW SPECIES OF *PETTIBONEIA*
(POLYCHAETA: DORVILLEIDAE) PRIMARILY FROM
THE GULF OF MEXICO

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Abstract.—Two new species of the genus *Pettiboneia* Orensanz, 1973, are described, *P. duofurca* from the east and west coasts of Florida, Alabama, and Texas, and *P. blakei* from the east coast of Florida.

The genus *Pettiboneia* Orensanz, 1973, is currently known for three species: *P. sanmatiensis* Orensanz, 1973 (redescribed by Blake 1979), *P. urciensis* Campoy and San Martin, 1980, and *P. australiensis* Westheide and von Nordheim, 1985. *Pettiboneia sanmatiensis* is recorded from Argentina, its type locality, and from California and British Columbia (Blake 1979:1137); *P. urciensis* is described from the Mediterranean; and *P. australiensis* is described from Australia. Wolf (1984) identified two potentially new species of *Pettiboneia* from the Gulf of Mexico; these are described below.

The bulk of the material examined for this study was collected as part of a U.S. Bureau of Land Management (now Minerals Management Service) Outer Continental Shelf baseline study conducted during 1975-1981. MAFLA stations were those designated within the Mississippi-Alabama-Florida portion of the program; SOFLA stations were those located off southwest Florida; STOCS stations were located off the Texas coast (see Uebelacker and Johnson (1984). The remaining material was collected under the auspices of the Environmental Protection Agency (EPA) during contracts issued to Battelle, Columbus Laboratories (EPA/Bat stations); to Science Applications International Corp. through JRB Associates, McLean, Virginia (SAI stations); and under a contract issued by the U.S. Army Corps of Engineers to Barry A. Vittor & Associates, Inc. (COE station).

The type material and some additional specimens are deposited in the National Museum of Natural History, Smithsonian Institution (USNM). Other specimens are in the laboratory museum of Barry A. Vittor & Associates, Inc., Mobile, Alabama.

Figure Abbreviations

an	antenna	nuO	nuchal organ
br	branchia	pa	palp
noto	notopodium	vC	ventral cirrus

Pettiboneia Orensanz, 1973

Type species.—*Pettiboneia sanmatiensis* Orensanz, 1973.

Diagnosis.—Maxillae in 8-14 rows, each row composed of free denticles only; some maxillary rows with rasping denticles; base plates absent. Denticle rows not fused posteriorly. Maxillary carriers absent. Prostomium with well-developed, biarticulate palps; antennae digitiform, simple, shorter than palps. Notopodia present anteriorly, long, with internal acicula, without distal article; absent posteriorly. Branchiae present or absent. Supraacicular setae simple with long tapered forms and furcate setae; subacicular setae include compound falcigers and occasionally inferior simple setae.

Remarks.—Armstrong and Jumars (1978) described *Protodorvillea pugettensis* and *P. dibranchiata*, both of which probably belong in *Pettiboneia* primarily because of their jaw morphology (Blake, pers. comm.); how-

ever, both species are described as having maxillary carriers. Thus, their inclusion within *Pettiboneia* would necessitate expansion of the generic diagnosis to include species with maxillary carriers.

Pettiboneia duofurca, new species
Figs. 1, 2

Pettiboneia sp. A.—Wolf, 1984:44–47, fig. 44-1, 44-2a-j.

