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DESCRIPTIONS OF SOME THECATE HYDROIDS (CNIDARID-HYDROZOA) FROM THE EGYPTIAN MEDITERRANEAN WATERS.

FAMILY : CAMPANULARIIDAE

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ABSTRACT

The thecate hydroids of the Egyptian Mediterranean waters are represented by the Family Campanulariidae. This Family is represented in the present collection by five species, these are : Clytia gracilis, Clytia hemisphaerica, Clytia sp., Gonothyraea loveni & Obelia geniculata. The study differentiates between the two former species carefully. Some of the species are newly recorded in the Egyptian Mediterranean waters: Clytia gracilis, Clytia hemisphaerica & Gonothyraea loveni. The Taxonomy, Morphology & Distribution of the recorded species are discussed.

INTRODUCTION

The family campanulariidae is represented in all Oceans. The species are found mainly within continental shelf depth, and some occur intertidally (Cornelius, 1982). many of the genera and species are cosmopolitan. The Branching of some species of this Family e.g. Obelia geniculata was most frequent in low water temperature than warm one (Ralph & Thompson, 1968). Internode length, extent of annulation, hydrothecal characters, gonothecal shape have all been used to define the present specimens. Medusa generation is present in this Family. All the available records refer to the hydroid stage & almost none to the medusa. The aim of the present work is to study the Taxonomy, Morphology & Distribution of the recorded 5 species of this Family which are : Clytia gracilis, Clytia hemisphaerica, Clytia sp., Gonothyraea loveni & Obelia geniculata.

MATERIAL AND METHODS

The specimens were selected from deposited collections of the Marine Biological Reference collection center. The collections were previously dredged during in the period 1966-1979 from the area of the Mediterranean Sea which lies between Port Said & West of El-Alamen. The collections were preserved in formaline 10 %.

The hydroid specimens were sorted from the others marine bottom fauna. They were examined under the ordinary light Microscope & Streomicroscope. The dimensions of the different species were made by means of Eye-Piece Micrometer. The descriptive Drawings were made by the aid of the Camera Lucida.

All Samples were documented & they are now deposited in the Marine Biological Reference collection center, Alexandria.

Family Campanulariidae Johnston, 1836
Subfamily Clytiinae Cornelius, 1982
Genus Clytia Lamouroux, 1812
Clytia gracilis (Sars, 1850)

(Fig. 1 A)

Laomedia gracilis p.p. Sars, 1850:138.

Laomedia (Campanularia) gracilis Sars, 1857:161, pl.1 figs. 1-3, 5.

Gonothyrea gracilis-Hinks, 1868: 183-184, pl. 36 fig. 1.

Laomedia (Phialidium) pelagica-Vervoort, 1959: 313-315, fig. 55b-c; Vervoort, 1968: 15-17, fig. 5.

Laomedia (Clytia) pelagica-Vervoort, 1972: 91-92, fig. 26 c. Clytia sarsi-Cornelius, 1982: 78.

Clytia gracilis-Cornelius & Ostman, 1986: 165-166; Calder, 1991: 54-57, fig. 31, Ramil & Vervoort, 1992: 235-238, fig. 67 a.

Site of collections:

Unknown locality; caught by "Faras El-Bahr" ship, St.3, 15.8.1969, 16 m; El-Maadea Makka, St.5, 16.10.1969, 5 m; Abu Kir, St. 18, S.N. 184, 18.5.1970, 10m;
El Karsh, St. 4, S.N. 228, 28.7.1970, 15 m;
El Maadea St. 2, S.N. 226, 28.7.1970, 9 m.
*S.N. = Sample number.

