it does not appear to have been calcareous; and the total absence of calcareous matter in the rock is an objection to referring the same to *flustra*, or any of the parasitic corals. The ferns are abundant in the rock at this point, and many of them unbroken, and evidently not far or long transported—which, had they been, would have given support to the supposition of this body being coral.

I have referred this species to the *Glossopteris Phillipsii*, as being the only description and figure accessible to me to which this fossil bears any near resemblance. The geological position of that fossil is so well ascertained to be the schists of the upper part of the oolitic period that, relying upon the evidence offered by a single species, we might regard it as a strong argument for referring all the other specimens to the same geological period.

The two following species, or varieties of the same species, have been referred with doubt to the genus *pecopteris;* but a close examination shows the midrib only partially distinct, and in some cases scarcely visible, while the nervules radiate from the base. In other cases the midrib appears well marked at the base, but disappears in numerous ramifications before reaching the apex. The character, therefore, given by Brongniart, of "*nervo medio valde notato, nec apice evanescente,*" is inapplicable to these species; but the same feature may be observed in some figured by Brongniart himself.

6. PECOPTERIS UNDULATA. Pl. 1, figs. 1 and 2. (Nos. 83 and 118 of collection.)

Description.—Frond bipinnate; rachis slender; pinnæ long, slightly oblique to the rachis, opposite and alternate; pinnules oblique, oval-ovate, broad at the base, and the lower ones sometimes lobed, gradually becoming coadunate toward the extremity of the pinnæ.

The pinnules have often an apparently continuous smooth outline; but, on closer examination, they appear undulated, or indented upon the margin, and many of them are obviously so.

7. PECOPTERIS UNDULATA; *var.* Pl. 1, figs. 3, 4, 5. (No. 78 of collection.)

Description.—Frond bipinnate; rachis slender; pinnæ numerous, long, and gradually tapering, oblique to the rachis; pinnules oval-ovate, broad at base; midrib evanescent; nervules strong, bifurcating toward the apex; margins lobed or indented, particularly in those near the base of the pinnæ.

This species may be regarded as a variety of the last, though the pinnules are longer and less broad proportionally; but the general aspect is similar, and the habit of the plant precisely the same.

The specimen fig. 5 can only be regarded as an extreme variety of the same species, which is approached in some of the enlarged pinnules, as fig. 4.

8. PECOPTERIS (?) ODONTOPTEROIDES. Pl. 1, figs. 6 and 7. (Nos. 78 and 118 of collection.)

Description.—Frond bipinnate (?); pinnæ long and slender; secondary pinnæ subdistant, gradually tapering, nearly perpendicular; pinnules subrotund, obtuse, small, approximate, oblique, alternate, and coadunate at base; nervules strong, diverging from base; no distinct midrib.

Fig. 7. A few of the pinnæ near the termination of a frond.

The arrangement of the pinnules and nerves in this species strongly reminds one of the *Odontopteris Schlotheimii*, Brong., Hist. Veg. Foss., p. 256, t. 78, fig. 5—a fossil fern of the Pennsylvania coal measures; but this is essentially different.

The aspect of the three last-named plants is more like that of the true coal-measure ferns than any of the others; but the whole association, and their fossil condition, demand that they should be referred to a very modern period.

New Genus—TRICHOPTERIS.

Character.—Frond slender, flexuous, in tufts or single, branching or pinnate; branches long, very slender.

9. TRICHOPTERIS FILAMENTOSA. Pl. 2, fig. 6. (No. 78 of collection.) Compare *Fucoides æqualis*, Brong., Hist. Veg. Foss., p. 58, t. 5, figs. 3 and 4.

Description.—Frond pinnate or bipinnate; rachis long, and almost equally slender throughout; branches numerous, regular, alternate, simple, elongated, very slender, and flexuous.

The branches are frequently folded back upon themselves, and undulated, lying like the finest thread upon the surface of the stone. This species is very delicate and graceful, and can scarcely be examined without the aid of a magnifier. This fossil is very similar to the *Fucoides æqualis* of Brong. (from the lower chalk), except that the branches are longer and undivided.

10. TRICHOPTERIS GRACILIS. Pl. 1, fig. 8. (No. 84 of collection.)

Description.—Slender, stems numerous, flexuous, in a tuft, branched; branches numerous, slender, oblique, stronger than in the last species.

