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Two New Calycophorae, Siphonophorae[1]

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THE NEW SPECIES here described were observed in the plankton collections obtained by the NAGA Expedition (1959–1961) in the South China Sea and the Gulf of Thailand.

Family ABYLIDAE L. Agassiz 1862

Subfamily ABYLOPSINAE Totton 1954

Genus *Enneagonum* Quoy and Gaimard 1827

DIAGNOSIS: Superior nectophores with opening to nectosac next to dorsal wall of hydroecium at the base of a large triangular basal facet. Bract cuboidal; somatocyst with apical horn and two short stubby ventrolateral branches. Gonophores with five prominent teeth; dorsal, one lateral and one ventral ridge incomplete; deep pocket beneath the apophysis (Sears, 1953).

The genotype *E. hyalinum* Quoy and Gaimard 1827, for which only the superior nectophore, bract, and gonophores are known, is well described by Sears (1953), together with the synonyms.

Enneagonum searsae n. sp.

HOLOTYPE: USNM No. 52701

PARATYPES: USNM No. 52702

ETYMOLOGY: Named for Dr. Mary Sears in appreciation of the privilege of working with her.

DESCRIPTION: Represented by only the bract and gonophores. Its bract is a truncated square pyramid; thus the top is a perfect square, with four lateral ridges prolonged at the base to a length almost equal to the height of the pyramid. Therefore, the bract is cuboidal, with a top square facet, two lateral trapezial facets (anterior and posterior), and the other two sides with a huge arch emphasized by the extension of the ridges. Most of the entire basal part is the opening of the hydroecium (Fig. 1*A,B*).

The somatocyst in the bract is like that in *E. hyalinum,* formed by two swollen ovoid lateral branches and the conspicuous apical diverticulum.

The gonophore is a complicated bell, with the dorsal and lateral teeth more prominent than in *E. hyalinum* gonophores. These teeth are emphasized by ridges like wings and by strong serrations. Pocket deep. (Fig. 1*C,D.*)

The illustrations of the bract and female gonophore (Fig. 1), together with those of the superior nectophore, bract, and gonophores (male and female) for *E. hyalinum* (Fig. 2), make it easy to compare the morphological characteristics of these two species. The size of the bells of the siphonophores is variable; therefore, only the size of the whole specimen is given in the legends for the illustrations.

DISTRIBUTION: See Table 1.

Family DIPHYIDAE Quoy and Gaimard 1827

Subfamily SULCULEOLARIINAE Totton 1954

Genus *Sulculeolaria* Blainville 1834

DIAGNOSIS: The nectophores are smooth and round. The lateral canals of the posterior nectophores make a loop from the ring canal to the upper part of the nectosac walls. The anterior nectophores lack the hydroecium cavity. In contrast to the genus *Lensia,* which does not present looped canals, the anterior nectophores have lateral longitudinal ridges and also have a shallow hydroecium cavity.

The genus *Sulculeolaria* is represented by the following seven species, the synonyms for which appear in Totton and Bargmann (1965).