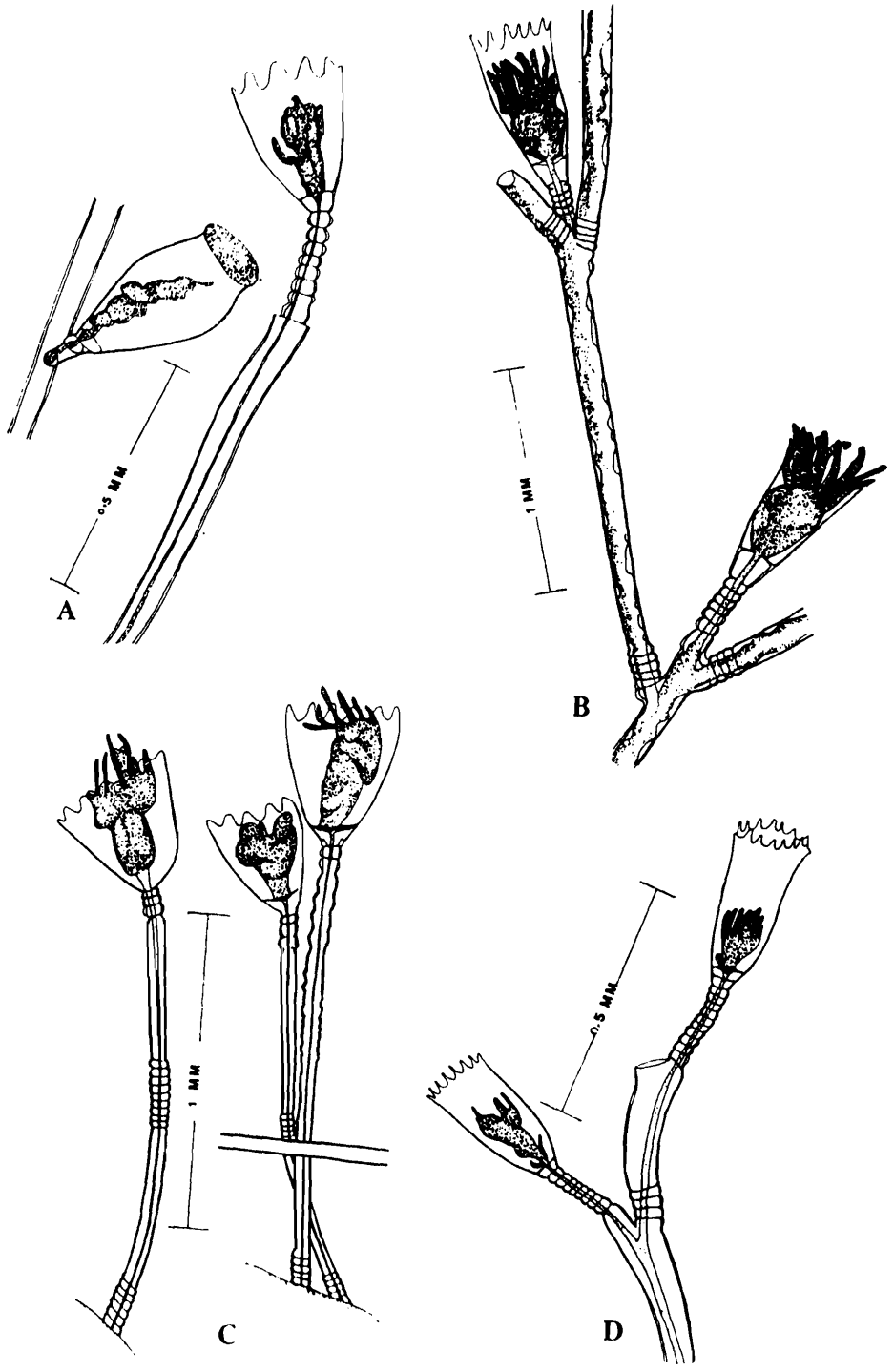

Figure 1: A: Clytia gracilis (with Gonotheca)
B: Clytia hemisphaerica
C: Clytia sp.
D: Gonothyraea loveni

Description :

Stolon is generally attached to a substrate, which may be other hydroids or fixed substrate. It gives rise to erect pedicels of which some have a lateral ramification. The pedicels & ramifications terminate in a hydrotheca, and they have, basally, a number of rings. The remainder of the pedicel is smooth with exception of a portion just basal to hydrotheca. The latter has four to six rings. Hydrotheca is elongate, slightly campanulate with basal part rather narrowed than rounded. Its lateral walls slightly widening towards hydrothecal rim. This has eight acute cusps separated by deep, rounded embayments, which slightly but distinctly inclined inwards. Also in major part of each hydrotheca a portion of its rim bearing marginal cusp curved inwards so that cross section of hydrotheca just under rim is undulated. Basal part of hydrotheca has fine, laminar diaphragm separating off small basal chamber. Gonotheca is elongated oval, gradually tapering at the base and has 0-4 rings. Its Apex cut off straight and usually with slightly everted collar. This last character does not hold for all gonothecae, especially the older. The empty gonothecae have no collar & simply cut off at the apex.

