

large, clear, glassy crystals (microtine of Tschermak) of a feldspar simple in structure, my analysis of which proved it to be andesite. Some of the anorthosites described by Dr. T. Sterry Hunt in the *Geology of Canada*, 1863, were proven by his analysis to be composed of pure labradorite, and some sections of the same which he submitted to me for examination were found to be composed of a multitude of small grains, none of which were twinned. Some of the fine crystals of oligoclase from Bodenmais are simple crystals so far as the ordinary mode of twinning is concerned.

If feldspar habitually showed their cleavages in their sections? the optical method might still be followed with some certainty, but as they do not, when the grains are too small to allow cleavage fragments to be obtained for optical examination, the method followed by me* in the examination of the feldspathic constituent of the Triassic diabase is the most reliable.

In consideration both of the complexity of the feldspathic element in most rocks, and of the possibility of the simplicity of structure in triclinic feldspars, the very carefully developed methods founded upon the relation of twinning planes and elasticity planes in chance sections are liable to lead to wrong results.

NATIONAL MUSEUM, *April 20, 1881.*

ON CERTAIN CRETACEOUS FOSSILS FROM ARKANSAS AND COLORADO.

By C. A. WHITE.

In volume III of the *Proceedings of the United States National Museum*, pp. 157-162, five species of Cretaceous fossils (together with some Tertiary species) were described, but not then illustrated. Illustrations of those Cretaceous species are now given on the accompanying plate of this volume, together with those of two other Cretaceous forms which are for the first time described in this article.

The Arkansan species were collected by Mr. E. O. Ulrich in the vicinity of Little Rock, and by him presented to the Museum, together with a parcel of other fossils, mainly mollusca, which he found associated with them. The greater part of these Arkansan specimens are in the condition of mere casts of the interior of the shells, and therefore the determination of their specific and generic relations is not entirely satisfactory in all cases.

*This volume, page —. The method of separating constituents of rocks by means of a heavy solution was first proposed, according to von Lasaulx, by Fleuvian de Bellevue and Cordier, at the beginning of this century. Church suggested the use of the solution of the iodide of potassium in iodide of mercury, in the *Mineralogical Magazine* in November, 1877.

Thoulet bettered the method and introduced improved apparatus. (*Bulletin de la Soc. Minéral. de France*, 1879, No. 1.) Victor Goldschmidt succeeded in increasing the special gravity of the fluid to 3.2. (*Inaugural Dissertation*, Stuttgart, 1880.)

The following is a list of them so far as their specific and generic identity could be determined:

Callianassa ulrichi White.

Tubulostium dickhauti White.

Nautilus texanus Shumard.

Turritella? ——— apparently two species.

Anchura ———?

Lunatia ———?

Corbula? ———?

Cytherca ———?

Crassatella? ———?

Axinca ———?

Cucullæa ———?

Idonearea ———?

Modiola ———?

Ostrea ———?

Gryphæa pitcheri Morton?

Spines of an Echinoid.

The two species described in this article as new were collected by Mr. Cleburn in the valley of South Platte River, a few miles from Julesburg, Colo. He found associated with these two species several other molluscan forms, all of which are characteristic of the later Cretaceous strata, equivalent with those of the Upper Missouri River region, which are generally known as the Fox Hills and Fort Pierre Groups. The following is a list of the species collected by Mr. Cleburn, so far as they are determinable:

Nautilus dekayi Morton.

Placenticeras placenta Dekay.

Scaphites conradi Morton.

Turris (Sercula) contortus Meek & Hayden.

Cantharus? *julesburgensis* (sp. nov.).

Pyropsis bairdi Meek & Hayden.

Fasciolaria (Piestocheilus) culbertsoni Meek & Hayden.

Pyrifusus subturritus Meek & Hayden.

Anchura americana Meek & Hayden.

Lucina cleburni (sp. nov.).

Solemya bilix White.

Inoceramus barabini Morton.

Following are descriptions of the two new species before referred to, and also references to the other five Cretaceous species which were described in volume III, all of which are illustrated on the accompanying plate in this volume.

CALLIANASSA ULRICHI White.

(Plate —, Figs. 10 and 11.)

TUBULOSTIUM DICKHAUTI White.

(Plate —, Figs. 12 and 13.)

Spirorbis? dickhauti White, 1880, Proc. U. S. National Museum, vol. iii, p. 161.

Since the description of this species was published (loc. cit.), certain fragments have been brought to light which indicate that this shell really belongs to a group for which Dr. Stoliczka in Pal. Indica, vol. ii, p. 237, proposed the generic name *Tubulostium*. Our species is indeed very closely related to his *T. discoideum* (op. cit., pl. xviii, figs. 20–25). The tubular prolongation of the mouth is one of the distinguishing features of this group of shells. Our specimens do not show this feature clearly, but it is probable that that portion of the shell has been broken off, as is suggested by the added outline in figure 12.

CANTHARUS? JULESBURGENSIS (sp. nov.).

(Plate —, Figs. 1 and 2.)

Shell short fusiform; spire moderately elevated; volutions convex, apparently five or six in number, obscurely flattened upon the outer side and obliquely flattened or slightly concave upon the distal side; the outer side of the volutions marked by four strongly-raised revolving ribs (including the two prominent ones which border the flattened portion of the outer side) which are narrower than the spaces between them; the distal side marked by two or three similar, but less distinct revolving ribs, the convex proximal side of the last volution marked by numerous ribs similar to those of the outer side, but which decrease in prominence anteriorly after the first two; longitudinal varices irregular, somewhat numerous, giving the shell, in connection with the revolving ribs, a rugose aspect.