S. angusta Totton 1954
S. bigelowi (Sears) 1950
S. biloba (Sars) 1846
S. chuni (Lens and Riemsdijk) 1908

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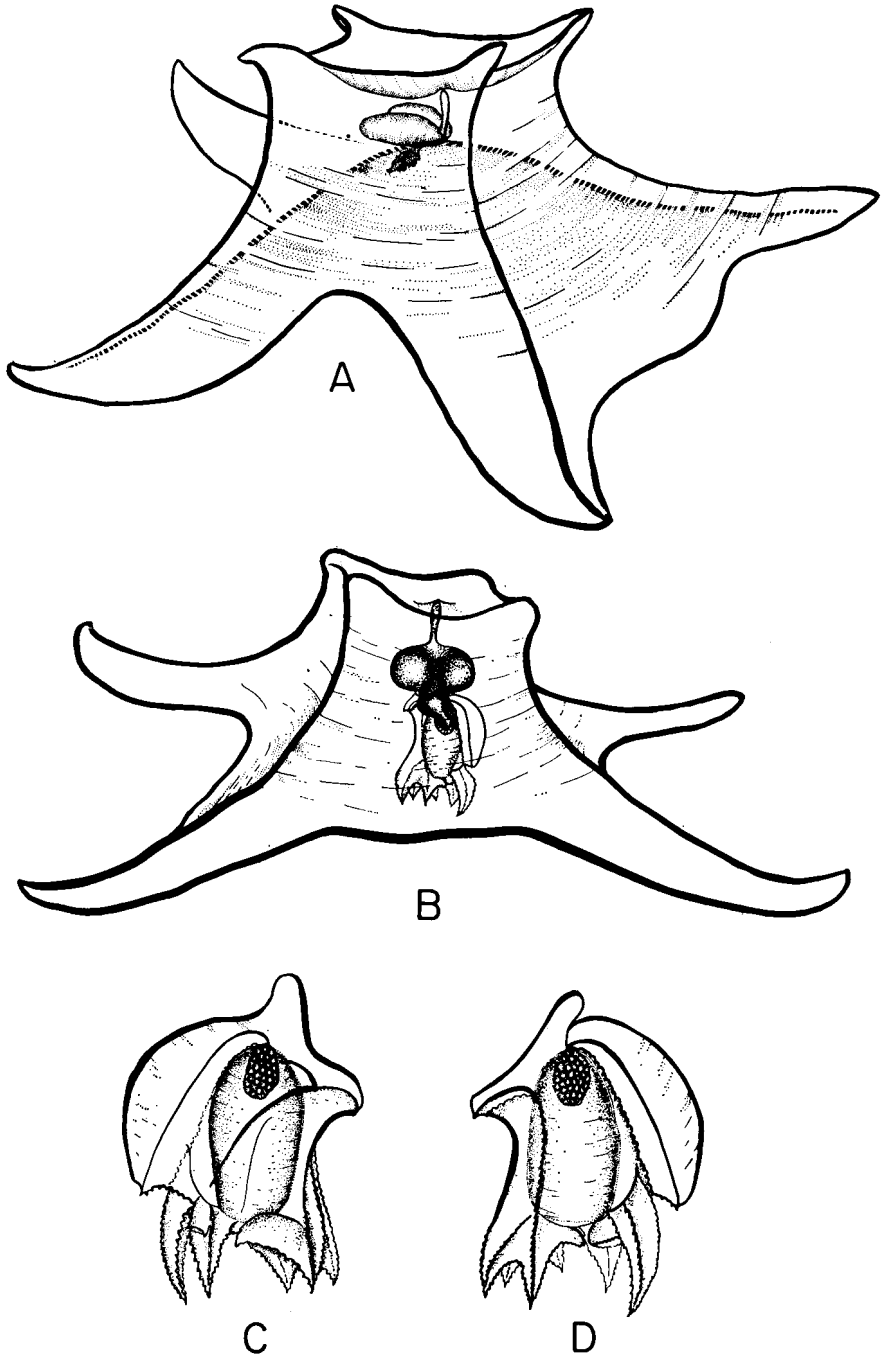

FIG. 1. *Enneagonum searsae* n. sp. *A,* Left dorsal view of bract (7 mm high, ridges 11 mm long); *B,* ventral view of bract; *C,* female gonophore, left view (2.7 mm high); *D,* female gonophore, right view.

