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**A Monograph of the Foraminifera of the North Pacific  
Ocean ...**

**Cushman Joseph Augustine**

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**Title: A Monograph of the Foraminifera of the North Pacific Ocean ...**

**Author: Cushman Joseph Augustine**

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Bulletin 71

A MONOGRAPH OF THE FORAMINIFERA  
OF THE NORTH PACIFIC OCEAN

PART I. ASTORRHIZIDÆ AND LITUOLIDÆ

BY

JOSEPH AUGUSTINE CUSHMAN  
*Of the Boston Society of Natural History*

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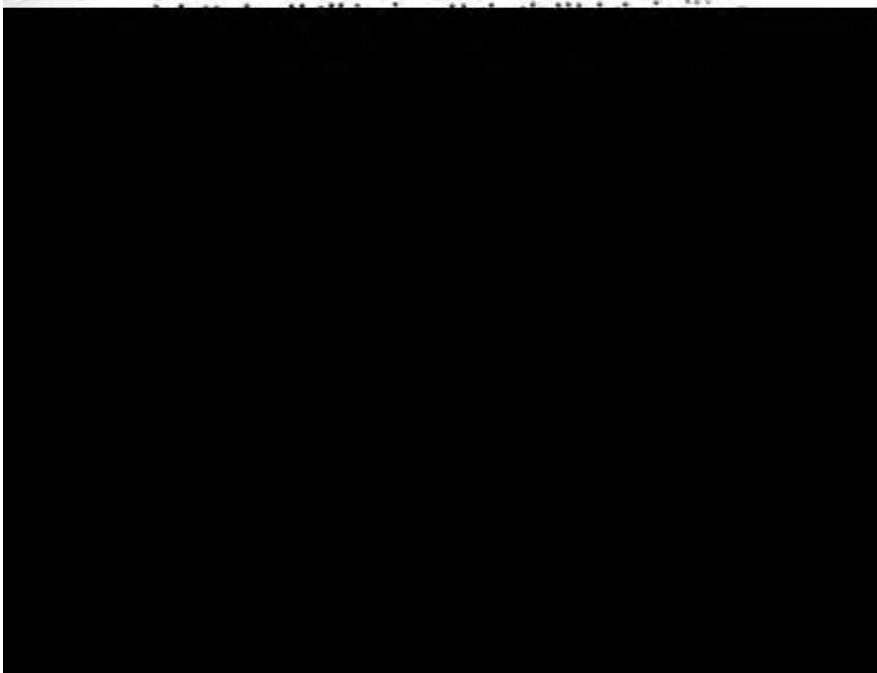


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## ADVERTISEMENT.

The scientific publications of the United States National Museum consist of two series—the *Proceedings* and the *Bulletins*.

The *Proceedings*, the first volume of which was issued in 1878, are intended primarily as a medium for the publication of original, and usually brief, papers based on the collections of the National Museum, presenting newly acquired facts in zoology, geology, and anthropology, including descriptions of new forms of animals, and revisions of limited groups. One or two volumes are issued annually and distributed to libraries and scientific organizations. A limited number of copies of each paper, in pamphlet form, is distributed to specialists and others interested in the different subjects, as soon as printed. The date of publication is printed on each paper, and these dates are also recorded in the tables of contents of the volumes.