Length about 50 millimeters; diameter of the last volution 22 millimeters. (Museum No. 11468.)

Only a single example of this species has been discovered, and that is imperfect, as shown in the figure. Its characteristics are, however, so well marked that it may be readily recognized as distinct from any hitherto-described form.

Position and locality.—Later Cretaceous strata (equivalent with the Fox Hills and Fort Pierre Groups of the Upper Missouri River region) in the vicinity of Julesburg, Colo., where it was obtained by Mr. W. Cleburn.

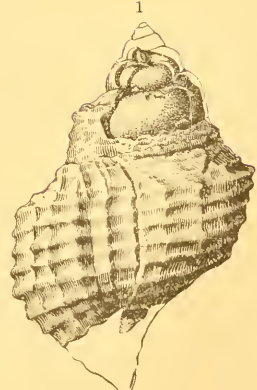
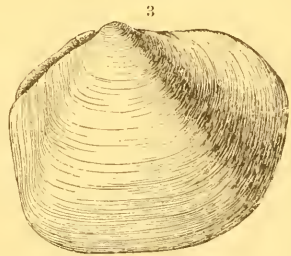
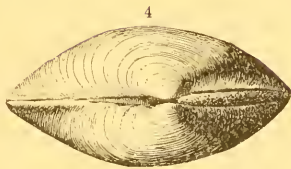
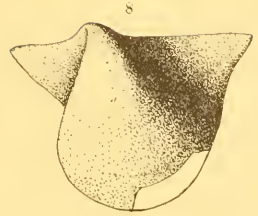
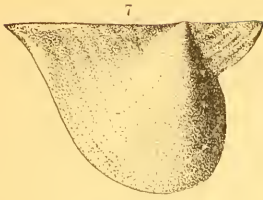
LUCINA PROFUNDA White.

(Plate —, Figs. 5 and 6.)

Lucina profunda White, 1880, Proc. U. S. National Museum, vol. iii, p. 158.

EXPLANATION OF PLATES.

- FIG. 1. *Cantharus?* *julesburgensis*; lateral view.
" 2. " " " apertural view.
" 3. *Lucina eleburni*; right-side view.
" 4. " " dorsal view.
" 5. *Lucina profunda*; right valve.
" 6. " " left valve.
" 7. *Pteria (Oxytoma) erecta*; right valve.
" 8. " " " left valve.
" 9. *Solemya bilix*; right valve.
" 10. *Callianassa ulrichi*; left manus; exterior view.
" 11. " " " interior view.
" 12. *Tubulostium dickhauti*; lateral view.
" 13. " " " peripheral view.
- All of natural size.



LUCINA CLEBURNI (sp. nov.).

(Plate —, Figs. 3 and 4.)

Shell moderately large, indistinctly pentahedral in marginal outline; valves moderately convex; posterior side truncate, basal border rather short, nearly straight or slightly convex, abruptly rounded up to the posterior border and broadly rounded up to the antero-basal border; front prominent, somewhat abruptly rounded above; antero-dorsal border slightly concave, nearly horizontal; postero-dorsal border slightly convex, sloping downward and backward, its whole length occupied by a large prominent external ligament; lunule very narrow, hardly so wide as the ligament, and extending the whole length of the antero-dorsal border; beaks small, situated subcentrally; umbonal ridge not well defined, passing near the posterior and postero-dorsal borders. Surface marked by the usual distinct lines of growth, and also by somewhat numerous strongly and sharply raised concentric lines, especially upon its upper and umbonal portions.

Length 37 millimeters; height 30 millimeters; thickness, both valves together, 14 millimeters. (Museum No. 11469.)

This fine shell bears some resemblance to the preceding, but it is a more robust form, its transverse diameter is proportionally greater, the front more prominent, the basal border less abruptly rounded, and the external ligament larger and more prominent. In its large size it resembles *L. occidentalis* Morton, as identified by Meek and figured in vol. ix, U. S. Geol. Sur. Terr., but in its abrupt posterior truncation and greater prominence of the upper portion of the front it differs conspicuously from that species.

The ligament of this shell is unusually large and prominent for that of a *Lucina*, but it has the outward characteristics of a species of that genus. Besides this, an imperfect separate valve, too fragile for preservation, which was found associated with the other specimens, and which apparently belongs to the same species, shows the hinge, pallial line, and muscular markings which characterize *Lucina*.

Position and locality.—Later Cretaceous strata (equivalent with the Fox Hills and Fort Pierre Groups of the Upper Missouri River region) in the vicinity of Julesburg, Colo., where it was obtained by Mr. W. W. Cleburn, and in whose honor the specific name is given.

SOLEMYA BILIX White.

(Plate —, Fig. 9.)

Solemya bilix White, 1880, Proc. U. S. National Museum, vol. iii, p. 158.

This species was also found by Mr. Cleburn, near Julesburg, Colorado.

PTERIA (OXYTOMA) ERECTA White.

(Plate —, Figs. 7 and 8.)

Pteria (Oxytoma) erecta White, 1880, Proc. U. S. National Museum, vol. iii, p. 157.