



## Rediscovery of the *Conus conspersus* Reeve, 1844 holotype

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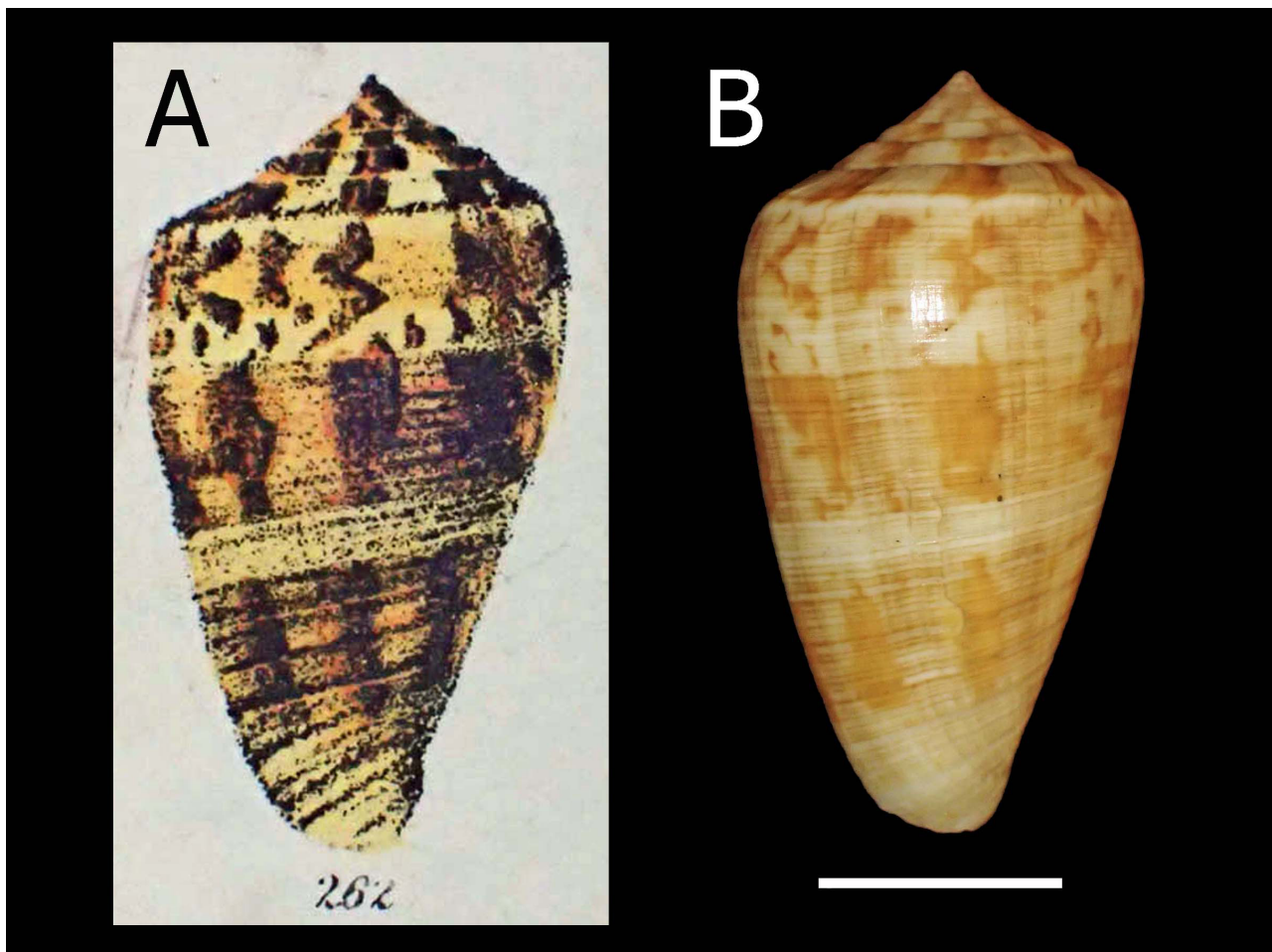
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*Conus conspersus* Reeve, 1844 is a gastropod of the Conidae family that was originally described and illustrated in the first volume of the *Conchologia Iconica* (Reeve, 1843–1849) without locality. It is included as species number 262 with a figure of the same number on plate 47 (Figure 1A) drawn in dorsal view. The plate is signed “Sowerby del. et lith.” indicating that it was delineated (*i.e.* drawn) and lithographed by George Brettingham Sowerby II, who provided most of the illustrations for the *Conchologia Iconica* (Petit, 2007). It is not known whether Sowerby drew the shell itself, or duplicated a drawing of the shell. The description in the text of the monograph associated with plate 47 was published in February 1844. This first description refers to another published description in the Proceedings of the Zoological Society of London for the year 1843 which was not published until May 1844 (Reeve, 1844).