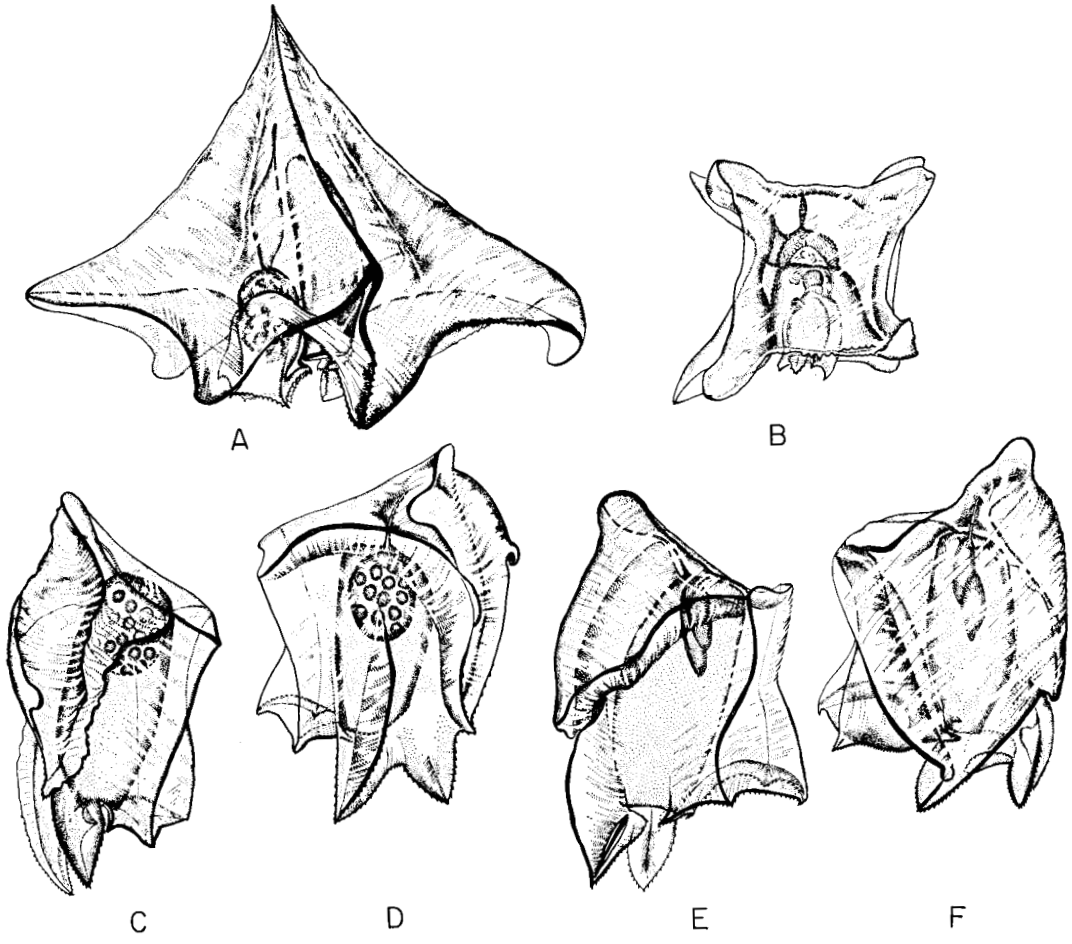

FIG. 2. *Ennaegonum hyalinum* Quoy and Gaimard. *A,* Superior nectophore (8 mm high); *B,* bract, right view (4 mm high); *C,* female gonophore, left view (2.5 mm high); *D,* female gonophore, right view; *E,* male gonophore, left view (2.5 mm high); *F,* male gonophore, right view.

TABLE 1

DISTRIBUTION OF *Enneagonum searsae* n. sp. IN THE SOUTH CHINA SEA AND THE GULF OF THAILAND (NAGA EXPEDITION)

CRUISE	DATE	TIME	STATION	POSITION	DEPTH OF HAUL (METERS)	DEPTH OF BOTTOM (METERS)
S-2	2 Dec 1959	1823–1839	11	10°27′00″N–112°54′30″E	153	2533
S-4	7 Mar 1960	1050–1114	21	09°23′30″N–112°12′30″E	123	1792
S-5	24 Apr 1960	0037–0046	1	06°23′00″N–102°11′45″E	17	24
S-8	14 Sep 1960	0330–0344	6	15°42′30″N–112°47′40″E	128	2505

