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## NOTES ON THE DISTRIBUTION OF AND CERTAIN CHARACTERS IN THE SAXIDOMI OF THE WEST COAST.

BY ROBT. E. C. STEARNS.

Four species of *Saxidomus* have been described from the West coast of North America and one from Japan. On the American shores its distribution extends from the Gulf of Alaska to San Diego, a range of about 2500 miles. It is remarkably prolific, being found in great abundance in the waters of Puget Sound and in many places between the points above named.

The foregoing applies particularly to the two species *S. aratus* Gould (= *S. gracilis* Gld.), and *S. Nuttallii* Conrad. The other forms, *S. squalidus* Desh., and *S. brevisiphonatus* Cpr., may prove to be only varietal. With our present knowledge, the latter appear to be quite local, or of infrequent occurrence, apparently restricted to Vancouver Island and the shores around the Strait of Juan de Fuca, though Carpenter credits *squalidus* to Oregon and the neighborhood of San Francisco bay. *S. Nuttallii* appears to be more generally distributed and more abundant throughout the region named than *S. aratus*, though in one instance as many as a hundred bushels of the latter were included in a single consignment in 1867 to a San Francisco commission merchant. Notwithstanding its superior quality from an edible point of view, there was no sale for them; it was not a familiar form and the greater part was dumped into the bay.



These were obtained from some point on the shore of Soloma county in the neighborhood of Bodega, the exact locality unknown.

The Indians, Wintuns and Pomos, who formerly inhabited the general region bordering this part of the coast, collected and dried great quantities of the meats of this species, which formed an important part of their food supply, and they also made their disk-shaped beads and money, *hawock*, out of the shells.

Harford's<sup>1</sup> Alaska collection contained examples of *S. Nuttallii*, from Kodiak Island, Sitka, Carter's Bay, and Port Simpson. Dall's voluminous Alaskan notes when published will, probably, show that it is generally distributed throughout the Alaskan region. At San Pedro in the south, it occurs in gravelly mud and sand, associated with *Tapes laciniata*, a sharply sculptured species belonging to a genus that like *Saxidomus* is without a representative on the Atlantic coast. *S. Nuttallii* is ordinarily a much coarser sculptured shell than *S. aratus*, and as would be inferred when its wide distribution and great abundance are considered, varies greatly in proportion of length to breadth and both of these to thickness. The sculpture varies according to the local character of the ground it inhabits.

There are other features worthy of notice; among these the hinge cartilage, etc., and the adductors, the mechanism by which the valves are opened and closed, which is exceedingly conspicuous in *Saxidomus* as compared with *Tivela crassatelloides*, as will be seen at a glance when individuals of the two forms, of the same size, are placed side by side.

Following Dall's analysis of the so-called cartilage,<sup>2</sup> which he says "is not a cartilage, and which is frequently spoken of as 'ligament,' or 'internal ligament,' [there is] a great need of a distinctive name, and I propose that of 'resilium,' which clearly indicates its function;" the term ligament being used for the upper or external portion or member, which operates *by pulling*, while the resilium or inner portion may be said to operate by causing a *rebound* when pressed, so *resisting the closing of the valves* when they are open; thus these two parts or members act reciprocally, each assisting in its special way in opening the valves. The function of the adductor

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<sup>1</sup> Shells collected by the U. S. Coast Survey Expedition to Alaska in the year 1867; Proc. Cal. Acad., Dec. 2, 1867.

<sup>2</sup> Trans. Wagner Free Institute of Science, Vol. 3, Part III, March, 1895.



muscles is, on the contrary, that of *closing the valves*, and the position of these as related to the position of the compound ligament facilitates exactness in the inter-locking of the hinge teeth. Now these organs or devices for opening and closing the shells are of exceeding prominence in *S. Nuttallii*, and the opportunity for examining a fine series has recently been afforded me, by the gift of a large number for culinary purposes,<sup>1</sup> by Mr. and Mrs. Oldroyd.

The adductors are exceedingly large for shells of the size and weight, and the ligament being in proportionate size to these muscles, makes this form particularly desirable for the study of these characters. When alive and gaping, the least disturbance will be followed by an energetic closing of the shell, with a snap so vigorous as to cause a chipping or fracture of the vertical edges of the valves. The strength and tenacity of the grip, when the powerful adductors are brought into action, may be easily proven by the insertion of the finger-tips into a partially open shell.

The texture or substance of the shells in the *Saxidomi* is less compact or solid than in *Tivela crassatelloides*, and the comparative weight of examples of the same dimensions is as 10 to 13; while the mass of the adductors and ligaments are fully twice as large in *Saxidomus* as in *Tivela*, examples of the same size being compared.

The differences exhibited by these forms, both belonging to the *Veneridæ*, indicate differences in habits and environmental conditions, and no doubt others not readily perceived.

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#### A NEW SPECIES OF SISTRUM.

BY HENRY A. PILSBRY.

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***Sistrum nicocheanum*, n. sp.**

Shell imperforate or rimate, fusiform, thick and strong, brownish flesh-colored, the spiral liræ brown. Sculpture of strong, rounded, longitudinal waves equal to their intervals, 8 or 7 in number on the last whorl; these waves crossed by rather strong spiral cords, which widen into transversely oblong low tubercles upon the summits of the waves. Between these cords there are several spiral threads in most or all of the intervals. Whorls about  $5\frac{1}{2}$ , convex, the last one with concave outlines below, produced in a rather long anterior

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<sup>1</sup> This "clam" makes an exceedingly delicious soup or broth.



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