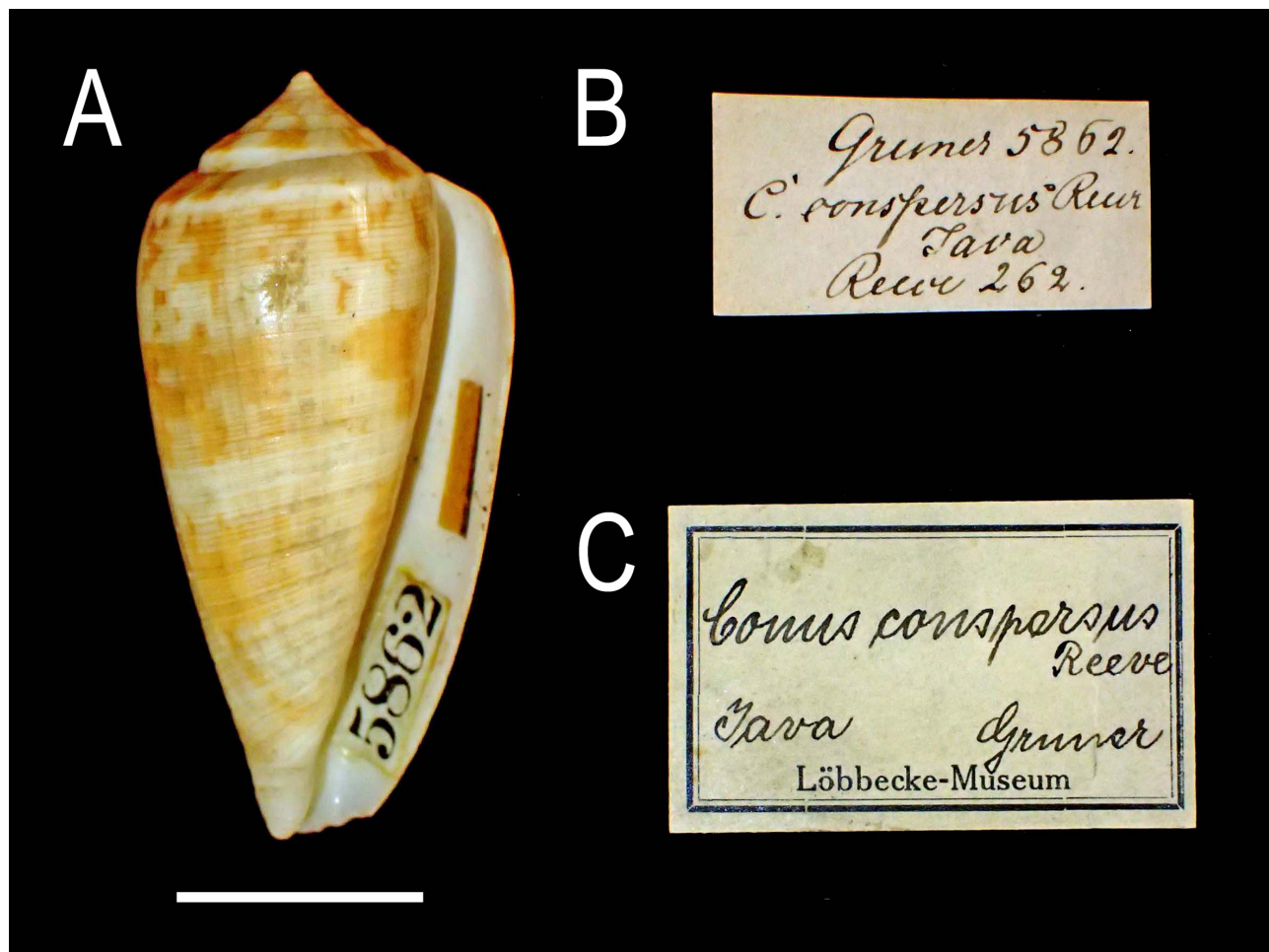


**FIGURE 1.** *Conus conspersus* Reeve, 1844; A. Holotype figure (Reeve, 1843–49: plate 47, fig. 262); B. Holotype (LMD. LOEB–102617a, ex Gruner collection (#5862)) dorsal view. Scale bar: 10 mm.

Reeve added information about *C. conspersus* in June 1849 when supplemental plate 9 and associated text to the *Conchologia Iconica* was published (Reeve, 1843–1849). This plate illustrated a different shell from the A. L. Gubba collection as *C. conspersus* in ventral view. It is labeled species and figure 262b presumably to distinguish it from species and figure 262 described earlier. He stated the reason for doing this was because the shell illustrated earlier was an “indifferent specimen” that did not furnish a “very characteristic figure” showing the “leading feature of the species, consisting of its being encircled throughout with fine close-set hair lines...”. Unfortunately, Filmer (2001 & 2011) reports the Gubba collection, in Le Havre, France area was totally destroyed during the second world war.

The *Conchologia Iconica* lists the repository of the specimen first figured as *C. conspersus* in 1844 as “Mus. Gruner, Bremen”, indicating the specimen figured was in the collection of Erich Christian Ludwig Gruner (1786–1857) from Bremen, Germany. This collection was offered for sale after the death of its owner by his widow in 1857 using a published volume of the collection catalog (Gruner, 1857) to market it to prospective buyers. Dance (1966) reports that the buyer of this collection was not known, however, records at the Aquazoo Löbbecke Museum (LMD) in Düsseldorf, Germany show it was purchased by Carl Heinrich Wilhelm Theodor Löbbecke (1821–1901) and kept in his collection as a part of a private museum in Düsseldorf until his death.