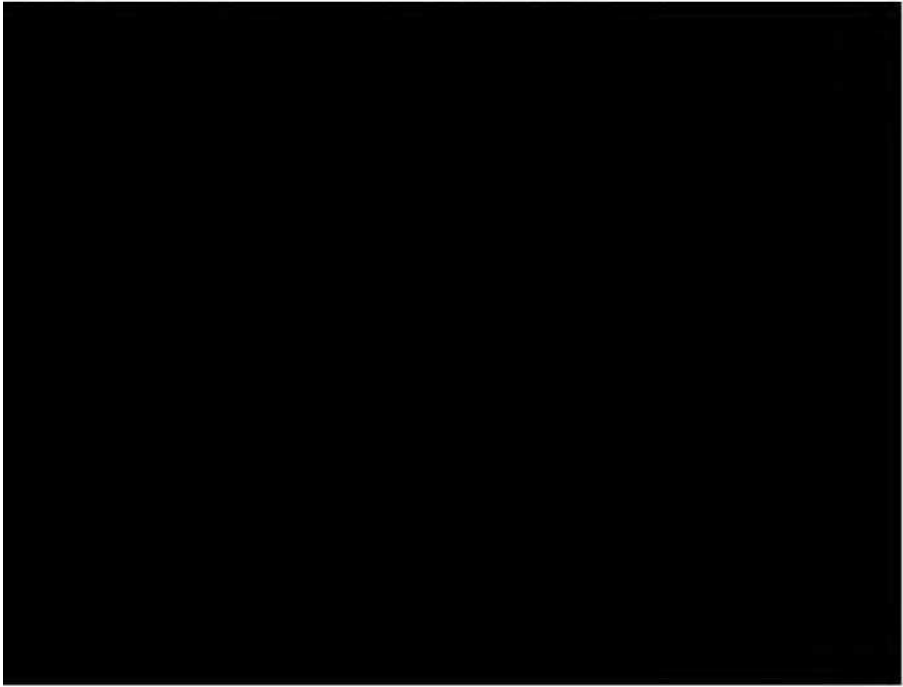
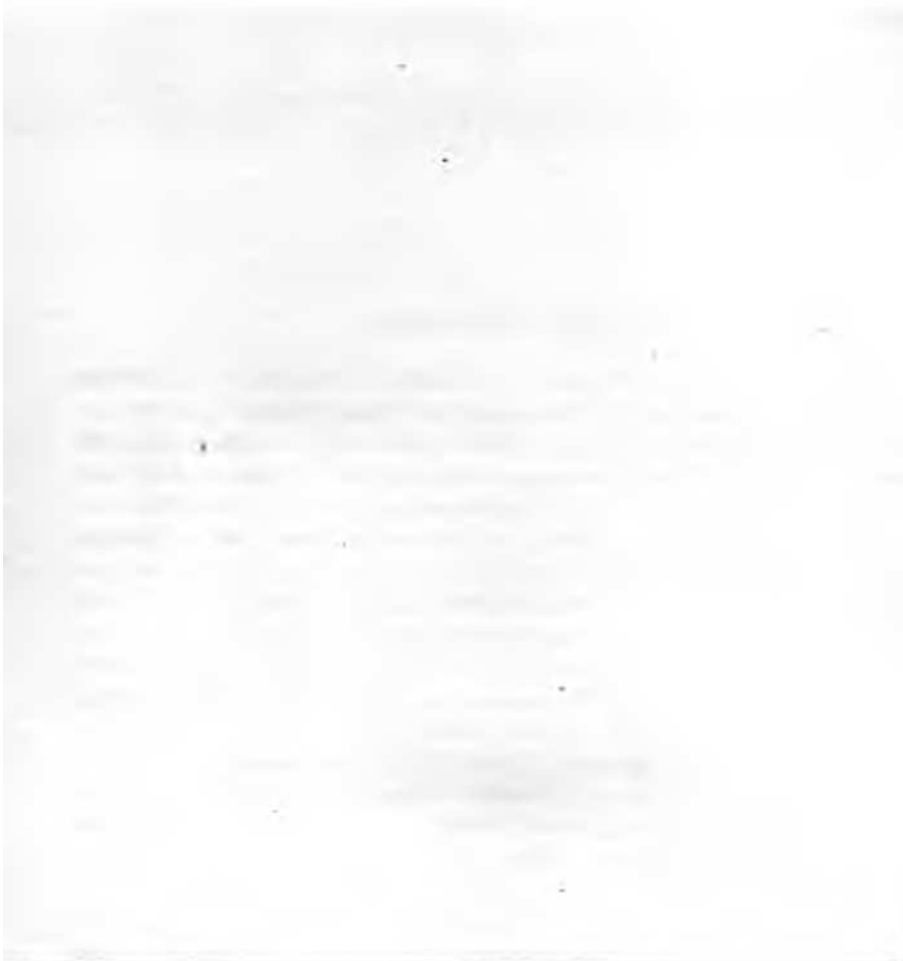
The *Bulletins*, the first of which was issued in 1875, consist of a series of separate publications comprising chiefly monographs of large zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, and catalogues of type-specimens, special collections, etc. The majority of the volumes are octavos, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable.