This species is more robust than the first described, but evidently belongs to the same genus. I had first supposed that this might be a collec-

tion of fern stems, stripped of their foliage; but their slender structure, long branches, and peculiar arrangement, with the appropriate proportion of all the parts, forbid its reference to anything of this kind; it is therefore placed in a new genus.

11. Stems of ferns. Pl. 1, fig. 9.

The stems of ferns, denuded of leaves, and portions only of the branches remaining. Great numbers of these stems occur, mingled with fragments of leaves and other portions of ferns still perfect.

12. Leaf of a dicotyledonous plant (?). Pl. 2, fig. 4. (Fr. Aug. 17, and No. 201 of collection.)

Description.—Leaf ovate-lanceolate, lobed; lobes acute, mucronate; midrib straight, distinct, dichotomous; principal divisions going to the mucronate points.

This leaf has the aspect of the leaf of a dicotyledonous plant, and approaches remotely only to the character of species of the genus *Phlebopteris* of Brongniart, which are regarded as such by Phillips, and by Lindley and Hutton. The specimen was not observed soon enough to make a satisfactory comparison.

Locality, in the neighborhood of the specimens containing the preceding fossils, and regarded by Captain Frémont as belonging to the same formation. The rock containing them is a soft or very partially indurated clay, very unlike the hard and brittle mass containing the other species.

Plate III.

Fossil Shells, etc.

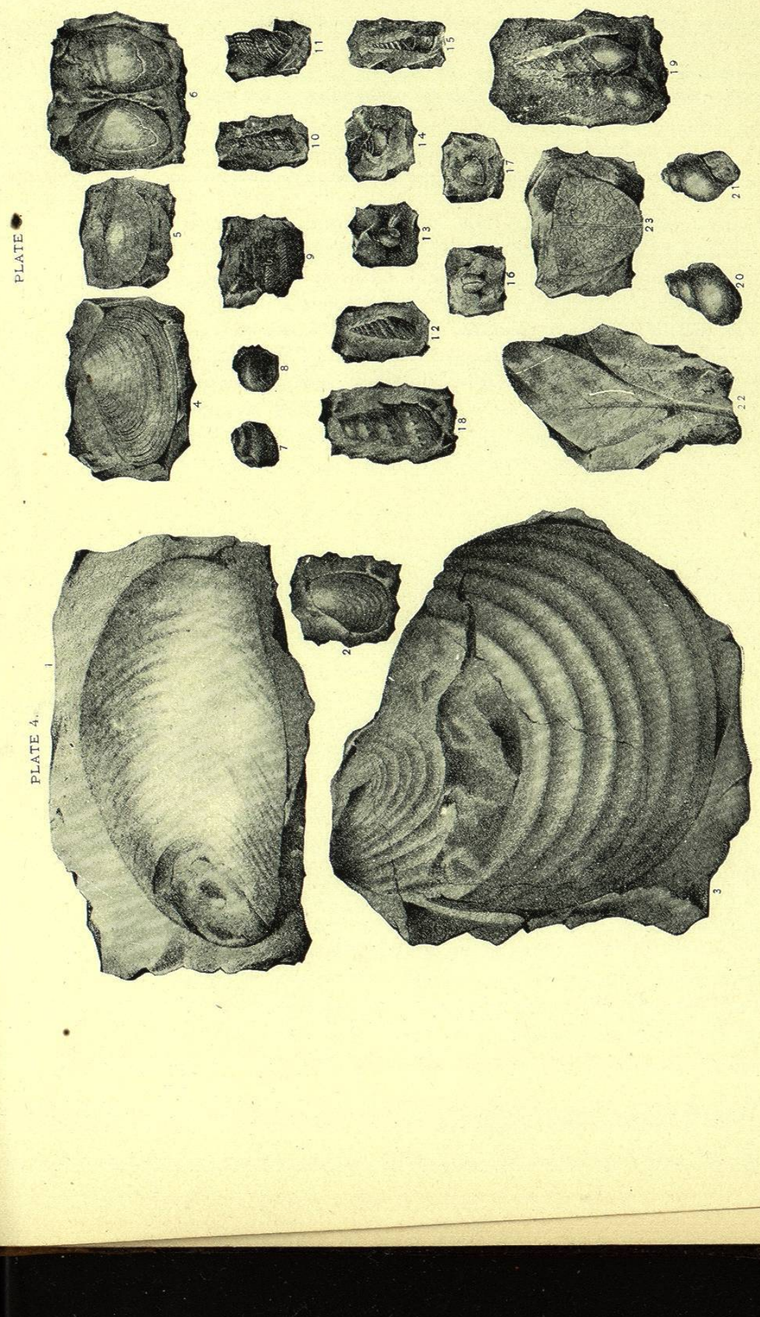
Figs. 4, 6, 5, 7, 9, and 12 are from longitude 111°, latitude 40°.
Figs. 18, 19, and 20 are from longitude 111 latitude 41½°.
Figs. 13, 15, and 16 are from longitude 115°, latitude 43°.
Figs. 22 and 23, leaves, from longitude 122°, latitude 45½°.

