

of the flank, but the first lateral lobe is trifold, complexly frilled, and about twice as deep as the external lobe and very similar to the corresponding elements in the genotype as figured by Wright (1957, p. L364, fig. 476-5c). The maximum size was probably over 8 inches in diameter as the holotype measures more than 6 inches in diameter (reconstructed) and is septate throughout.

Holotype.—The holotype is specimen number 28656 U.C.L.A. Invert. Paleo. Cat. It was collected at locality 3477 on Coyote Creek. Dimensions: height of whorl 27 mm., width of whorl 16 mm. (approximate), width of umbilicus 25 mm. All measurements at 73 mm. diameter.

Remarks.—*P. puma* n. sp. can be differentiated from other puzosids described from California by its high flat-sided whorl, wide shallow umbilicus and low, acutely rounded umbilical wall.

In addition to the locality of the holotype, the species has been found in the mudstones overlying the Bald Hills formation in the North Fork of Cottonwood Creek area.

The trivial name is a synthetic word.

PUZOSIA SULLIVANAE n. sp.
Pl. 105, figs. 4,5

Shell medium size with an ovate almost equant adult whorl section; umbilicus a little less than one third diameter of shell; umbilical edge rounded; umbilical wall steep, convex, turned under at the umbilical seam; ornamentation consists of sigmoidal constrictions and ribs; constrictions 5 per whorl, moderately deep grooves on the internal mold, cross the venter with a slight anterior inflection, reflected on the external shell; ribs between each constriction variable in number (19-27), very low and indistinct on the periphery and absent on the inner half of the flank to about 50 mm. diameter; ribs on the early part of the body whorl reach the umbilical edge, may bifurcate on the shoulder or arise by intercalation on the shoulder; suture puzosid, complexly frilled.

Holotype.—The holotype, specimen number 28657 U.C.L.A. Invert. Paleo. Cat., was collected at U.C.L.A. locality 3764 by W. P. Popenoe. It is the only known specimen. Dimensions: at 77 mm. diameter, height of

whorl 32 mm., width of whorl 30 mm., umbilicus diameter 23 mm.

Remarks.—*Puzosia sullivanae* n. sp. resembles *P. dilleri* (Anderson) (Anderson, 1938, pl. 42, fig. 1, not pl. 42, figs. 2,3) more closely than any of the other California species but has a much smaller umbilicus than the latter.

The species is named for Mrs. Catherine Sullivan near whose ranch the holotype was found.

Genus MESOPUZOSIA Matsumoto, 1954
MESOPUZOSIA COLUSAENSE (Anderson)
Pl. 102, fig. 10

Desmoceras colusaense Anderson, 1902, p. 96,97. pl. v, figs. 128,129, pl. x, fig. 200.

Puzosia (Parapuzosia) colusaense (Anderson), Anderson, 1958, p. 236, pl. 10, fig. 1.

Pachydesmoceras colusaense (Anderson), Matsumoto, 1958, p. 652.

Shell large with ovate whorl section; umbilicus a little less than $\frac{1}{3}$ diameter of the shell; umbilical edge smooth, rounded; umbilical wall steep, rounded (convex), turned under at the umbilical seam; ornamentation of sigmoidal constrictions and ribs; the constrictions number 6 or 7 on specimens about 150 mm. in diameter, more constrictions per whorl (about 10) are apparently present on the younger shell judging from a partially preserved specimen of about 50 mm. diameter; Anderson (1902, p. 97) reported 10-11 constrictions on the young whorls of his specimen; number of ribs between each constriction varies greatly with growth, on specimens of about 150 mm. diameter, 17-19 ribs are on the periphery, 10-13 on the flanks; ribs reach almost to the umbilical edge; suture puzosid, Anderson's figure (1902, pl. 10, fig. 200) is good for the external lobe, 1L and the outer part of the suspensive lobe.

Holotype.—The holotype is type specimen number 4283 in the collections of the California Academy of Sciences in San Francisco. It was found on the Petersen Ranch 4 miles north of Sites, Colusa County, California.