TABLE 2

DIFFERENTIAL MORPHOLOGICAL CHARACTERISTICS OF SUPERIOR NECTOPHORES FOR THE SPECIES OF *Sulculeolaria*

SPECIES	SOMATOCYST	BASAL PLATES	LATERAL CANALS	COMMISSURAL CANALS	OSTIAL TEETH
S. angusta	small	both with round pointed distal edges	none	none	none
S. bigelowi	small	exceptionally large and wide lamellae	extend to near the summit of nectosac; ventral canal divides in two short branches before entering ring canal	none	none
S. biloba	short ovoid, longest axis oblique	long, bilobed	extending to near upper ¼ of nectosac	reaching to midlength of nectosac; one small branch at top of loop, length variable according to size of nectophore	none
S. brintoni	long	2, mitten-shaped, with free finger to the center, locking	extending near upper ¼ of nectosac	left canal shorter than right, which joins ventral canal	2, like fingers at dorsal side
S. chuni	long, but shorter in small specimens	short, rounded	extending to top ⅓ of nectosac	none	none
S. monoica	small	divided, with one tooth near sagittal margin in proximal part	to top ⅓ of nectosac	to posterior ⅓ of nectosac	5 in total; 3 dorsal, 2 lateral
S. quadrivalvis	long, reaching to midlength of nectosac	2 wings, with notch locking them together	to near summit of nectosac	to posterior ⅓ of lateral canals	4 in total; 2 dorsal, 2 lateral
S. turgida	small	2 halves	to near summit of nectostac	to posterior ⅓ of lateral canals	none

S. monoica (Chun) 1888
S. quadrivalvis Blainville 1834
S. turgida (Gegenbaur) 1853

The ostium of the nectophores of *S. monoica* and *S. quadrivalvis* presents teeth, five in the former and four in the latter. In the other five species, the ostium has smooth borders.

Sulculeolaria brintoni n. sp.

HOLOTYPE: USNM No. 52703
PARATYPES: USNM No. 52704

ETYMOLOGY: Named after my colleague Dr. Edward Brinton, scientist in the NAGA Expedition.

DESCRIPTION: Appeared to be represented by only the anterior nectophores. These bells presented two teeth in the dorsal part of the ostium. The teeth are long and cylindrical, like fingers, and are inclined toward the opening of the nectosac (Fig. 3).

The mouth plates are of mitten shape. They lock together at the middle by the free finger protuberance in such a way that the left mitten locks with the finger to the outer part, and the right mitten to the inner part, that is, toward the opening of the nectosac.

The somatocyst is long and thin, reaching up to near the midlength of the nectophore.

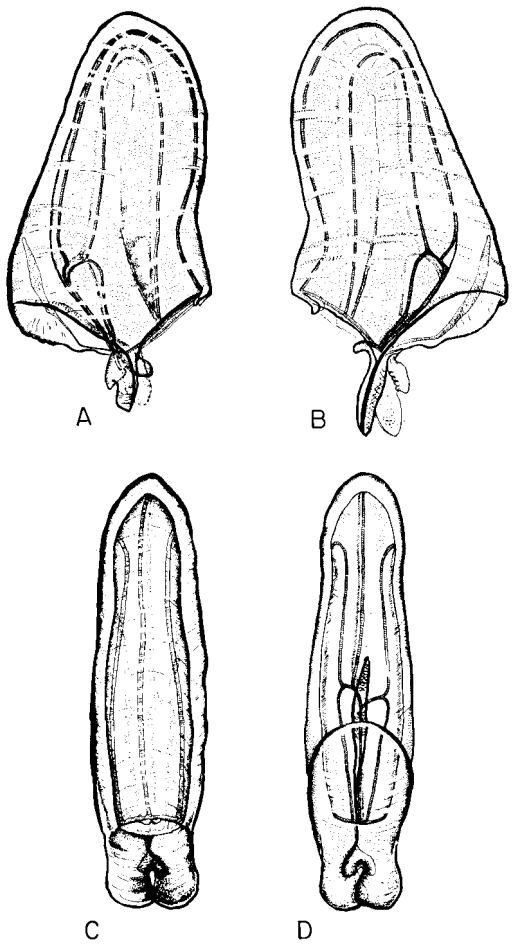

FIG. 3. *Sulculeolaria brintoni* n. sp., superior nectophore in various views (14 mm high). *A*, Left view; *B*, right view; *C*, dorsal view; *D*, ventral view.

The commissural canals reach up to the posterior third of the length of the lateral canals. The ventral canal either joins the right commissural canal (Fig. 3) or goes straight to the point at which both commissural canals meet.

The anterior nectophores of the seven other species of the genus *Sulculeolaria* are illustrated (Fig. 4) for comparison with those of *S. brintoni* n. sp. The size of the bell is variable; for instance, the superior nectophores of *S. monoica* ranged in length from 5 mm to 22 mm. Therefore, again, only the specimen size is given in the figure legends.