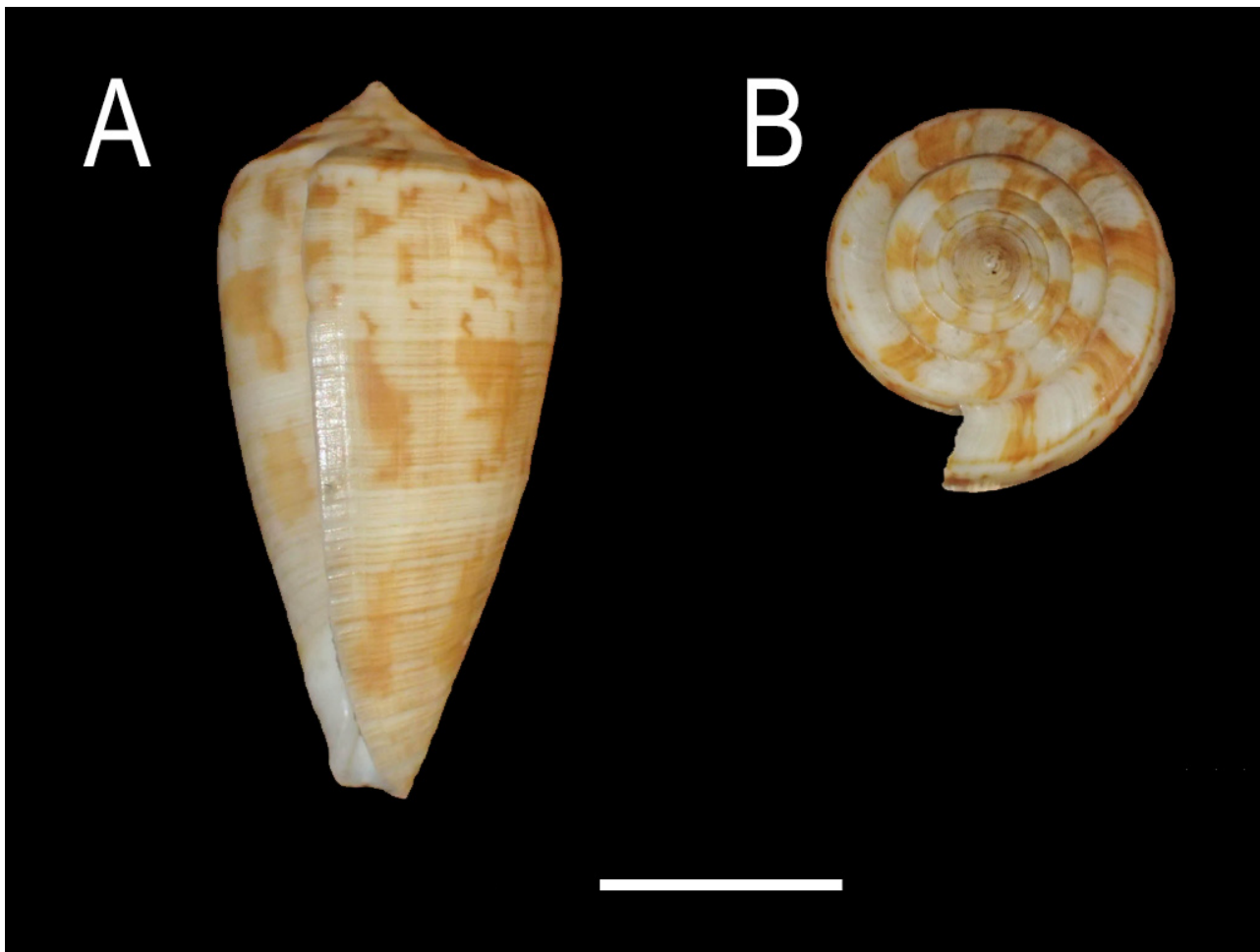
The LMD museum today still has Gruner’s original collection catalog. This catalog lists only one specimen of *C. conspersus* in the collection as lot number 5862 (Figures 1B, 2A). A label glued in the shell aperture (Figure 2A) with the Gruner catalog collection number and a label with the shell (Figure 2B) links this specimen to the only *C. conspersus* in the Gruner collection catalog. The other label with this specimen is an early label of the LMD, but not in the handwriting of Theodor Löbbecke (Figure 2C). When Theodor Löbbecke died, his shell collection was donated to the city of Düsseldorf by his wife on the condition that it would be made into a public museum.



**FIGURE 2.** *Conus conspersus* Reeve, 1844; A. Holotype (LMD.LOEB-102617a, ex Gruner collection (#5862)) ventral view; B. Gruner collection label for lot #5862; C. early label of the Löbbecke museum. Scale bar: 10 mm.

