SOME FOSSIL FRESH-WATER MOLLUSCA FROM WASHINGTON AND OREGON

By Junius Henderson

About a year ago I reported some fossil fresh-water Mollusca from Quaternary deposits between Soap and Alkali Lakes, in Grand Coulee, Washington.[1] At that time I was not aware of the geological history of the Grand Coulee. I have since learned that geologists who have studied the region believe that the Coulee was carved by the Columbia River when it was forced from its channel by glacial ice during the Pleistocene Glacial Epoch, the river having resumed its course around the Great Bend after the retreat of the glaciers, leaving the wide, deep, valley with no perennial stream, but partly occupied by a series of disconnected lakes. Because of the lack of outlets and the loss of water by evaporation in the semi-arid climate, leaving in the water the salts brought in by annual run-off, the water of some of these lakes is too saline to support molluscan life. I am not sure whether the fossils from Soap Lake district represent mollusks that lived there while the river flowed through the Coulee, or lived in a large lake after the abandonment of the Coulee by the river but before the lakes had shrunken to their present dimensions. Certainly Soap Lake was once larger and deeper than now. I have not been able to re-examine the region in the light of my present idea of the history of the Coulee.

In crossing the Coulee farther north in the summer of 1928, accompanied by Mr. Elven Clifford Nelson, we found a very interesting fossiliferous river deposit, undoubtedly of Pleistocene age, in the bluff on the south side of Park Lake, a short distance below Dry Falls, which has recently been set aside as a State Park, where the waters of the river are believed to have once tumbled over a great precipice. There are two distinct deposits of fossils, both at about the same level, many feet above the present level of

[1] Henderson, The Nautilus, XLI, 118-120, 1928.

the valley. The one nearest the upper end of the lake is a well consolidated bed a foot or more thick, exposed in an excavation made in obtaining road material. This bed consists mostly of the shells of *Anodonta californiensis* Lea, which is still found living in the states west of the Rocky Mountains. The mussels were evidently buried alive, as the valves in all cases are together and closed. This is likely the deposit that Curator T. A. Bonser, of the Spokane Municipal Museum, had mentioned to us a couple of weeks before. Several hundred yards south of the first exposure is another thick, loosely consolidated, calcareous bed composed almost entirely of plant fragments, apparently *Chara,* and shells, as follows: *Planorbis antrosus* Conrad, *P. vermicularis* Gould, *P. trivolvis* Say, *Parapholyx effusa effusa* (Lea), *Valvata humeralis californica* Pilsbry, *Physa* related to *P. humerosa* Gould, *Lymnaea stagnalis wasatchensis* "Hemphill" Baker, *Stagnicola couleensis* Baker (new species), *Pisidium compressum* Prime, *Pisidium* sp. It may be noticed that all the species of this fauna are still living somewhere except *S. couleensis* and possibly the *Physa* and *Pisidium* sp.

On the slope of the latter deposit were some shells of *Oreohelix strigosa* (Gould), but they are probably more recent and rolled down from the shrubbery up the hill, as we found none actually embedded in the deposit. This species now lives in abundance in the lava rock slides of the vicinity. We found no mollusks living in the lake, but found along the shore at various points many bleached shells of some of the species, sometimes with a little of the calcareous matrix attached, all probably washed from the fossiliferous deposit. We found *Succinea* living at several places along the shore, and in the tiny outlet by which the lake drains into Blue Lake we found several species of freshwater mollusks living. Dr. Pilsbry[2] long ago reported a number of species as having been found at Blue Lake by Professor Snodgrass.

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[2] Pilsbry, THE NAUTILUS, XVII, p. 84, 1903.

At Silver Lake, southwest of Spokane, Washington, the water is now 30 feet or more below its former level. Tufa deposits many feet above the water contain numerous very small *Physa* shells. We found no other shells actually in the tufa, but on the surface about the tufa knobs large *Physa* shells were common and *Valvata humeralis californica* Pilsbry and detached valves of *Pisidium compressum* (Prime) abundant, the abundance of *Valvata* extending up the slope nearly or quite to the former high water mark. The shells in the tufa are surely fossil, and our failure to find any living mollusks in the lake leads to the belief that the others are also, especially the *Valvata.*