Material examined.—FLORIDA, off Palm Beach: EPA/Bat Sta 5-2, Nov 1984, 26°46.0'N, 79°58.9'W, 118 m, medium coarse sand, 1 Paratype (USNM 98931).—Off Port Everglades: EPA/Bat Sta Dive 1, Nov 1984, 26°07.7'N, 80°05.0'W, 17 m, sand, 1 Paratype (USNM 98932).—Off Tampa Bay: MAFLA Sta 2209I, Jun 1976, 27°52'30.5"N, 83°33'59.0"W, 34 m, clayey-sandy silt, 1 specimen (USNM 89597); SAI Sta A-13-1, 15 May 1982, 82°59.0'N, 27°36.5'W, 49 m, medium fine sand, 1 specimen; SAI Sta A-13-3, same date and location, 49 m, coarse sand with gravel, 1 specimen.—Northwest: MAFLA Sta 2422C, Jun 1976, 29°30'N, 84°27'W, 24 m, medium fine sand, 2 specimens including 1 ovigerous female; MAFLA Sta 2424B, Jul 1976, 20°13'00.7"N, 85°00'01.4"W, 27 m, medium sand, 4 specimens (USNM 89557); MAFLA Sta 2424C, same date and location, 3 specimens; MAFLA Sta 2424E, same date and location, 1 specimen (USNM 89596); MAFLA Sta 2424H, same date and location, 1 specimen.—Off Panama City: MAFLA Sta 2528H, Aug 1977, 29°54'58.6"N, 86°04'58.5"W, 37 m, coarse sand, 2 specimens (USNM 89594–5); SAI Sta 10-1, Nov 1983, 30°08'07"N, 85°45'39"W, 17.7 m, fine to medium sand with shell, 1 Paratype (USNM 98933).—ALABAMA, off Mobile Bay: COE Sta 695-6, 1 Apr 1981, 30°01.5'N, 87°54.27'W, 22.4 m, sand, 1 specimen.—TEXAS, off Matagorda: SAI Sta 1-3, Nov 1983, 28°15.33'N, 96°11.91'W, 9.3 m, sand and gravel, 1 specimen.—Off Padre Island: STOCS Sta III/4-

1, no date, 26°58'N, 97°20'W, 15 m, sand, 1 specimen.—Off Port Isabel: STOCS Sta IV/4-1, Fall 1976, 26°10'N, 97°08'W, 15 m, sand, 2 specimens (USNM 89556, 89593).—Off Brownsville: SAI Sta 8-3, Nov 1983, 26°03.28'N, 97°04.15'W, 16.9 m, sand, Holotype (USNM 98930).

Description.—Length to 4.3 mm, width to 0.2 mm. Largest specimen incomplete with 45 setigers. Prostomium conical, broadly rounded anteriorly (Fig. 1a), with 1 pair of small eyes, when present. Antennae smooth, digitiform, about $\frac{2}{3}$ length of palps. Palps biarticulate. Single pair of large nuchal organs present dorsolaterally at postectal corners of prostomium. Additional ciliated areas present on prostomium, palps, and laterally on each tentacular ring (Fig. 1a).

Notopodia present on setigers 2–8 or 9, with internal acicula, without distal article (Fig. 1b). Notopodia absent posteriorly (Fig. 1c). Branchiae present on dorsal edge of neuropodia from setigers 3–5 or 8, or absent entirely. Parapodia without well-developed pre- or postsetal lobes (Fig. 1b, c).

Supraacicular setae including simple serrate setae tapering to fine tips, and furcate setae. Furcate setae of anterior few setigers small, with tines slightly unequal in length, with spines present below short tine (Fig. 1d); thereafter tines long, slightly unequal in length, with or without spines below short tine (Fig. 1e, f). Furcate setae of juveniles pseudocompound, with tines unequal in length and with numerous spines below short tine (Fig. 1g, h). Subacicular setae compound, with long to short blades having unidentate tips (Fig. 1i, j); blade length ratio approximately 4.4–5.1:1. Far posterior parapodia with inferior simple setae (Fig. 1k).

Pygidium with 4 anal cirri, 2 very long, filiform dorsal ones and pair of shorter, club-shaped ventral ones (Fig. 2a).

Maxillae in 12 rows (Fig. 2b), each row composed of separate denticles, each denticle wider than long. Row 1 with 6–7 broad,