During the following years, the LMD collection was stored and/or displayed at various places, most notably during the second world war when it was transported to Osterode in the Harz, a highland area in northern Germany, and Blücherhof in Mecklenburg (Germany) to prevent losses due to bombings. After the war, it was transported back to Düsseldorf where it was stored and partially displayed in a former air raid shelter. As a result of this frequent relocation and suboptimal storage, material in the collections could often not be located, and the *C. conspersus* holotype was presumed lost by most recent authors cataloging cones such as Coomans, Moolenbeek, & Wils (1985), Filmer (2001), and Monnier *et al.* (2018). Filmer (2011) reviewed the historical confusion around this species, re-described it without new information, and concluded that the name was a synonym of *Conus spectrum* Linnaeus, 1758. In addition, Monnier *et al.* (2018) synonymized it with *Conus filamentosus* Reeve, 1849 (which they recommend separating from *C. spectrum*) due to the missing holotype. Hence, the absence of the holotype has had taxonomic implications that can be addressed if it were to be rediscovered.

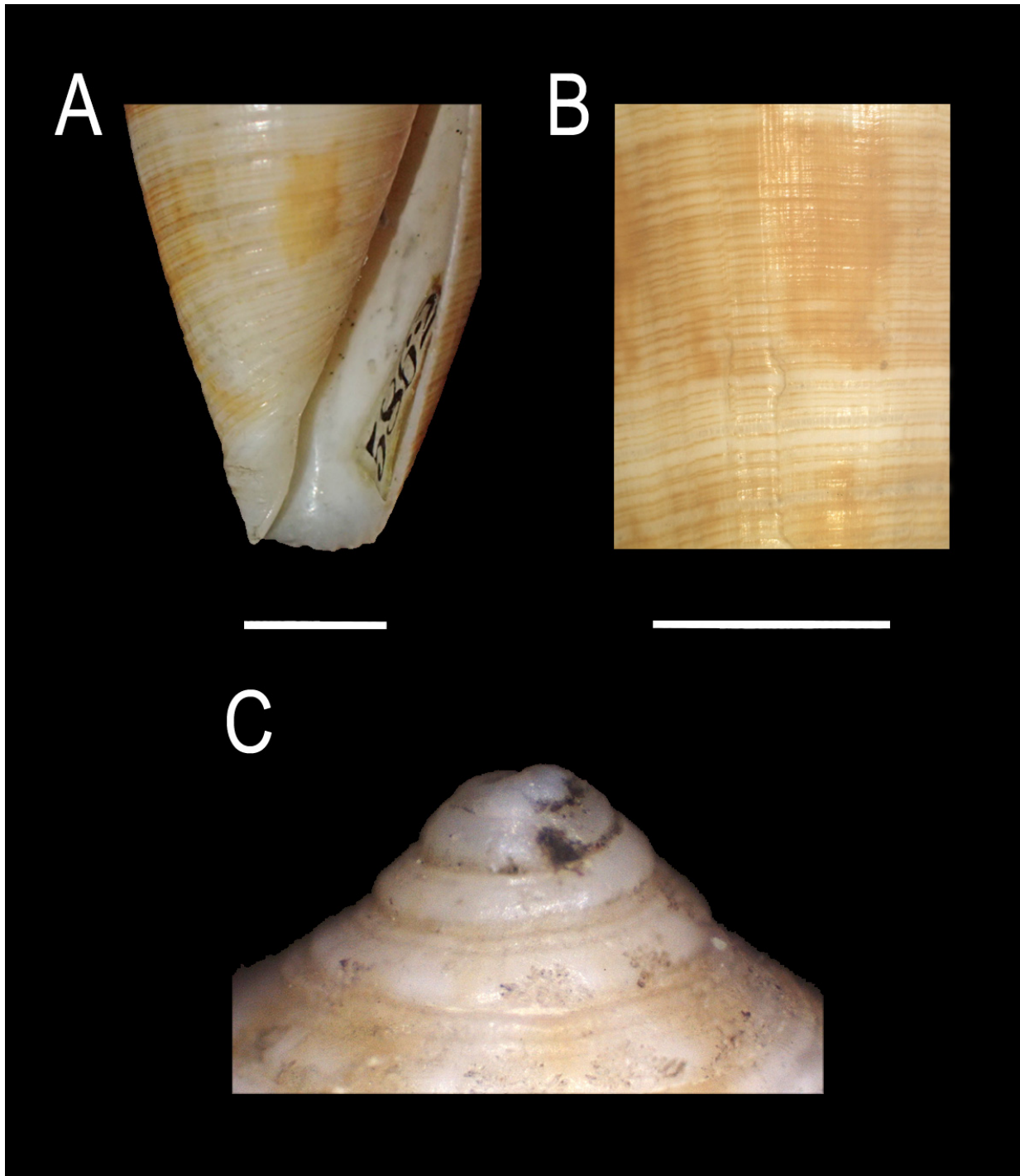
In March 2013, the first author visited the LMD in search for lost type specimens from old collections. It was during this visit that the specimen *C. conspersus*, LMD.LOEB-102617a, in the Löbbecke collection was tentatively identified as the lost holotype. Further review in 2021 by MD using measurements of the shell and comparison of the pattern to the figure in *Conchologia Iconica* (Reeve, 1843–1849) confirmed the identification. In length the specimen is 30.83 mm, and in width 16.76 mm. The body whorl is ventricosely conical; the outline convex but weakly concave above the siphonal fasciole on the left side (Figure 4A). The shoulder is subangulate. The spire is low, with a concave outline and the sutural ramps are flat (Figure 3B, 4C). There are 14 fine spiral grooves from above mid-body to the base, where they become more pronounced. The ground color of the body-whorl is creme white with a nuance of yellow. It is covered with numerous very fine, red to orange hair lines (Figure 4B). There are three radial, broad, pale orange, consistent to interrupted bands. The blotches and spots within these bands exactly match the illustration and text of *C. conspersus* in the original description (Figures 1A, 1B, 3A).