13. Mya tellinoides.* Pl. 3, figs. 4 and 6. Compare *unio peregrinus*; Phillips' Geol. Yorkshire, pl. 7, fig. 12. (Nos. 8, 28, and 32 of collection.)

Description.—Ovate, posterior side extended, slope gentle, rounded at the extremity; anterior side regularly rounded; surface nearly smooth, or marked only by lines of growth; beaks slightly wrinkled; moderately prominent.

The specimen fig. 4 is an entire shell; fig. 6 is a cast of the two valves of a smaller specimen, retaining a small portion of the shell. Another

* The species, where no authority is given, are regarded as new, and will be so understood.



specimen, larger than either of these, presents the inside of both valves, with the hinge broken.

Locality, in longitude 111°, latitude 40°, in slaty bituminous limestone.

14. NUCULA IMPRESSA (?) G. Pl. 3, fig. 5. (No. 32 of collection.)

Description.—Subelliptical; posterior extremity somewhat expanded; surface smooth. A few of the teeth are still visible on the anterior hinge margin, but the greater part of the hinge line is obscured.

Locality, in longitude 111°, latitude 40°, in slaty bituminous limestone.

15. CYTHEREA PARVULA. Pl. 3, figs. 16 and 17. (No. 21 of collection.) Compare *Isocardia angulata (?)*, Phillips' Geol. Yorkshire, pl. 9, fig. 9.

Description.—Ovate trigonal; umbones elevated; beaks incurved; surface marked by regular concentric lines of growth; umbones and beaks with a few stronger wrinkles. The umbones of this shell are scarcely diverging or involute enough to place it in the genus *Isocardia*, where it would otherwise very naturally belong.

Locality, in longitude 115°, latitude 43°, in gray argillaceous limestone. Two other specimens of the same shell were noticed.

16. PLEUROTOMARIA UNIANGULATA. Pl. 3, figs. 7 and 9. (Nos. 8 and 32 of collection.)

Description.—Turbinate; whorls, about six, gradually enlarging; convex below, and angular above; suture plain; surface marked by fine lines of growth; aperture round-oval; shell thin, fragile.

The specimens are all imperfect, and more or less crushed; the figures, however, are good representations of the fossil. It is readily distinguished by its fine lines of growth, resembling a species of helix, and by the angular character of the upper part of each whorl.

Locality, in longitude 111°, latitude 40°, in a dark slaty bituminous limestone.

17. CERITHIUM TENERUM. Pl. 3, figs. 10, 11. (Nos. 8, 32, and 34 of collection.)

Description.—Elongated, subulate; whorls, about ten, marked with strong ridges, which are again crossed by finer lines in the direction of the whorls. The strong vertical ridges are often obsolete on the last whorl, as in fig. 11, and the spiral lines much stronger.

This shell is very strongly marked, and its external aspect is sufficient to distinguish it; it is easily fractured, and, from the nature of the matrix, it has been impossible to obtain a specimen exhibiting the mouth perfectly.

Locality, same as the preceding.

18. CERITHIUM FREMONTII. Pl. 3, fig. 12. (No. 28 of collection.)

Description.—Shell terete, ovate, acute; whorls, about nine, convex; summit of each one coronated; surface marked by regular rows of pustular knobs, often with smaller ones between; beak small, sharp; mouth not visible in the specimen.