Opening of gonotheca is circular. Gonophores with 4-6 developing medusal buds.

Variability :

The hydrothecal curvatures may at times give the impression of longitudinal striae running downwards from the base of the marginal embayment, occasionally until halfway hydrothecal depth. This, however, is an optical effect not supported by actual present of structural striae. Some of pedicels show signs of regeneration after breakage. Regeneration starts at the broken end of the pedicel with a number of rings similar to those found under the hydrotheca. Actual length of pedicel as well as depth of hydrotheca greatly varied amongst the various colonies.

Measurements (in mm.)

Hydrothecal pedicel, length	1.22 - 2.75
diameter	0.07 - 0.09
Hydrotheca, total depth	0.56 - 0.67
diameter just below rim	0.22 - 0.27
Gonotheca, length	0.93 - 1.05
maximal diameter	0.275- 0.50

Distribution :

Clytia gracilis has wide geographical distribution and is considered by some authors (Patriti, 1970; Rossi, 1971) to be a cosmopolitan species. The species has previously been recorded from the Mediterranean (Picard, 1958; Ramil & Vervoort, 1992).

Remarks :

This species is a new record for the Egyptian Mediterranean waters. The validity of the binomen Clytia gracilis (Sars, 1850) & its possible synonymy with Clytia hemisphaerica (Linnaeus, 1767) gave rise to lengthy discussion (Vervoort, 1959, 1968; Millard, 1975; Cornelius, 1982). Ostman's studies (1979, 1982) on the species of Campanulariidae from Scandinavian waters as well as the study of living specimens from both Scandinavian & British waters (Cornelius & Ostman, 1986) have now unambiguously demonstrated the validity of both species.

Clytia hemisphaerica (Linnaeus, 1767)

(Fig. 1 B)

Medusa hemisphaerica Linnaeus, 1767: 1098.
Clytia johnstoni: Hincks, 1868: 143-146, pl. 24, fig. 1, 1a.
Campanularia gracilis: Stepanyants, 1979: 32, pl. 5, fig. 3.
Clytia hemisphaerica: Vervoort, 1968: 16-17; Calder, 1975: 300-302, fig. 4a-b; Millard, 1975: 217-218, fig. 72 a-d.

Site of collections :

El Madeea (Makka), St. 5, 16.10. 1969, 5m; Abu Keer, St. 4, 17.4.1970, S.N. 166,7 m; Abu Keer, St. 18, 18.5.1970, S.N. 184, 10 m.

Description :

Hydrorhiza is composed of a tangled mass of perisarcal tubules from which rises an erect, basally slightly polysiphonic axis with three lateral branches arranged alternately in the same plane. Axis, in monosiphonic part, is slightly geniculate, divided into segments with four or five basal rings and distally supporting the hydrothecal pedicel. The next internode springs from apophysis at the base of hydrothecal pedicel. Side-branch springs from segment just under hydrothecal pedicel. The hydrothecae are alternately directed left and right. Hydrothecal pedicel has three to six rings. The hydrotheca is slender, with conical walls, gradually widens from the basal chamber onwards. The basal chamber is fairly spacious, separated from the rest of the theca by means of diaphragm. The hydrothecal margin is provided with about 12 acute, sharply triangular teeth, separated by rounded incisions. The hydrothecal cross-section, just under the margin, is sinuous. The periderm on the hydrotheca is exceedingly thin and the hydrothecae, consequently, are collapsible. Structure of the branches is identical with that of axis, the hydrotheca from whose base they spring becoming auxiliary.

Measurements (in mm.)