Harney Lake, southeast of central Oregon, has no outlet, hence for a very long period has been a concentrated salt solution, containing no mollusks and subject to considerable fluctuation in size. It, together with the neighboring Malheur Lake, which drains into it, are said to have shrunken rapidly for the past two years. At the present time the high sand dunes are a long distance from the shore line of Harney Lake. On the dunes are large quantities of mollusks of the following species: *Planorbis vermicularis* Gould, *P. trivolvis* Say (very large), *Parapholyx effusa effusa* (Lea), *Carinifex ponsonbyi* Smith, *Lymnaea stagnalis wasatchensis* Hemphill, *L.* (*Stagnicola*) *leai* Baker, *Valvata humeralis californica* Pilsbry, *Paludestrina longinqua* (Gould), *Anodonta* fragments, apparently *A. californiensis* Lea. We considered these surely fossil, representing the period when the climate was more moist and the lake consequently non-saline. Malheur Lake, having no outlet, is comparatively fresh, and probably contains living mollusks. The dense tule growth along its margins prevented us from getting to the water at its present low stage, in a search of several miles along the shore, but the outlet, at Narrows, yielded living *Lymnaea stagnalis wasatchensis* Hemphill, *L.* (*Stagnicola*) *palustris nuttalliana* Lea, *L.* (*Fossaria*) *obrussa obrussa* Say (?), *Planorbis trivolvis* Say (large), *P. vermicularis* Gould and *Valvata humeralis californica* Pilsbry.

The vast, semi-arid, interior portions of Oregon and Washington are dotted with many lakes, varying from fresh-water to saturated salt solutions. A study of their waters and shore deposits would be very interesting and well repay the effort. Most of them can now be reached by auto over passable roads. Where no mollusks are now living in the lakes because of saline conditions, the adjacent lacustrine deposits will usually yield fossils representing the more moist Pleistocene time, when the lake basins were full and overflowing and the water consequently fresh.

The following description was prepared by Dr. Frank C. Baker and the figures of the paratypes were drawn by my assistant, Miss Elberta L. Craig:

STAGNICOLA COULEENSIS F. C. Baker, new species.

Shell elongate-ovate, turreted; surface with distinct spiral striae; whorls 5½, flatly rounded, the body whorl rather obese, rapidly increasing in diameter; sutures well marked; spire acutely conic; aperture ovate or elliptical, half as long as the shell and equal to or longer than the spire; outer lip convex, without varical thickening; inner lip narrow at base of aperture, but becoming wider near the body whorl where it is tightly oppressed and somewhat twisted, forming a distinct, ascending plait; there is a small umbilical chink and the parietal wall is covered with a thin wash of callus.

L. 18.5; D. 10.5; Ap. L. 10.5; D. 6.0 mm. Holotype.
L. 17.6; D. 11.1; Ap. L. 11.1; D. 6.6 mm. Paratype.
L. 14.8; D. 8.1; Ap. L. 8.6; D. 5.7 mm. Paratype.

Type Locality: From Bluffs on south side of Park Lake, Grand Coulee, Washington

Types: Museum Natural History, Univ. Ill., No. Z28049; paratypes: Univ. Colo. Museum, No. 17024.

This is apparently an extinct species characterized by its acute spire, wide and somewhat globose shell, and distinct columellar plait. It somewhat resembles some forms of *Stagnicola binneyi* (Tryon) but differs in its sharper, more

turreted spire and twisted, plait-like columella. It bears the greatest resemblance to Currier's *intertexta,* which has been considered a synonym of *Stagnicola catascopium.* A somewhat similar form, believed to be ancestral to *intertexta,* has recently been found in Pleistocene deposits in Wisconsin. The fossils from Grand Coulee appear to be of an extinct species, although it may yet be found living in the northern part of British America.

NOTES OF THE MOLLUSCA OF SOUTHEASTERN UTAH

By Ralph V. Chamberlin and Elmer Berry

The mollusca listed in the present paper were for the most part taken by the authors and associate members of a field expedition from the University of Utah during April, 1928. While most of the collecting, which was carried on in connection with other work, was done in San Juan County, some material was secured in adjacent parts as indicated under the separate forms below. The region covered is largely desert in character and so unfavorable for the group. Mr. Berry deserves credit for the material obtained.

Pisidium variabile Prime. Moab, Grand Co., three specimens occurring with *P. abditum* Hald.; Fruita, Wayne Co., a number of very small specimens.

Pisidium abditum Haldeman. Torrey, San Juan Co., one specimen; Moab, Grand Co., several mature specimens; south of Colorado River, near Moab, three specimens taken with *P. variabile* Prime.

Vallonia pulchella (Müller). Moab, Grand Co.

Vallonia albula Sterki. Verdure San Juan Co.; Torrey, Wayne Co., one specimen.

Vallonia gracilicosta Reinhardt. Verdure, San Juan Co.; Fruita, Wayne Co.

Oreohelix depressa (Cockerell). LaSal Mts., San Juan Co.,