This is a very beautifully marked shell, with the summit of each whorl crowned with a row of short spines.

Locality, same as the preceding.

19. NATICA (?) OCCIDENTALIS. Pl. 3, figs. 13 and 14. (Nos. 16 and 21 of collection.)

Description.—Depressed, conical, or subglobose; spire short, consisting of about five whorls, the last one comprising the greater part of the shell; aperture semioval, rounded at both extremities; umbilicus small; surface marked by lines of growth.

There is a single perfect specimen and several casts of this delicate little shell. The mouth is not entire, but enough remains to show that the lip was a little expanded; but whether the columella covered a part of the umbilicus is uncertain.

Locality, in longitude 115°, latitude 43°, in a gray siliceous limestone.

20. TURRITELLA BILINEATA. Pl. 3, fig. 15. (No. 21 of collection.)

Description.—Elongated, subulate, spire rapidly ascending; whorls marked by a double, elevated, spiral line, which is notched in the lower whorls.

The specimen figured is imperfect, only the upper part of the shell remaining. Several casts of the same species occur in the specimens.

Locality, same as the preceding.

21. CERITHIUM NODULOSUM. Pl. 3, figs. 18 and 19. (Nos. 64, 68, and 74 of collection.)

Description.—Elongated, subulate; spire rapidly ascending; whorls about seven; the sutures marked by a spiral band; surface of whorls marked by curved striæ, or elevated lines, in the direction of the lines of growth; whorls carinated, with a row of protuberances along the centre.

The arched lines of growth are more distinct upon the last whorl, and it is marked beneath by a few spiral lines.

Fig. 18 is a perfect specimen. Fig. 19. The left-hand figure is a cast of the same species; the right-hand figure retains the shell upon the upper part, while it is removed from the lower part.

Locality, in longitude 111°, latitude 41½°, in yellowish-gray oolitic limestone.

22. TURBO PALUDINÆFORMIS. Pl. 3, fig. 20. (No. 64 of collection.)

Description.—Whorls, about four, rapidly enlarging, convex, smooth; mouth round-oval; columella slightly reflected; volutions marked by fine arched striæ in the direction of the lines of growth.

A small portion only of the shell remains upon the specimen figured, but it is retained in the matrix. This fossil occurs in gray or yellowish oolite, associated with *Cerithium nodulosum*, and other shells. It resembles *Paludina* in form.

Locality, same as the preceding.

23. LEAVES OF DICOTYLEDONOUS PLANTS. Pl. 3, figs. 22 and 23.

The specimens have not been satisfactorily identified, but doubtless belong to a very modern tertiary deposit.

Locality, Cascades of the Columbia River.

PLATE IV.

24. INOCERAMUS————? Pl. 4, figs. 1 and 2. (Nos. 26, 29, 21, 33, and 38 of collection.) Compare *Inoceramus mytiloides*, Sow. Min. Con., tab. 442.

Description.—Inequavalved, depressed, and elongated; surface marked by numerous waved lines and ridges; convex toward the beaks; beaks short and obtuse, somewhat obsolete in old specimens; hinge line oblique.

In the old specimens, the shell appears much flattened, except toward the beaks; while in the younger specimens it is more convex, and particularly so toward the beaks. The youngest specimens are finely lined, and the whole surface of one valve quite convex.

This fossil apparently exists in great numbers, as in the specimens examined there were individuals in all stages of growth, though mostly broken or separated valves. The same species was collected by the late Mr. Nicollet, near the Great Bend of the Missouri.

Locality, Smoky Hill River, longitude 98°, latitude 38°, in yellowish and gray limestone of the cretaceous formation.

25. INOCERAMUS————? Pl. 4, fig. 3. (No. 42 of collection.) Compare *Inoceramus involutus*, Sow. Min. Con., tab. 583.

Description.—Semicircular; surface flat, with the margin deflected; marked by strong, regular concentric ridges, which become attenuated on either side, and are nearly obsolete toward the beak; beak of one valve small, not elevated; hinge line nearly rectangular.

The strong concentric ridges distinguish this fossil from any other species. The specimen figured is probably the flat valve, as a fragment of

a large and much more convex valve accompanies this one, from the same locality. The shell, particularly toward the margin, is very thick and fibrous.