Hydrotheca, total length.....0.825 - 1.000
diameter at rim.....0.360 - 0.460

Distribution :

Clytia hemisphaerica is nearly cosmopolitan in coastal waters (Ralph, 1957; Kramp, 1961; Cornelius, 1982).

Remarks :

It was observed-from the available literature-that this species was not recorded before from the Mediterranean Sea. That is the first record of this species in both Mediterranean and Egyptian Mediterranean waters. The material is identical with that material obtained by Stepanyants, (1979) from the northern part of hemisphere & the middle part of the Pacific Ocean under the name of Campanularia gracilis. As for as the available literature shows, it was not also recorded from the Egyptian Red Sea waters.

The main difference between C. hemisphaerica & C. gracilis is that C. hemisphaerica is composed of a tangled mass of tubules, while C. gracilis exhibits only erect pedicels with very few ramifications. The hydrotheca of the former is very slender & that of the latter is slightly companulate & more wide.

The first record of this species in the Mediterranean may be explained through the distributional mechanism i.e. through the transport by ships (as fouling-organisms) and see-currents.

Clytia sp.

(Fig. 1 C)

Site of collections:

El-Tarh, 10.5.1969, 6 m; Sidi Krer, St. 2, 2.11.1978, 25 m.

Description :

The colony is composed of creeping, thin hydrorhiza (stolon) attached to substrate (usually other hydroids). From this stolon arise, at irregular intervals, erect, unbranched pedicels each with one terminal hydrotheca. The Pedicels basally, in the middle & apical are ringed.

Hydrotheca is wide, slightly campanulate, gradually rounded at the base. Its Rim has 10-12 cusps, separated by deep, rounded embayments. In this it resembles the hydrotheca of C. gracilis. Basal parts of many, but not all, hydrothecae have fine diaphragm, which not separate the hydrotheca to completely upper & lower chambers. Gonothecae are not observed in the examined specimens.

Measurements (in mm)

Hydrotheca, total length.....0.450-0.520
diameter at aperture.....0.320-0.510

Remarks :

This species resemble to C. gracilis. The main differences between the two species are that the pedicels of C. gracilis are long & smooth, except under the hydrotheca. All the hydrothecae are with complete diaphragm. On the other hand, the pedicels of the present species exhibit rings basally, in the middle & apical, and the majority of hydrothecae are with incomplete diaphragm. This species shows the general characters of the Genus Clytia Lamouroux, 1812. At the same time it does resemble any species of this Genus described in the present work or in the available literature. Since this material is scanty & without Gonothecae, I refer to it as Clytia sp. waiting for another materials in the future.

Subfamily Obelinnae Haeckel, 1879

Genus Gonothyraea Allman, 1864

Gonothyraea loveni (Allman, 1859)

(Fig. 1 D)

Laomedia loveni : Allman, 1859: 138-140.
Gonothyraea hyalina: Hincks, 1866: 297-298; Hincks, 1868:184-185, pl. 35, fig. 2.
Obelia loveni : Naumov, 1960: 264-265, fig. 152.
Gonothyraea loveni : Hincks, 1868: 181-183, pl. 25, fig. 2; Cornelius, 1982: 92-94, fig. 15 (a,b).

Site of collections :

Ziad El Hamra, St. 10, 17.8.1969, 9 m; El Madeea, St. 7, S.N. 231, 28.7.1970; Rashid, St. 10, S.N. 234, 28.7.1970, 8 m; Port Said, S.N. 227, 28.2.1971. 9 m.

Description :

The Colony is erect with monosiphonic, delicate and variably flexuose stem. The internodes are usually slightly curved and irregularly branched reaching c. 100 mm. Annuli appear above origins of branches. Hydrothecal pedicels usually annulate throughout but frequently smooth central portion remains; usually tapering distally to roughly half proximal diameter. Hydrotheca are cylindrical, campanulate with length 1.5-3 times maximum breadth. Its rim is delicate, slightly outturned, castellate with raised often notched; portions; longitudinal folds often appear in hydrotheca.

Variation : Internode length and curvature, length of hydrotheca and the degree of transparency of the perisarc are all variable.

Measurements (in mm.)