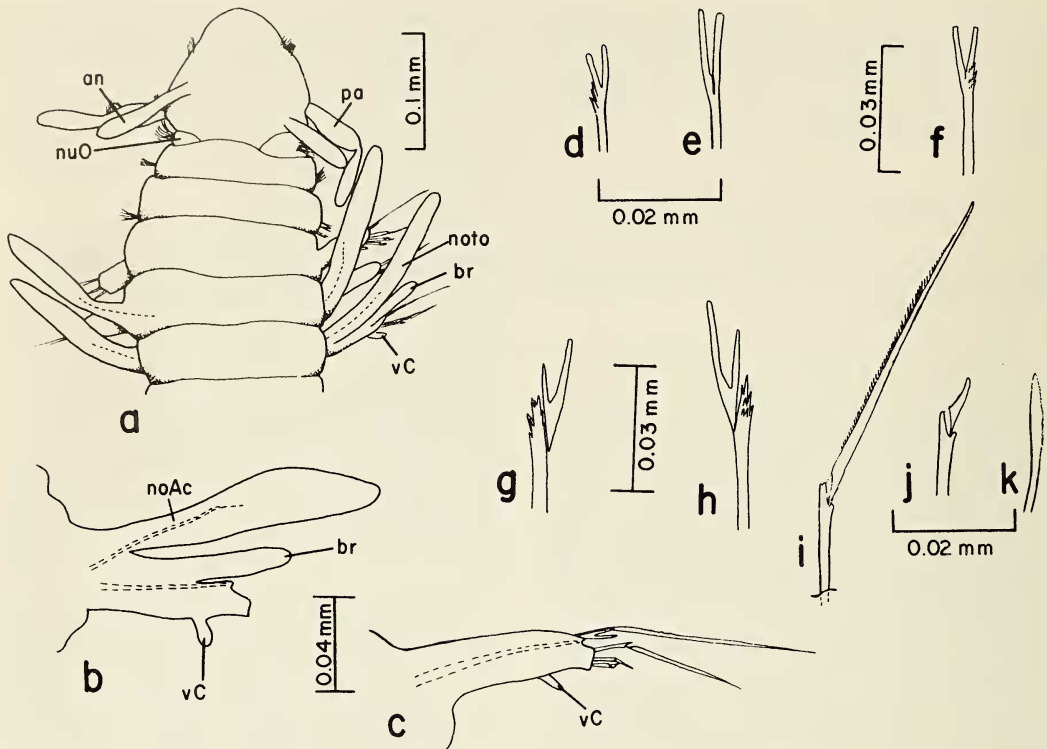


Fig. 1. *Pettiboneia duofurca*: a, Anterior end, dorsal view; b, Anterior parapodium, posterior view; c, Posterior parapodium, posterior view; d, Furcate seta from anterior setiger of adult; e, Same, from posterior setiger; f, Same, spinous form; g, Pseudocompound furcate seta from anterior setiger of juvenile; h, Same, from posterior setiger of juvenile; i, Superior subacicular falciger; j, Inferior subacicular falciger; k, Inferior simple seta. (Figs. a–e, i–k from Wolf 1984:fig. 44-2a–h.)

rounded, poorly chitinized, clear, rasp-like denticles, each denticle with numerous minute teeth. Row II with about 13–15 squared, flattened denticles, each denticle with one large tooth and several smaller ones. All denticles of Row II heavily sclerotized and dark brown in color. Rows III–VI with poorly sclerotized, clear, rounded, rasp-like denticles, each denticle with numerous teeth. Mandibles each with anterior portions rounded, scalloped along inner edge. Each mandible strongly concave medially along outer edge, and with widely divergent posterior portions (Fig. 2c).

Remarks.—Reexamination of material shows that rows I and II of Wolf (1984) were labelled and described in reverse order. It also appears that in most specimens ex-

amined, row I is not as long as row II, but this feature is difficult to determine due to the small size and/or the condition of the worms. Indeed, row I may be analogous to maxillary carriers of other dorvilleid genera, thereby further distinguishing *P. duofurca* from other species of the genus. If maxillary carriers are present, this may be cause to remove *P. duofurca* to a new genus; however, I have elected not to do this since other diagnostic characters indicate *P. duofurca* is best kept within *Pettiboneia* for the present.

Among the material examined, one complete juvenile specimen was found that measures 2.06 mm in length for 28 setigers. It differed from the adult worms in having pseudocompound furcate setae (Fig. 1g, h)