Locality, near the eastern slope of the Rocky Mountains, in longitude 105°, latitude 39°, in light yellowish-gray limestone, probably of the cretaceous formation.

NOTE.—The specimens figured on Plate III., Nos. 4, 6, 5, 7, and 10, have the appearance of fluviatile shells, and would have been so regarded but for the occurrence of fig. 5, which appears to be a Nucula, and fig. 12, in the same association, the sculpturing of which is unlike any of the Melania known to me. It is not improbable, however, that this may prove a fresh-water deposit of vast interest, as it appears to be of great extent, and occurs at a great elevation. The researches of Captain Frémont, in his future explorations, will doubtless set this question at rest, by a larger collection of fossils from the same region.

C. NOTE CONCERNING THE PLANTS COLLECTED IN THE SECOND EXPEDITION OF CAPTAIN FRÉMONT.

When Captain Frémont set out on his second expedition, he was well provided with paper and other means for making extensive botanical collections; and it was understood that, on his return, we should, conjointly, prepare a full account of his plants, to be appended to his report. About fourteen hundred species were collected, many of them in regions not before explored by any botanist. In consequence, however, of the great length of the journey, and the numerous accidents to which the party were exposed, but especially owing to the dreadful flood of the Kansas, which deluged the borders of the Missouri and Mississippi Rivers, more than half of his specimens were ruined before he reached the borders of civilization. Even the portion saved was greatly damaged; so that, in many instances, it has been extremely difficult to determine the plants. As there was not sufficient time, before the publication of Captain Frémont's report, for the proper study of the remains of his collection, it has been deemed advisable to reserve the greater part of them to incorporate with the plants which we expect he will bring with him on returning from his third expedition, upon which he has just set out.

The loss sustained by Captain Frémont, and, I may say, by the botanical world, will, we trust, be partly made up the present and next seasons, as much of the same country will be passed over again, and some new regions explored. Arrangements have also been made by which the botanical collections will be preserved, at least from the destructive effects of water; and a person accompanies the expedition, who is to make drawings

of all the most interesting plants. Particular attention will be given to the forest trees and the vegetable productions that are useful in the arts, or that are employed for food or medicine.—JOHN TORREY.]

Descriptions of some new genera and species of plants, collected in Captain J. C. Frémont's exploring expedition to Oregon and North California, in the year 1843–44. *By John Torrey and J. C. Frémont.*

CLEOMELLA (?) OBTUSIFOLIA. *Torr. and Frém.*

Branching from the base, and diffuse; leaflets cuneate-obovate, obtuse; style filiform.

Annual, stem smooth, the branches spreading, about a span long, hairy in the axils. Leaves, or petioles, an inch or more in length; the lamina of the leaflets four to six lines long, apiculate with a deciduous bristle, nearly smooth above, sparsely strigose underneath. Pedicles solitary and axillary in the upper part of the branches, longer than the petioles. Calyx much shorter than the corolla; the sepals lacerately three to five-toothed. Petals yellow, oblong-lanceolate, obtuse, about three lines in length. Stamens six, unequal, a little exserted; anthers linear-oblong, recurved when old. Torus hemispherical. Ovary on a long slender stipe, obovate; style longer than the ovary.

On the American Fork of the Sacramento River; March. The specimens are not in fruit, so that we cannot be certain as to the genus; but it seems to be a Cleomella.

MECONELLA CALIFORNICA. *Torr. and Frém.*

Leaves obovate-spatulate; stamens 11 to 12.

On the American Fork of the Sacramento River.

This species is intermediate between Meconella and Platystigma. It is a slender annual, three to four inches high, with the radical leaves in rosulate clusters, and more dilated at the extremity than in *M. Oregana*. The flowers also are much larger. The torus, which is like that of Eschscholtzia, is very distinct.

ARCTOMECON. *Torr. and Frém.—n. gen.*

Calyx of three smooth imbricated caducous sepals. Petals four, obovate, regular. Stamens numerous; anthers oblong-linear, the cells opening longitudinally. Ovary obovoid, composed of six carpels, with as many narrow intervalvular placentæ; styles none; stigmas coalescing into a small