Remarks.—If the position of the ribs on the flank and the flatness of the flank be treated as definitive characters, this species cannot be placed in the genus *Puzosia*. It does not have the features of ornamentation cited by Wright (1957, p. L365) for *Pachy-*

Genus *TURRILITES* Lamarck, 1801

TURRILITES (*TURRILITES*) *DILLERI* n. sp.

Pl. 103, fig. 6

Apical angle about 21°; the whorl is ornamented by three rows of bullate or tuberculate prominences which are connected by faintly developed transverse ribs that extend from slightly below the lower row of prominences to the upper whorl suture; the lower prominence is elongate slightly in a direction about 60° from the direction of the axis of coiling; the middle prominence is more or less equidimensional; the upper prominence is elongate in a direction at a slight angle to the axis of coiling; maximum length of shell probably exceeded 3 inches.

Holotype.—The holotype, specimen number 28655 in the U.C.L.A. Invert. Paleo. Cat., consists of two complete whorls of a completely septate shell with a maximum diameter of 18 mm. The holotype and three other specimens were collected from U.C.L.A. locality 3464. All four have virtually the same characteristics of ornamentation even though each specimen represents a different growth stage.

Remarks.—*Turrilites* (*Turrilites*) *dilleri* n. sp. differs from *T. oregonensis* Gabb (1864, pl. 28, fig. 201) in having only 3 rows of prominences rather than 4. "*Turrilites*" *Carlottensis* Whiteaves (1900, pl. 34) probably belongs to *Emperoceras* or some closely related genus. *T. dilleri* n. sp. differs from the genotype, *T. costatus* Lamarck, in the proportions of the bullae and a much less prominent spiral trough separating the posterior bulla from the anterior ones.

T. (T.) dilleri closely resembles two of Sharpe's figures of *Turrilites*, *T. costatus*

Lamarck (Sharpe, 1856, pl. 27, fig. 1), and *T. wiestii* Sharpe (pl. 27, fig. 8). Both of these specimens have been referred to *T. acutus* Passy by Wright and Wright (1951, p. 40). *T. dilleri* appears to be more loosely coiled than these specimens. In Sharpe's figures the lower bulla is not visible when the succeeding coil is present, but it is visible on *T. dilleri*.

The species is named for J. S. Diller pioneer worker in northern California geology.

Family DESMOCERATIDAE Zittel, 1895

Genus *PUZOSIA* Bayle, 1878

PUZOSIA PUMA n. sp.

Pl. 104, figs. 5, 6

Shell compressed with a high, flat-sided whorl cross section; umbilicus wide and shallow in comparison to most members of the genus (25 mm. at a diameter of 73 mm.); umbilical edge sharply rounded; umbilical wall low, steep, abutting previous whorl at umbilical seam; ornamentation consists of sigmoidal constrictions and ribs; the constrictions number about 5 per whorl, are deep and prominent from umbilical seam to umbilical seam, cross the venter with a pointed anterior inflection, show on the external shell as shallow groves preceded by a low labial ridge; constrictions are inflected forward at a greater angle than the intervening ribs, and, therefore, intersect several of the anteriormost ribs of each intra-constriction space; between each constriction are about 13 subdued sigmoidal ribs that arise near the lower quarter of the flank and cross the venter without interruption. The suture line is not exposed on the inner half

EXPLANATION OF PLATE 104

All figures $\times 1$

- FIGS. 1-3—*Eogunmarites matsumotoi* n. sp. 1, cross-section view of holotype, 28664 U.C.L.A. Invert. Paleo. Cat.; 2, lateral view of holotype; 3, fragment of body whorl of the holotype.
4—*Beudanticeras haydeni* (Gabb). View of specimen 28660 U.C.L.A. Invert. Paleo. Cat. showing first lateral lobe of suture.
5, 6—*Puzosia puma* n. sp. Ventral and lateral views of the holotype, 28656 U.C.L.A. Invert. Paleo. Cat.

