

THE ACTEOCINA OF SALTON SINK, COLORADO DESERT, CALIFORNIA

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The fact that the Colorado Desert was formerly connected with what is now the Gulf of California is generally accepted by geologists. In the book "The Salton Sea," by D. T. MacDougal and collaborators (Carnegie Inst., Wash., 1914), W. P. Blake states (p. 3) that the Salton Sink and contiguous territory was covered by the ocean in Middle Tertiary. According to E. S. Free (op. cit.: 26), the sea was absent from the lower part of the sink in late Tertiary, and also just previous to the post-Tertiary uplift, but there was a long intermediate period of which nothing is known. During this latter period there may have been a marine occupation, followed by the building up of the Colorado River delta and consequent shutting out of the sea.

The Tertiary sea has left numerous Miocene fossil marine deposits in the Carrizo Creek region and other localities, but the common molluscan fossils (or subfossils) found in the immediate vicinity of the present Salton Sea are evidently of Quaternary age, and are almost entirely typical of fresh water.

R. E. C. Stearns (Proc. U. S. Nat. Mus., 24(1256), 1901: 287), in discussing this latter fauna, mentions having taken near Indio specimens of *Tagelus* and a single example of *Ocenebra* (*Tritonalia*) *poulsoni* Nuttall. Nothing is said regarding the condition or apparent age of these marine shells, but it would appear probable that they were not living at the same time and in the same locality as such fresh-water genera as *Anodonta*, *Helisoma* and *Paludestrina*, the common members of the fauna in the near vicinity of Salton Sea. It is entirely possible that the *Tagelus* and *Tritonalia* may have washed down from an earlier deposit at higher levels.

However, one supposedly marine genus has been found with the fresh-water genera by several collectors on different occasions, under conditions and in a state of preservation which appear to me to indicate that it might have been contemporaneous with the fresh-water fauna. This is the genus *Acteocina* (*Tornatina* of some authors, *Retusa* of others).

At least ten or twelve years ago the late Fred M. Reed, of Riverside, California, brought to me a small vial of specimens of *Acteocina*, stating that he had collected them on the shores of Salton Sea. As the locality was so unusual, I assumed (unjustifiably, it now appears) that Mr. Reed had made a mistake in his collecting data. Within the past year several collectors, including Miss Edna T. Cook and Dr. Wendell O. Gregg, have brought in specimens from Salton Sea similar to those of Mr. Reed, so there can now be no doubt as to the locality.

The fact that this supposedly marine genus is to be found in company with several fresh-water genera, apparently in the same state of preservation, poses an ecological problem that appears difficult to solve. If these genera were really contemporaneous—as I believe they were—the most reasonable explanation might be that *Acteocina* had lived through the change from salt to fresh (or brackish) water, a change that may have been very slow and perhaps interrupted one or more times by temporary invasion of the sea. If the marine mollusk had been transferred directly, by birds or other agencies, from the ocean to the ancient fresh-water lake (Blake Sea, of some authors; Lake Cahuilla, of others), it would seem unlikely that it could survive the sudden change in habitat.

As the little shell under discussion appears to differ somewhat from known members of the genus, it seems advisable to give it a name. Therefore, it may be known as:

Acteocina anomala sp. nov.—Shell of about 4 whorls, very small, cylindrical, white, smooth except for growth lines; spire varying from considerably elevated to only slightly so, with summits of whorls either tabulated or rounded; aperture five-sixths to seven-eighths the length of shell, narrow posteriorly, rounded anteriorly, with thin coating of enamel on inside border; outer lip thin, usually slightly constricted near widening of aperture; inner lip calloused, with slight fold at its insertion.

Type, No. 1082 Los Angeles County Museum; paratype, No. 1083 same collection. Both collected by Dr. Wendell O. Gregg, together with 50 additional specimens, near shore of Salton Sea, Imperial County, California. Paratypes also in collections of Dr. Gregg and Miss Edna Cook. The type, the largest specimen seen in the series examined, measures: length 3.8, diameter 1.8 millimeters. The paratype is more slender, with higher spire, and measures 3.5x1.4 mm.

This little shell is probably more like *Acteocina inculta* Gould than any other of its Recent relatives. It differs from that species in being smaller and more slender, with narrower aperture and thinner inner lip. Also, the sides of the body whorl are much more nearly parallel, rounding off abruptly anteriorly rather than gradually. The spire is usually shorter than that of *inculta*, but this feature is variable.



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