Hydrothecal pedicel, length.....0.175-0.200
Hydrotheca, total length.....0.300-0.370
diameter at aperture.....0.175-0.190

Distribution :

Widespread in suitable habitats & often common. Occurs throughout western Europe north to West Greenland (Cornelius, 1982). It has been recorded from the black Sea (Naumov, 1969); & on the Atlantic coast from West France & Morocco (Billard, 1928; Partiti, 1970), and also from the Mediterranean Sea (Picard, 1958; Riedl, 1959).

Remarks :

As far as the available literature shows, this species is a new record in the Egyptian Mediterranean waters. Naumov (1960,1969); Calder (1970) & Cornelius (1982) regarded Gonothyaea loveni & G. hyalina as conspecific & I concur. Nevertheless G. loveni was widely confused with Laomedia flexuosa until Wright (1858, 1859) realized it was distinct.

Genus Obelia Peron & Lesueur, 1810
Obelia geniculata (Linnaeus, 1758)

(Fig. 2 A-C)

Sertularia geniculata	(Linnaeus, 1758 : 812.
Laomedea geniculata	Johnston, 1838: 198-201, pl. 33, Fig. 1-5.
Campanularia coruscans	Schneider, 1897 : 482.
Obelia geniculata	Allman, 1888: 23, 24, pl. 12, fig. 1; Naumov. 1960: 261-263,fig. 147-148; Cornelius, 1975: 272-273, figs. 1,5; Stepanyants, 1979: 36, Taf. 5, Fig. 7; Elbeshbeeshy, 1991: 114, fig. 26.