The differential morphological characteristics of the superior nectophores of the eight species of the genus *Sulculeolaria* are summarized in Table 2.

DISTRIBUTION: See Table 3.

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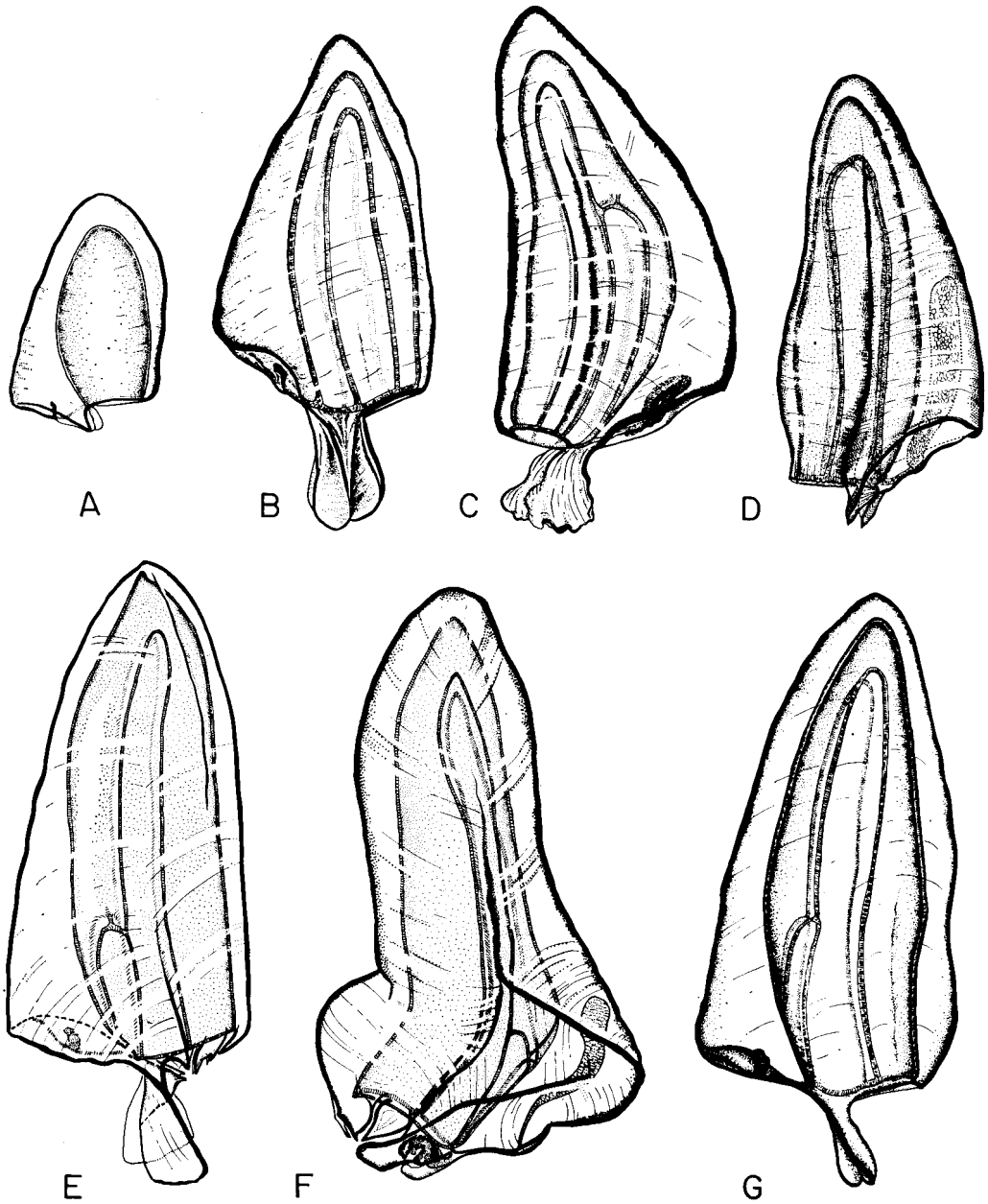

FIG. 4. Superior nectophores of other species of *Sulculeolaria,* for comparison. *A, S. angusta,* left view (4.5 mm high); *B, S. bigelowi,* left view (7 mm high); *C, S. biloba,* right view (13 mm high); *D, S. chuni,* right view (10 mm high); *E, S. monoica,* left view (13 mm high); *F, S. quadrivalvis,* right view (12 mm high); *G, S. turgida,* left view (11 mm high).