**FIGURE 3.** *Conus conspersus* Reeve, 1844; A. Holotype (LMD.LOEB-102617a, ex Gruner collection (#5862)) lateral view; B. apical view. Scale bar: 10 mm.



According to Art. 73.1 of ICZN (1999), a holotype is “the single specimen upon which a new nominal species-group taxon is based in the original publication.” Further, Art. 73.1.2 states that “if the nominal species-group taxon is based on a single specimen, either so stated or implied in the original publication, that specimen is the holotype fixed by monotypy.” Since the taxon involved was established before 2000, recommendation 73F applies. Although Reeve’s later statements and new figure in 1849 pertain to this taxon, the name and characters were already established five years earlier in the original description. If Reeve meant to have replaced his original species number and figure (262), he could have established a new number rather than just amending his original number with a letter (262b). That he chose to number this taxon this way is evidence he intended the new figure in 1849 to only illustrate discovered variation for the taxon rather than replacement of the single specimen as representative to the species group. Consequently, we believe the specimen discussed in this paper is the holotype of *C. conspersus* Reeve, 1844 by monotypy.



**FIGURE 4.** *Comus conspersus* Reeve, 1844; A. Holotype (LMD.LOEB-102617a, ex Gruner collection (#5862)) siphonal fasciole. Scale bar: 5 mm; B. Radial hair lines. Scale bar 5 mm; C. Postnuclear whorls.

Recommendation 16C, under Art. 16.4.2 of the code mentions that type specimens should be preserved and deposited in institutions that maintain a research collection, with the infrastructure for preserving specimens and making them accessible for study. LMD fulfills these criteria, as it is a public institution with many varied collections in regular use by researchers.

## Acknowledgements

We are grateful to Dr. Silke Stoll (Museum Natur und Mensch, Freiburg, Germany) and Joseph Boscheinen († 2021), both formerly curators of the Aquazoo Löbbecke Museum Düsseldorf, who helped with providing information and specimens and gave access to the museum's archive. Moreover, we would like to thank the two reviewers who helped us improve this manuscript.

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