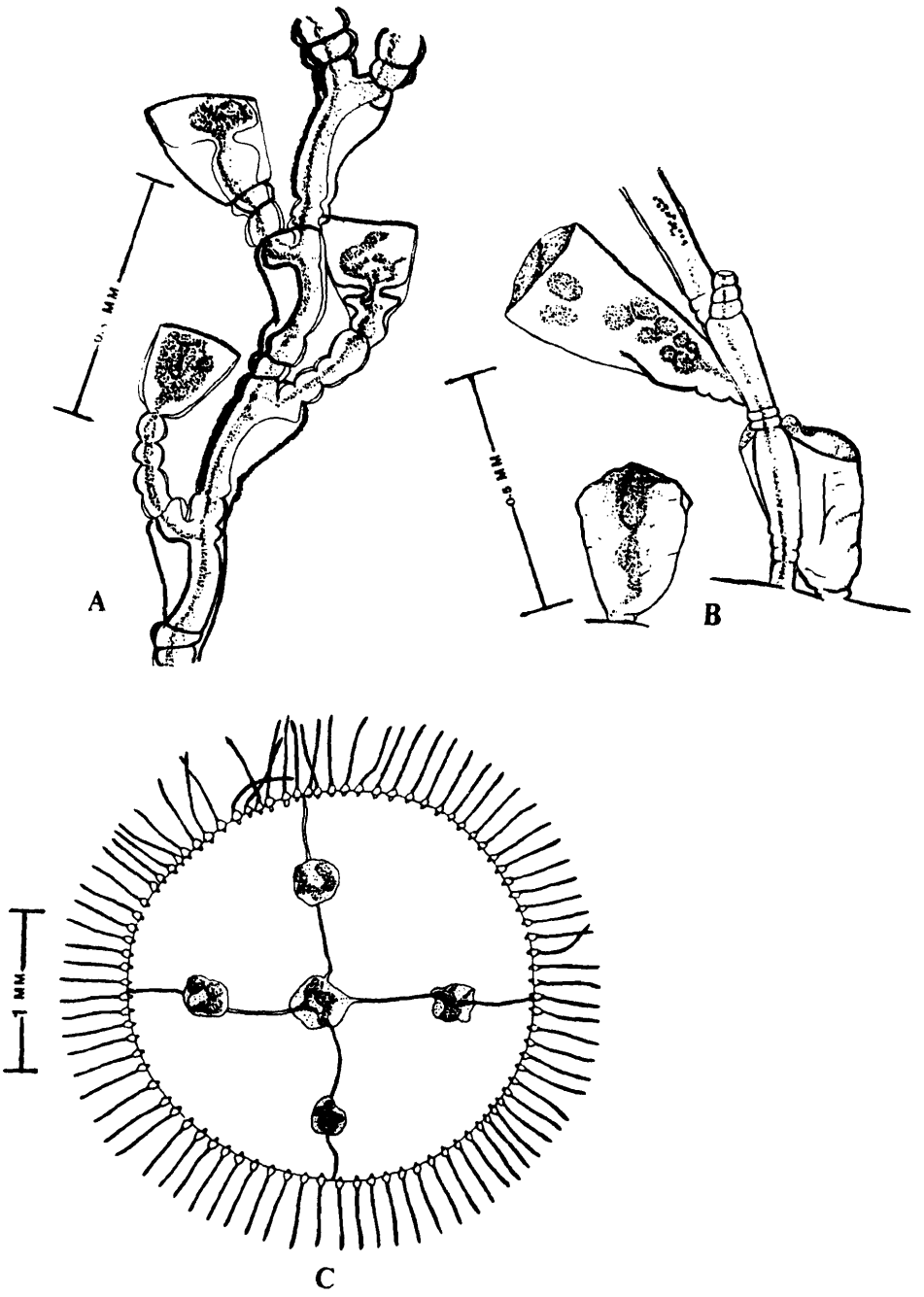

Figure 2 Obelia geniculata
A: monosiphonic fragment B: Gonothecae C: Medusa

Site of collections :

El Maadea (Laban Ziad), St. 9, 17.8.1969, 12 m.; El Maadea (Makka), S.N. 355, 16.10.1969, 5 m.; El Alamen, 8.1.1970, 10 m.; Abu Kir, St. 3, S.N. 193 10.6.1970, 12 m.; Abu Kir, St. 6, S.N. 226, 28.7.1970, 10 m.; El Grayer, St. 6, 26.3.1972, 9 m.; El Alamen, 8.1.1978, 14 m.

Description :

Colony comprises attached stolons from which arise vertical monosiphonic flexuose hydrocauli, usually unbranched. The internodes are short, curved, internally thickened below origin of each pedical, usually with one to five proximal annulations. The Pedicel varies in length, attached to short lateral process near distal end of internode, annulated throughout or with smooth central portion. Hydrotheca is broad, even-rimmed, bell-shaped with length some what equal to width at rim. Gonotheca has a short annulated pedicel situated in the axial of hydrotheca. It is conical, wider distally with apex domed and narrow tubular aperture. Free medusae with approximately 70-80 tentacles, umbrella-like flat without vellum and with 8 statocyst on the adradial tentacles. Gonads found on the radial-canals.

The medusae, those reared from this species have been found to resemble that of O. dichotoma Linnaeus, 1758 & O. lucifera (Forbes, 1848) (Russell, 1953).

As noted also by Russell (1953), it is at present impossible to relate them to the hydroid species, and it may remain so until further rearing work has been done and the characters of the medusae reassessed. The occurrence of both hydroid & medusa stages in the same specimen in the present work gives us no doubt, that this medusa belongs to O. geniculata.

Measurements (in mm.)

Internodes

length.....0.300-0.360

Hydrotheca

length.....0.180-0.210
breadth at rim.....0.210-0.230

Gonotheca

length.....0.370-0.510
maximum breadth.....0.220-0.250

Medusa

diameter.....2.30-2.500

DISTRIBUTION :

Obelia geniculata is almost cosmopolitan in continental shelf seas (Cornelius, 1975). In the present study, it is the most widely distributed species of all hydroids-fauna along the Egyptians Mediterranean coasts.

Variation: In the hydroid stage of this species variation occurs mainly in the angle of flexure between internodes, the asymmetric thickening of the internodal perisarc, the length to breadth ratio of the internodes and the shape of the hydrotheca.

Remarks : The occurrence of the above variations has prompted authors to recognize several varities and forms. It deals in all cases with one species. Detailed accounts of variation in New Zealand populations of obelia geniculata by Ralph (1956) & Ralph & Thomson (1968) demonstrated that over a wide geographical range & from season to season at a single locality certain morphological characters varied with temperature.

Low temperature induces longer colonies with longer internodes, and colonies from warmer localities show a reduction in branching.

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