

and postulating unlimited divisibility lay primarily in his rejection of actual infinity and acceptance only of potential infinity.

If it is one of the aims of mathematical history to set forth the successes and failures of leaders of mathematical thought, then the Aristotelean tract, "De lineis insecabilibus," is worthy of the attention of mathematicians.

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SPECIAL ARTICLES

JURA-CRETACEOUS STONEWORT AND LIMNEAS, SUPPOSEDLY FROM ARKANSAS

PRESERVED in the paleontological collections at Stanford University is a large block of white chert containing spore-cases of stonewort, a siliceous freshwater algæ and moulds and casts of *Lymnea ativuncula* and *L. consortis* White,¹ two pondsnails originally described from the Jura-Cretaceous red beds, variously called the Morrison formation or *Atlantasaurus* zone, at Garden Park, eight miles north of Cañon City Colorado.

The matrix consists of white siliceous material made up of compacted spicules of stonewort. The surface is rusty and roughened from exposure but shows no sign of stream attrition. The specimen is accompanied by a note by J. F. Newson, mining engineer and former Stanford professor, stating that it was one of two large blocks unlike any rock in place in the vicinity, picked up on the J. L. Van Winkle ranch, east $\frac{1}{2}$ section 6, township 5 north, range 16 west, near the Arkansas river opposite old Lewisburg, Arkansas.

If Dr. Newson is correct in supposing that no beds of similar rock outcrop nearby it is thought that the material was carried there or perhaps lost by one of the early exploring expeditions returning down the Arkansas river from Colorado. I have hoped to obtain information on the subject from the distribution of siliceous rocks derived from stonewort remains in this region but they appear to be of such rare occurrences as to have escaped notice.

¹ White, C. A., Bull. 29 U. S. Geol. Sur., 1886, p. 20, Pl. IV., Fig. 8-9, *consortis*, 10-11, *ativuncula*.

With the exception of the nutlets the remains of the Estancia stonewort, *Chara estancia* Hannibal, are desiccated beyond recognition. These resemble the nutlets of the Bear River stonewort, *Chara stantoni* Knowlton,² but are nearly round and marked by six encircling spirals.

There are three groups of limneas found in North America, the Abysmal limneas including *Lymnæa (Acella) haldemani* Binney, the Moss limneas including *Lymnæa (Galba) truncatula* Müll., *humilis* Say (+ *cubensis* P. fr.), *humilis solida* Lea, *obrussa* Say, and *cooperi* Hannibal and the Marsh limneas including *Lymnæa (Lymnæa) stagnalis* L., *columnella* Say, *auricularia* L., *palustus* Müll. and the European *glaber* Müll. The Garden Park limnea, *Lymnæa ativuncula* White, and Cañon City limnea, *Lymnæa consortis* White, belong to the third group.

These species are the oldest true limneas known from North America. *L. accelerata* White of the Morrison beds is perhaps a *Lioplax* or other operculate while *L. nitidula* Meek of the Bear River Cretaceous is a problematic species that has been confused by White³ with some other *Limnea*, possibly the Eocene *L. vetusta* Meek.

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² Knowlton, F. H., *Bot. Mag.*, XVIII., 1893, p. 141, text fig. 1-3; White, C. A., Bull. 128, U. S. Geol. Sur., 1895, pp. 63, 104, Pl. X., Figs. 14-16.

³ White, C. A., Bull. 128, U. S. Geol. Sur., 1895, Pl. VI., Figs. 1-2 doubtful, Fig. 3 *nitidula*.

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