Since 1902 a series of octavo volumes containing papers relating to the botanical collections of the Museum, and known as the *Contributions from the National Herbarium*, has been published as bulletins.

The present work forms No. 71 of the *Bulletin* series.

RICHARD RATHBUN,  
*Assistant Secretary, Smithsonian Institution,*  
*In charge of the United States National Museum.*

WASHINGTON, D. C., June 18, 1910.



## INTRODUCTION.

This paper is the first part of a work the intent of which is to describe and illustrate the Foraminifera of the North Pacific Ocean. This part includes the families Astrorhizidæ and Lituolidæ, together often known as the Arenaceous Foraminifera. These are usually considered the more primitive group and are therefore treated first.

The collection of recent Foraminifera in the United States National Museum has been carefully studied in so far as it represents the area in question. From the work of the various vessels of the Navy Department, the Coast and Geodetic Survey, and the Bureau of Fisheries a mass of material has accumulated which has been of great value in this work. A more detailed account of these collections will be given later.

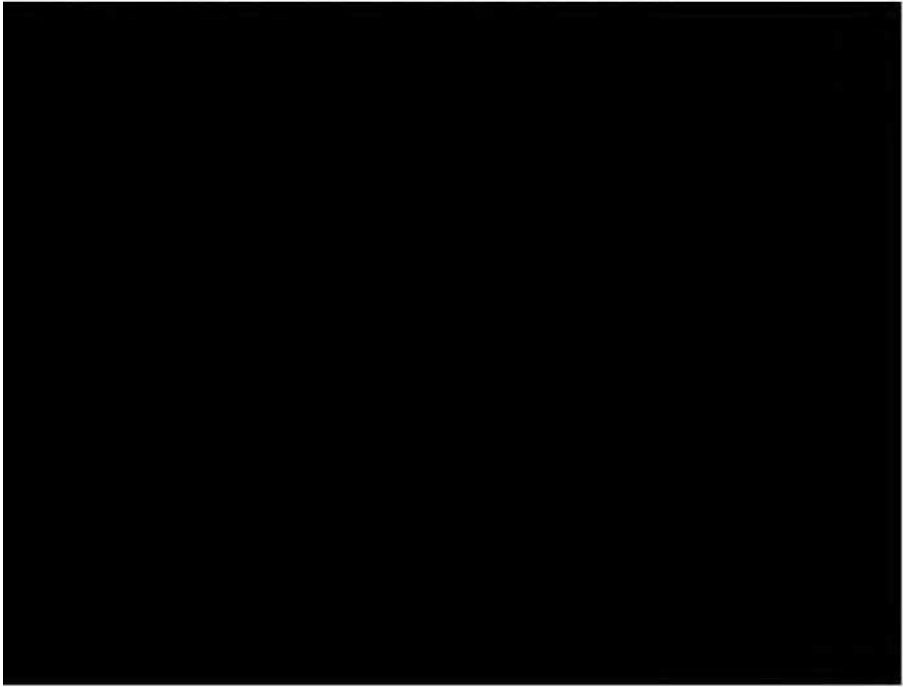
There have been few works dealing with the Foraminifera of this area, and such records as exist have been included here. Except where acknowledgment is given, the figures have been drawn by the writer from material in the collection of the U. S. National Museum or have been reproduced from photographs taken at the National Museum of specimens in the same collection. Where recorded species are not well represented in the collection, figures from other works have been used and due acknowledgment given.

A considerable number of changes in the nomenclature and systematic arrangement have been made in an attempt to separate more clearly species and groups which, after a study of this material, seem to be distinctive.

I wish to express my great appreciation of the kindness with which the U. S. National Museum and its staff have so freely met my various needs in the preparation of this work.

JOSEPH AUGUSTINE CUSHMAN.





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