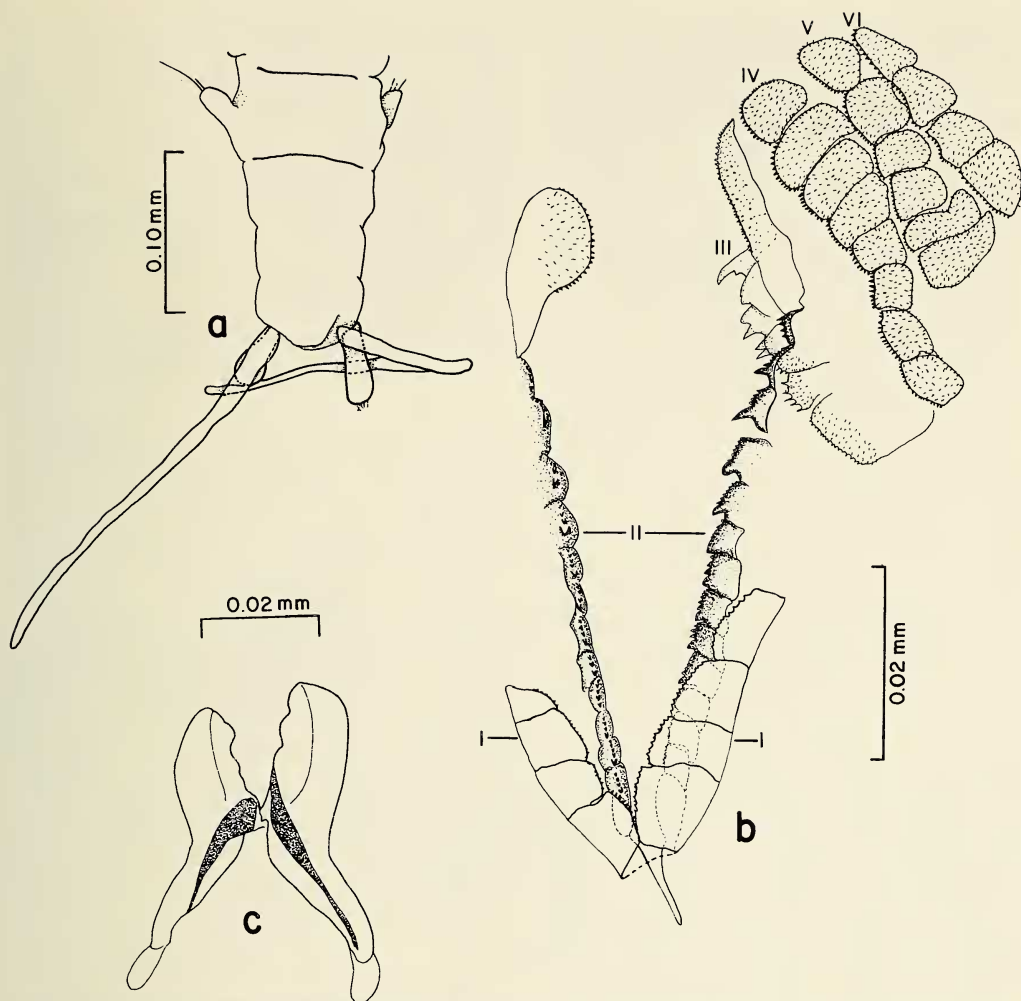


Fig. 2. *Pettiboneia duofurca*: a, Posterior end, dorsal view; b, Maxillae, dorsal view (left side not completely shown); c, Mandibles, dorsal view. (Fig. c from Wolf 1984:fig. 44-2j.)

and in having dorsal cirri present on both parapodia of setiger 3 only. The mandibles and maxillae are identical to those of the adult although an entirely new set of each was developing within the juvenile specimen.

One gravid female was also found. It contained 1-2 eggs per setiger from setiger 11. The largest egg measured about 80 μ m in diameter.

Pettiboneia duofurca is similar to *P. blakei*, described below, in having only 12 maxillary rows instead of 14 as in *P. san-*

matiensis or eight rows as in *P. australiensis* and *P. urciensis*. *Pettiboneia duofurca* differs from *P. blakei* in having denticles of all maxillary rows wider than long rather than longer than wide; in having smaller, more numerous rasp-like teeth on each denticle rather than fewer, more prominent teeth; in having narrow, widely flaring mandibles instead of broad, slightly divergent mandibles; in having two types of furcate setae instead of one; and in having branchiae in some specimens.