TABLE 3

DISTRIBUTION OF *Sulculeolaria brintoni* n. sp. IN THE SOUTH CHINA SEA AND THE GULF OF THAILAND (NAGA EXPEDITION)

CRUISE	DATE	TIME	STATION	POSITION	DEPTH OF HAUL (METERS)	DEPTH OF BOTTOM (METERS)
S-2	5 Dec 1959	0637–0655	17	10°34′00″N–109°25′15″E	153.00	256.00
S-2	9 Dec 1959	1941–1947	19	09°45′00″N–107°03′00″E	13.40	23.00
S-3	10 Jan 1960	1042–1054	U-13	10°29′12″N–100°26′30″E	33.40	55.00
S-3	22 Jan 1960	1546–1548	2	06°49′00″N–102°41′30″E	21.20	44.00
S-3	27 Jan 1960	0318–0334	17	09°35′00″N–101°20′00″E	25.40	66.00
S-3	27 Jan 1960	1916–1923	20	10°41′12″N–103°03′00″E	12.50	26.00
S-3	29 Jan 1960	0823–0833	26	10°27′48″N– 99°56′30″E	22.50	49.00
S-3	30 Jan 1960	1940–1947	32	12°24′00″N–101°19′12″E	12.50	27.00
S-4	16 Mar 1960	0530–0544	30	09°01′00″N–107°24′18″E	36.80	38.00
S-5	24 Apr 1960	0626–0633	2	06°45′30″N–102°41′00″E	26.50	?
S-5	26 Apr 1960	2242–2250	14B	07°36′30″N–101°11′00″E	19.80	25.00
S-5	27 Apr 1960	0548–0555	16	08°03′20″N–100°42′20″E	14.00	26.00
S-5	28 Apr 1960	0626–0638	20	09°55′30″N–101°54′00″E	53.00	69.00
S-5	30 Apr 1960	0138–0147	25	11°27′40″N–101°38′00″E	42.40	57.00
S-6	30 May 1960	0152–0217	3Y	15°42′00″N–110°03′20″E	402.00	466.00
S-6	31 May 1960	2107–2121	8	14°12′00″N–113°17′00″E	129.00	2566.00
S-6	10 Jun 1960	1954–2011	15	12°09′00″N–109°24′45″E	85.30	95.00
S-6	11 Jun 1960	0522–0536	16	11°51′40″N–110°08′05″E	153.00	2140.00
S-6	14 Jun 1960	1523–1538	25AX	09°54′00″N–110°34′40″E	134.00	2864.00
S-6	15 Jun 1960	0725–0740	27	10°30′30″N–109°36′30″E	123.00	284.00
S-6	15 Jun 1960	1446–1455	28	10°55′30″N–108°55′30″E	35.30	46.00
S-7	4 Aug 1960	2105–2116	14	11°32′00″N–101°38′15″E	45.00	57.00
S-7	5 Aug 1960	0334–0344	15	11°11′00″N–101°10′00″E	46.00	55.00
S-7	5 Aug 1960	1718–1727	17a	10°18′00″N– 99°48′00″E	38.60	49.00
S-7	6 Aug 1960	0312–0320	18c	09°52′00″N– 99°42′00″E	18.00	24.00
S-8	30 Sep 1960	1902–1911	29	09°43′00″N–107°03′00″E	17.00	23.00
S-8	1 Oct 1960	1918–1929	32	07°56′00″N–107°41′30″E	44.30	55.00
S-9	24 Nov 1960	0436–0444	37	11°17′55″N– 99°42′00″E	29.00	41.00
S-9	24 Nov 1960	1350–1358	38	12°19′40″N–100°20′20″E	22.00	29.00
S-9	24 Nov 1960	1824–1834	40	12°39′00″N–100°36′13″E	25.00	30.00

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