Etymology.—The species name is taken

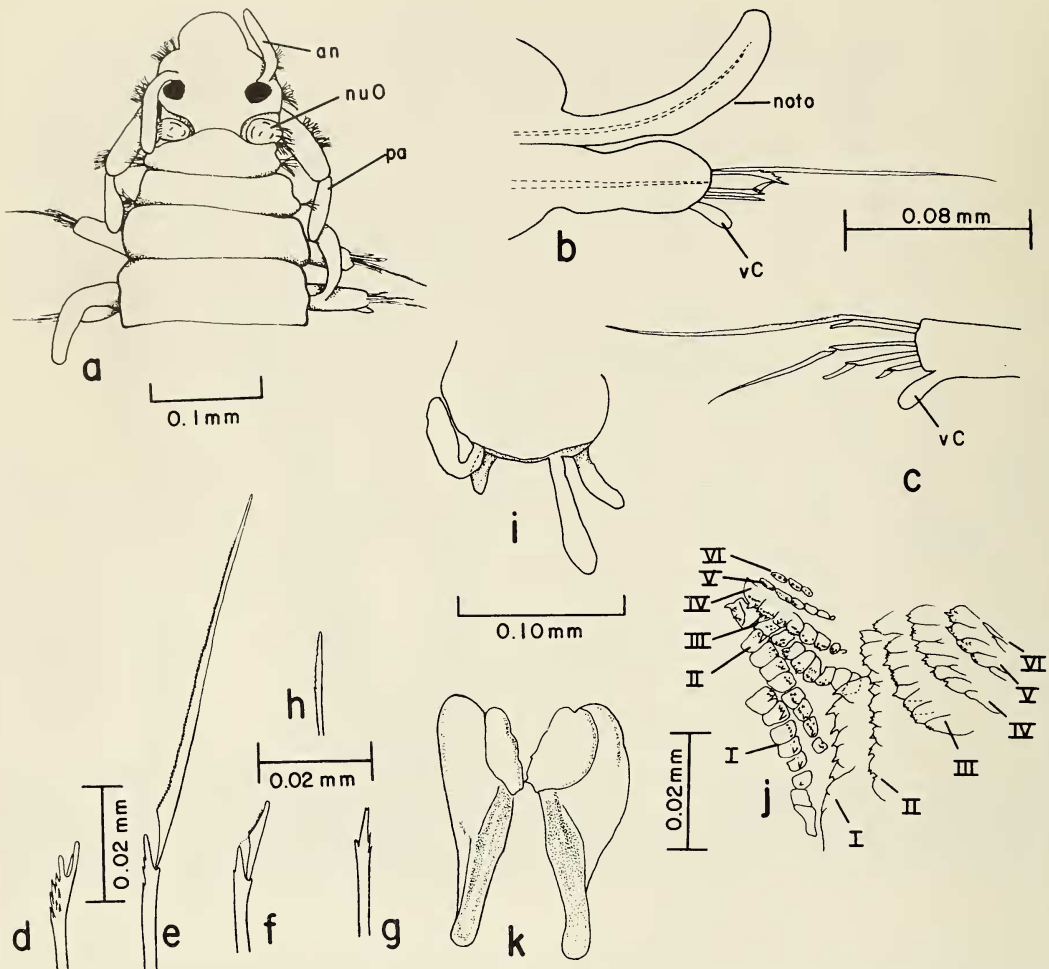


Fig. 3. *Pettiboneia blakei*: a, Anterior end, dorsal view; b, Anterior parapodium, posterior view; c, Posterior parapodium, posterior view; d, Furcate seta; e, Superior subacicular falciger; f, Inferior subacicular falciger; g, Setal shaft, edge-on view; h, Inferior simple seta; i, Pygidium, dorsal view; j, Maxillae, dorsal view; k, Mandibles, dorsal view. (Figs. a-h, j, k, from Wolf 1984:fig. 44-4a-j.)

from the Latin *duo*, two, and *furca*, fork, referring to the two types of furcate setae present along the body.

Distribution.—East and west coasts of Florida to Texas, 9.3–118 m.

Pettiboneia blakei, new species

Fig. 3

Pettiboneia sp. B.—Wolf, 1984:44–49, fig. 44-3, 44-4a-j.

Material examined.—FLORIDA, south-

west: SOFLA Sta 20A, May 1981, 25°17.34'N, 82°09.73'W, 22 m, coarse sand, 1 specimen: MAFLA Sta 2211F, Nov 1977, 27°56'29.5"N, 83°52'59.5"W, 43 m, coarse sand, 2 specimens.—Off Tampa Bay: EPA/Bat Sta 1111-III-OLD 3-10, Dec 1984, 27°29'N, 83°04.5'W, 22.6 m, sand, 1 Paratype (USNM 98937); EPA/Bat Sta 1111-III-5-1, Dec 1984, 27°28.7'N, 83°06.5'W, 24.7 m, sand, 1 Paratype (USNM 98935); EPA/Bat Sta 1111-III-5-3, same data, 1 Paratype (USNM 98936); EPA/Bat Sta

1111-III-5-10, same data, Holotype (USNM 98934).—West coast: MAFLA Sta 2315A, Jul 1976, 28°33'59.1"N, 84°20'09.1"W, 38 m, silty-fine sand, 1 specimen; MAFLA Sta 2316C, Nov 1977, 28°42'00.3"N, 84°20'00.7"W, 35 m, silty-fine sand, 1 specimen.—Off Cape San Blas: MAFLA Sta 2854G, Aug 1977, 29°24'00.1"N, 85°42'02.0"W, 42 m, medium fine sand, 1 specimen.—Off Panama City: MAFLA Sta 2528J, Aug 1977, 29°54'58.6"N, 86°04'58.5"W, 37 m, coarse sand, 1 specimen.

Description.—Length to 8.5 mm, width to 0.58 mm. Largest specimen complete with 114 setigers. Prostomium (Fig. 3a) rounded anteriorly, expanded in ocular region, with single pair of large eyes at antennal bases. Antennae smooth, digitiform, about $\frac{1}{2}$ length of palps. Palps distinctly biarticulate. Single pair of large, ciliated nuchal organs located at dorsal postectal corners of prostomium. Additional prominent ciliated areas present on prostomium, palps, and laterally on both peristomial rings (Fig. 3a).

Notopodia present on setigers 2–12 to 24 (Fig. 3b), with internal acicula, without distal article. Branchiae absent. Notopodia absent posteriorly (Fig. 3c). Neuropodia without pre- and postsetal lobes.

Supraacicular setae include long, simple, serrate setae tapering to fine tips; and furcate setae with blunt-tipped tines, slightly unequal in length, about 4 rows of spines below short tine (Fig. 3d). Subacicular setae compound, unidentate, with long to short serrate blades (Fig. 3e, f); apical tips of setal shafts bifid when viewed edge-on (Fig. 3g). Inferior simple setae present on far posterior parapodia (Fig. 3h).

Pygidium rounded with 2 pairs of filiform, subterminal anal cirri, dorsal cirri about twice as long as ventral ones (Fig. 3i).

Maxillae arranged in 12 rows (Fig. 3j) each row composed entirely of free denticles. Each denticle longer than wide, with 1 main tooth and several smaller teeth. Maxillary carriers absent. Rows I–IV each with 6–8 denticles;

row V with 5–6 denticles; row VI with 2–4 denticles. Each mandible broad anteriorly, scalloped along inner edge, then tapering abruptly posteriorly and becoming slightly divergent (Fig. 3k).

Remarks.—One paratype (USNM 98936) is a gravid female with numerous eggs present in each setiger from about setiger 26. The largest eggs measured 65–70 μ m in diameter.

Pettiboneia blakei is most similar to *P. duofurca*, described above, but differs in several respects (see "REMARKS" for *P. duofurca*).

Etymology.—The species is named in honor of Dr. James Blake, Battelle New England Marine Research Laboratory, Duxbury, Massachusetts, for his numerous contributions to polychaete taxonomy including those dealing with the Dorvilleidae.

Distribution.—East coast of Florida, 22–43 m.

Acknowledgments

I wish to thank Dr. Kristian Fauchald, Smithsonian Institution, Washington, D.C.; and Dr. Barry A. Vittor and Ms. Linda Sierke, Barry A. Vittor & Associates, Inc., for their reviews of the manuscript.

Some of the material examined was obtained under the following contracts: Environmental Protection Agency (EPA) to Science Applications International Corp. through JRB Associates, McLean, Virginia, contract number 68-0106388; from EPA to Battelle, Columbus Laboratories, Columbus, Ohio, contract number 68-01-6986; and from the U.S. Army Corps of Engineers, Mobile District, to Barry A. Vittor & Associates, Inc., Mobile, Alabama, contract number DACWO1-80-C-0427.

Barry A. Vittor & Associates, Inc., provided monetary and material support for this study.

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